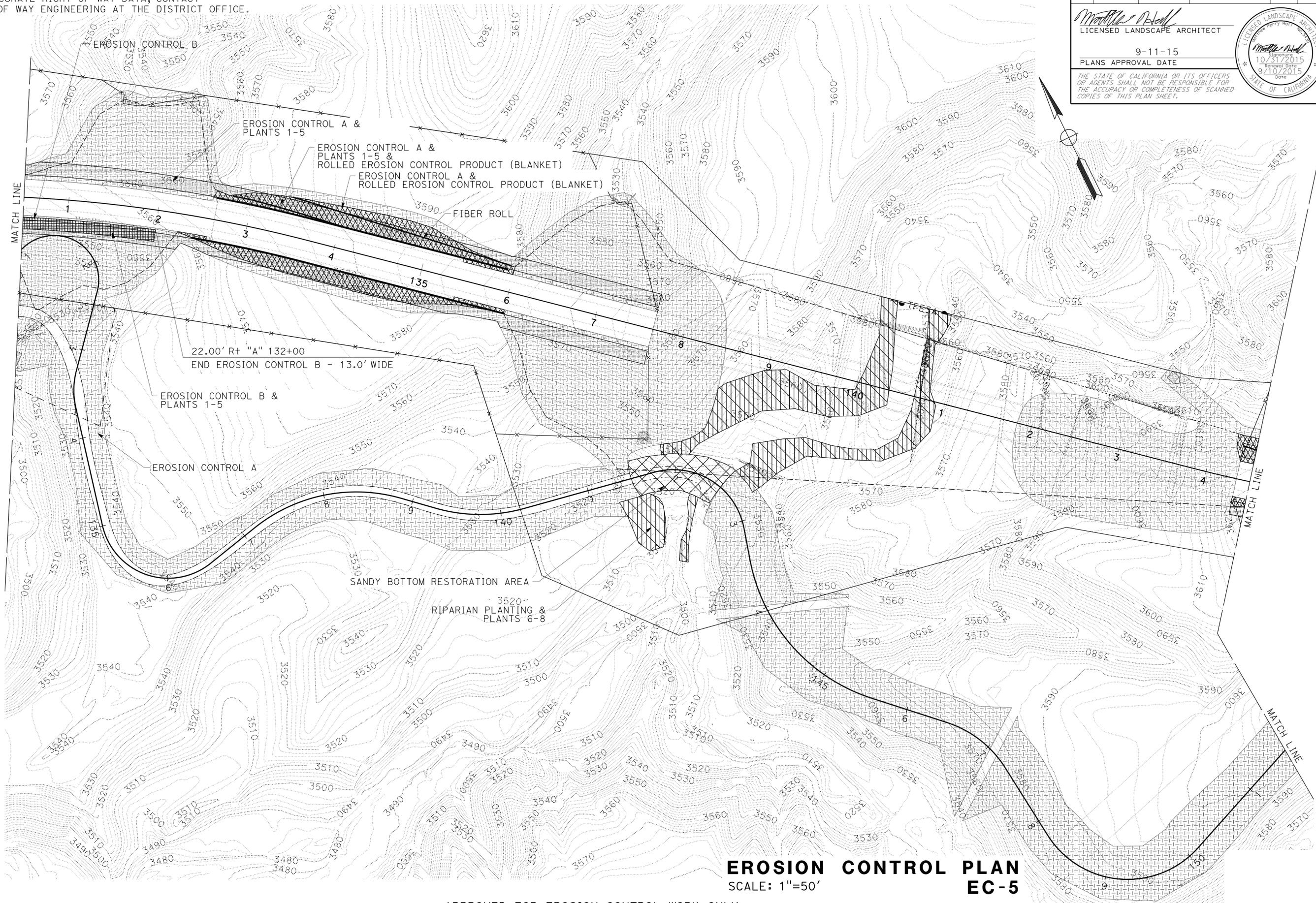


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	17.1/19.2	101	212

Matthew DeWitt
 LICENSED LANDSCAPE ARCHITECT
 9-11-15
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

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



EROSION CONTROL PLAN
EC-5
 SCALE: 1"=50'

APPROVED FOR EROSION CONTROL WORK ONLY

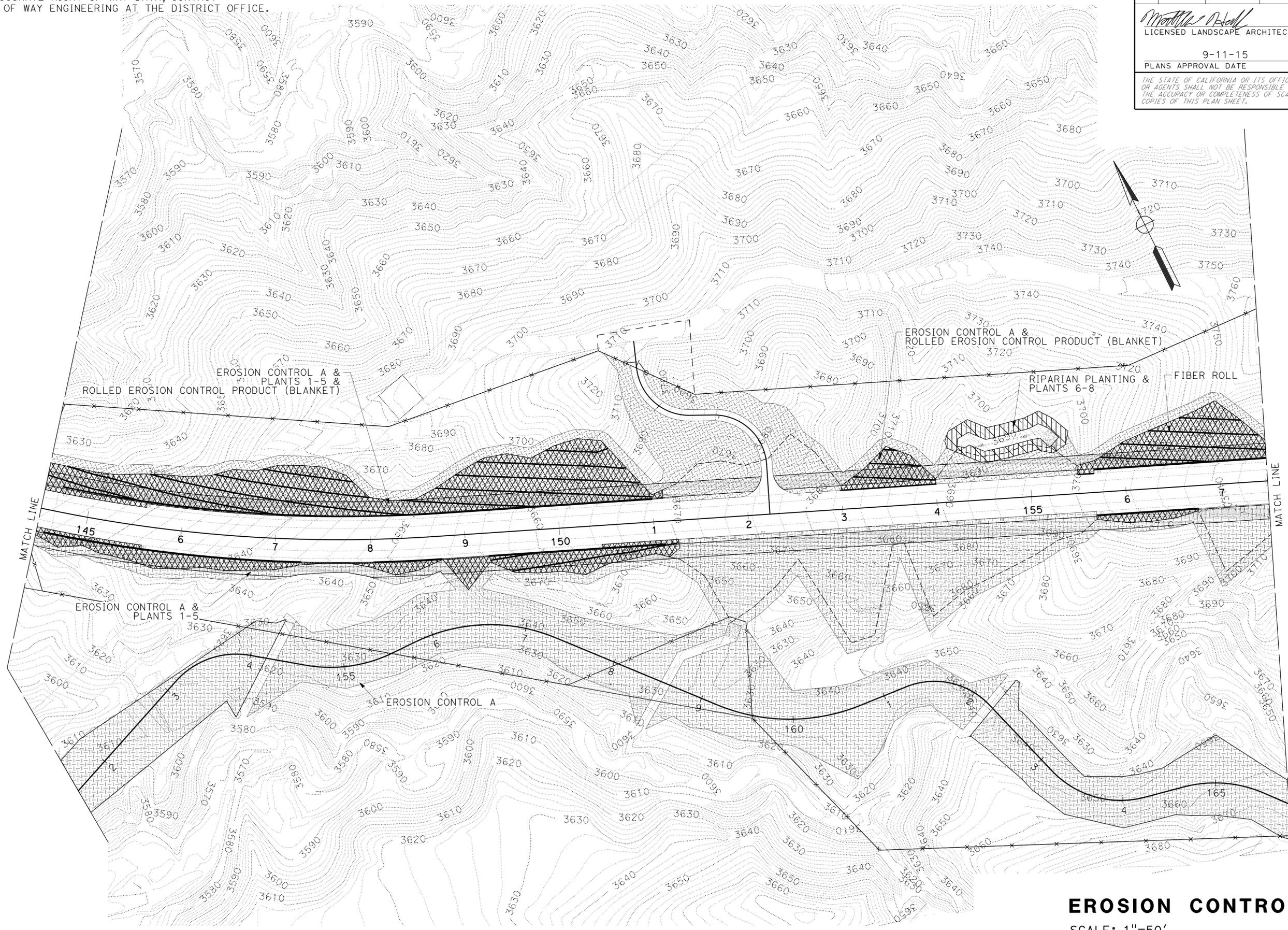
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	SENIOR LANDSCAPE ARCHITECT	CALCULATED/DESIGNED BY	REVISOR
Caltrans LANDSCAPE ARCHITECTURE	JOHN STANTON	CHECKED BY	MATTHEW HALL
			MIKE BABICH
			DATE REVISED

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SbD	138	17.1/19.2	102	212

Matthew DeBell
 LICENSED LANDSCAPE ARCHITECT
 9-11-15
 PLANS APPROVAL DATE

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	SENIOR LANDSCAPE ARCHITECT	CALCULATED-DESIGNED BY	REVISOR
Caltrans LANDSCAPE ARCHITECTURE	JOHN STANTON	CHECKED BY	MATTHEW HALL
			MIKE BABICH
			DATE REVISED

APPROVED FOR EROSION CONTROL WORK ONLY

EROSION CONTROL PLAN
 SCALE: 1"=50'
EC-6

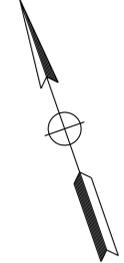
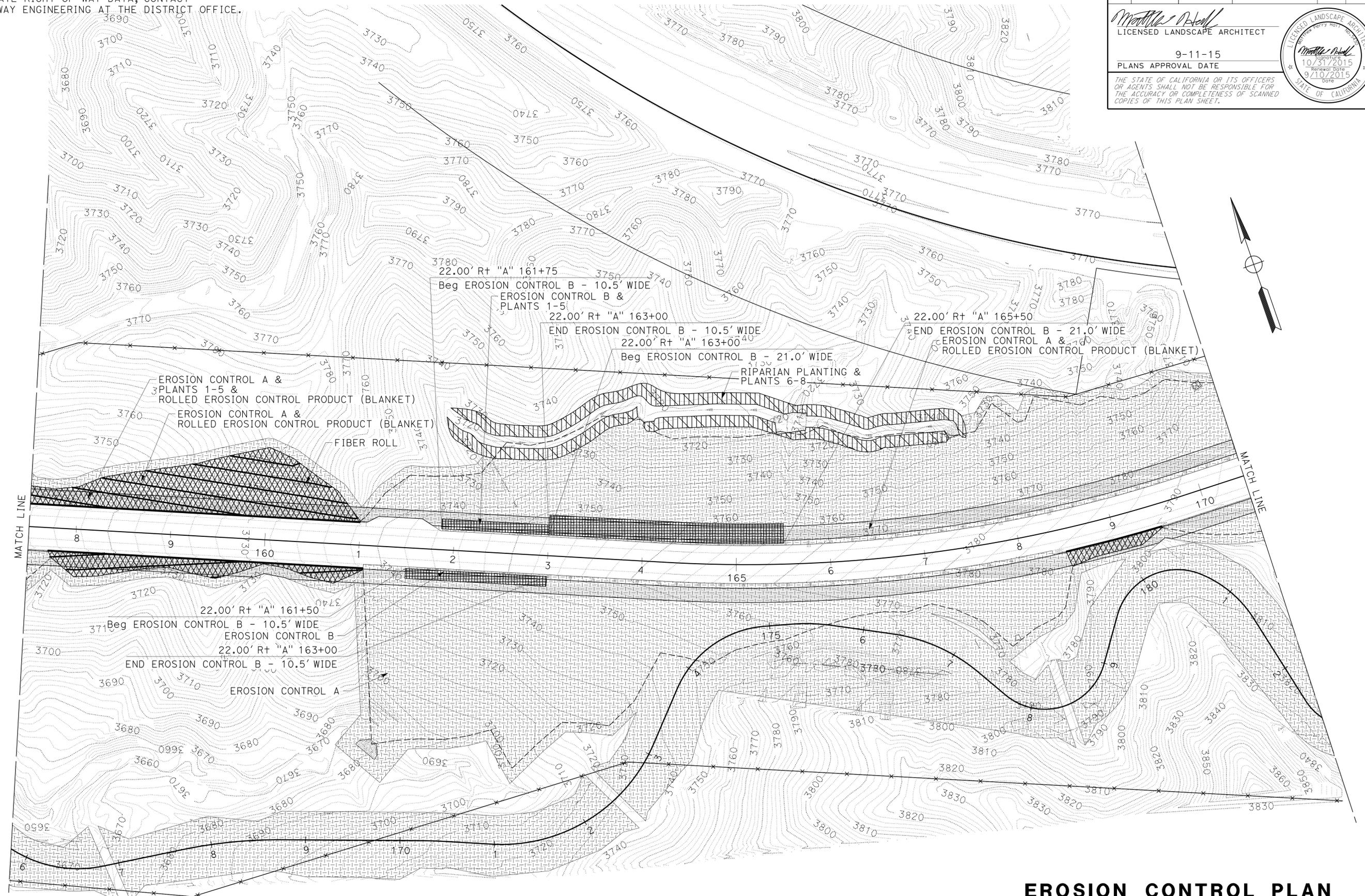
NOTE:

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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	17.1/19.2	103	212

Matthew DeWitt
 LICENSED LANDSCAPE ARCHITECT
 9-11-15
 PLANS APPROVAL DATE

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	SENIOR LANDSCAPE ARCHITECT	REVISOR	DATE
Caltrans LANDSCAPE ARCHITECTURE	JOHN STANTON	MATTHEW HALL	
		MIKE BABICH	

**EROSION CONTROL PLAN
 EC-7**
 SCALE: 1"=50'

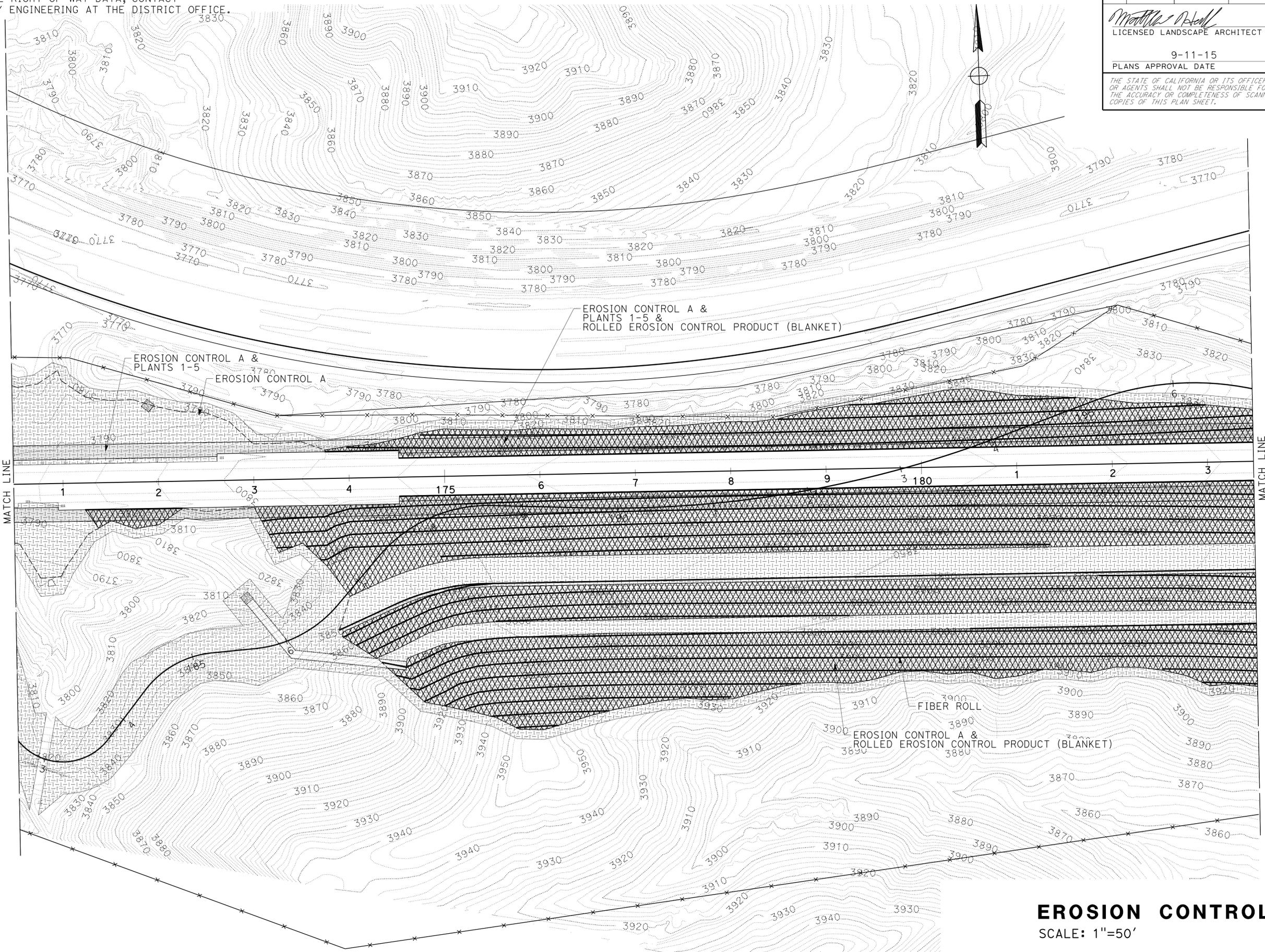
APPROVED FOR EROSION CONTROL WORK ONLY

LAST REVISION DATE PLOTTED => 16-NOV-2015
 09-10-15 TIME PLOTTED => 10:08

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	17.1/19.2	104	212

Matthew Hall
 LICENSED LANDSCAPE ARCHITECT
 9-11-15
 PLANS APPROVAL DATE
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NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	LANDSCAPE ARCHITECTURE	SENIOR LANDSCAPE ARCHITECT	MATTHEW HALL	REVISOR
Caltrans		JOHN STANTON	MIKE BABICH	DATE REVISED
				CHECKED BY
				DESIGNED BY

EROSION CONTROL PLAN
EC-8
 SCALE: 1"=50'

APPROVED FOR EROSION CONTROL WORK ONLY

NOTE:

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

EROSION CONTROL QUANTITY

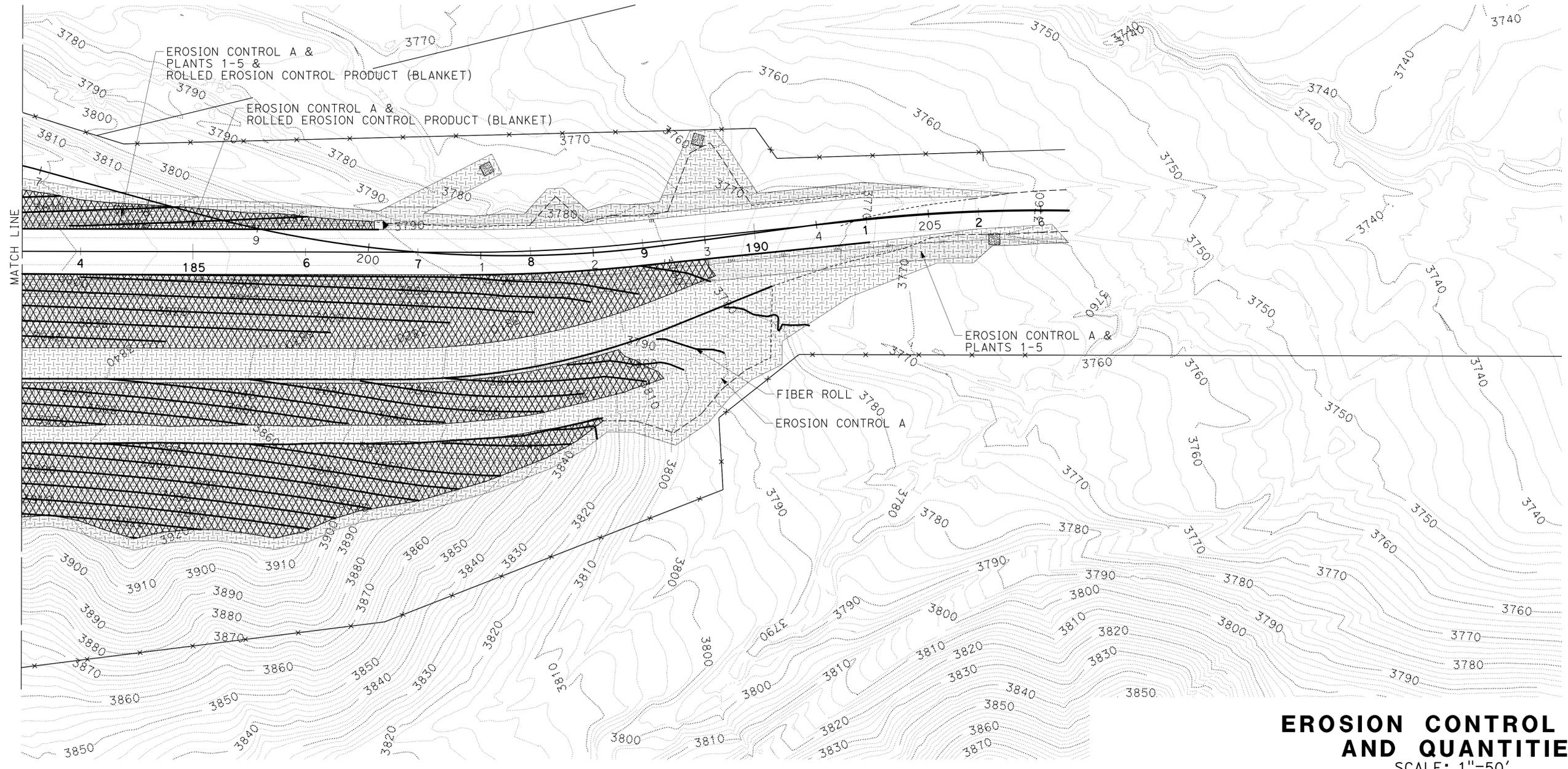
SHEET	LOCAL TOPSOIL (N)	DUFF	COMPOST (2" THICK)	COMPOST (4" THICK)	INCORPORATE MATERIALS (6" DEEP)	INCORPORATE MATERIALS (18" DEEP)	DRY SEED	HYDROMULCH	ROLLED EROSION CONTROL PRODUCT (BLANKET)	FIBER ROLL
	SQFT	ACRE	SQFT	SQFT	SQFT	SQFT	SQFT	SQFT	SQFT	SQFT
EC-1	80,512	1.85	80,512		80,512		80,512	80,512	2,888	260
EC-2	210,235	4.83	210,235		210,235		210,235	210,235	6,945	1,059
EC-3	216,741	4.98	216,741		216,741		216,741	216,741	16,250	1,314
EC-4	246,817	5.67	244,208	2,609	244,208	2,609	246,817	246,817	49,807	4,663
EC-5	253,406	5.82	251,433	1,973	251,433	1,973	253,406	253,406	13,817	1,101
EC-6	241,454	5.54	241,454		241,454		241,454	241,454	55,425	4,073
EC-7	357,614	8.21	349,395	8,219	349,395	8,219	357,614	357,614	25,249	2,122
EC-8	378,379	8.69	378,379		378,379		378,379	378,379	245,785	18,358
EC-9	196,221	4.50	196,221		196,221		196,221	196,221	116,359	8,453
SUBTOTAL	2,181,379	50.09	2,168,578	12,801	2,168,578	12,801	2,181,379	2,181,379	532,525	41,403
TOTAL	2,181,379	50.09		2,181,379		2,181,379	2,181,379	2,181,379	532,525	41,403

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	17.1/19.2	105	212


 LICENSED LANDSCAPE ARCHITECT
 9-11-15
 PLANS APPROVAL DATE



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EROSION CONTROL PLAN AND QUANTITIES
SCALE: 1"=50'
EC-9

APPROVED FOR EROSION CONTROL WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans LANDSCAPE ARCHITECTURE
 SENIOR LANDSCAPE ARCHITECT JOHN STANTON
 CALCULATED/DESIGNED BY
 CHECKED BY
 MATTHEW HALL
 MIKE BABICH
 REVISED BY
 DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	106	212

<i>Ferdinand De La Cruz</i>	9-10-15
REGISTERED ELECTRICAL ENGINEER	DATE
	9-11-15
PLANS APPROVAL DATE	

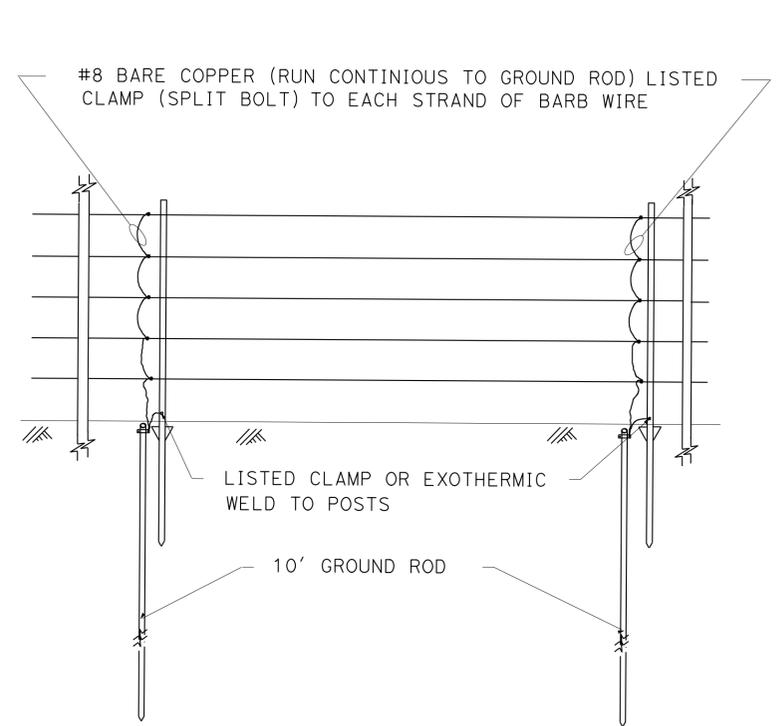
REGISTERED PROFESSIONAL ENGINEER
Ferdinand DE LA CRUZ
No. E 17215
Exp. 6-30-16
ELECTRICAL
STATE OF CALIFORNIA

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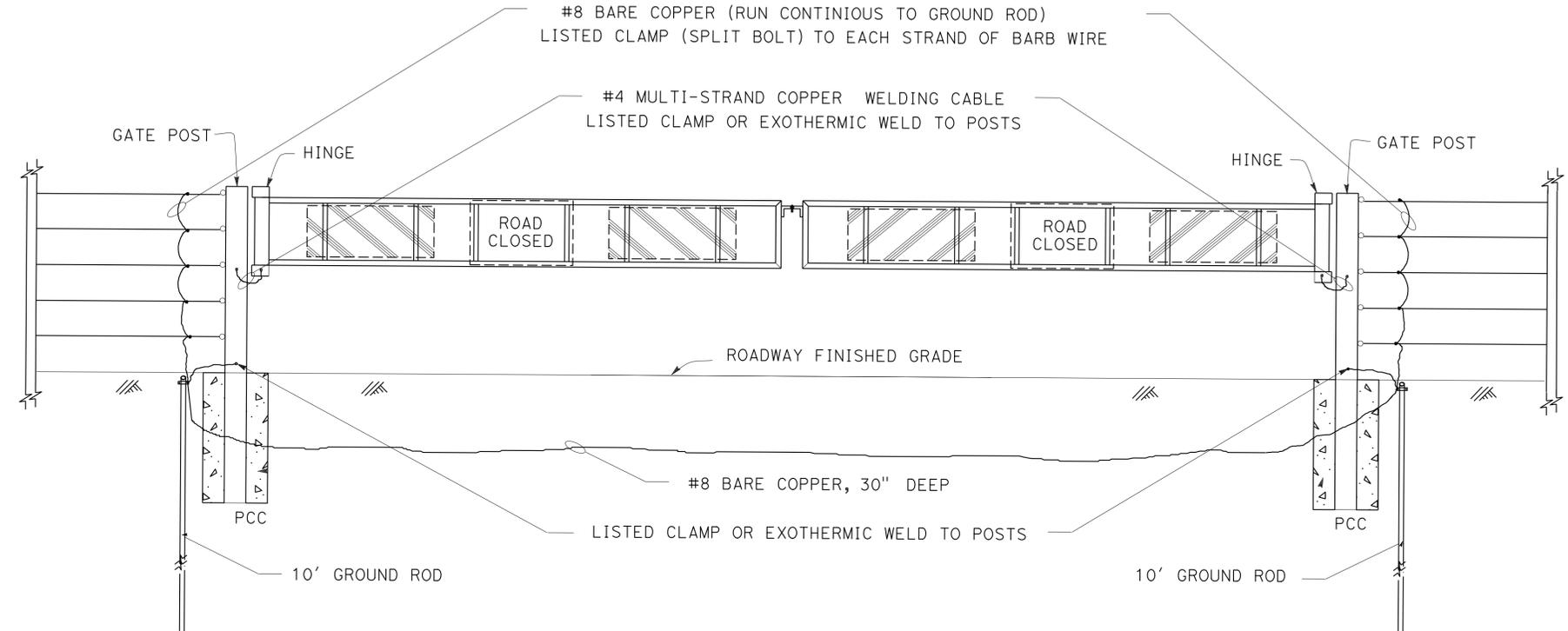
NOTES:

1. PROTECTION DETAILS SHALL APPLY TO FENCING 60 FEET IN BOTH DIRECTIONS OF CENTER LINE OF THE TRANSMISSION LINES.
2. ALL POSTS AND BARB WIRE STRANDS MUST BE CONNECTED BY EXOTHERMIC WELDING, LISTED PRESSURE CONNECTORS OR LISTED CLAMPS (NEC 250-8).
3. THE GROUNDING ELECTRODE MUST BE DRIVEN UNTIL THE UPPER END IS FLUSH OR BELOW THE FINAL GRADE (NEC 250).
4. APPLY NO-OX OR EQUIVALENT PASTE TO ALL LISTED CLAMPS.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® ELECTRICAL DESIGN B
 FUNCTIONAL SUPERVISOR: FERDINAND DE LA CRUZ
 CALCULATED/DESIGNED BY: FERDINAND DE LA CRUZ
 CHECKED BY:
 LUIS PENALOZA
 FERDINAND DE LA CRUZ
 REVISED BY: DATE REVISED:



TYPICAL BARB WIRE FENCE DETAIL



TYPICAL FOREST SERVICE GATE DETAIL

TO BE USED UNDER S.C. EDISON 500 KV LINES

FENCE BONDING AND GROUNDING
NO SCALE

E-1

APPROVED FOR ELECTRICAL WORK ONLY

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

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

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
St	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	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

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	107	212
<i>Grace M. Tsushima</i> REGISTERED CIVIL ENGINEER					
July 19, 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>					



TO ACCOMPANY PLANS DATED 9-11-15

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
∅	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
08	Sbd	138	R17.1/R19.2	108	212

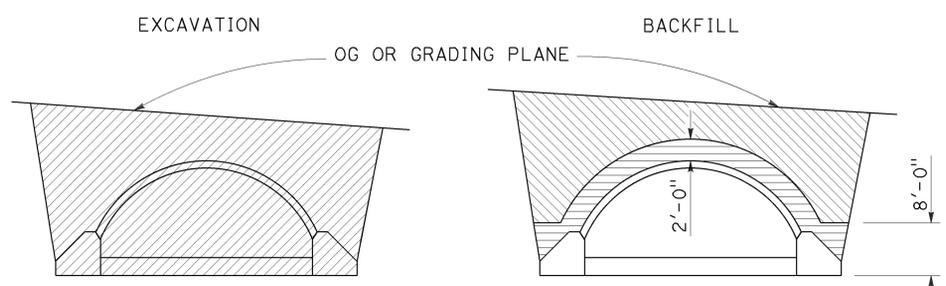
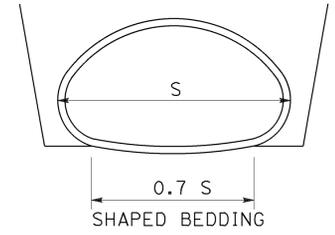
Carl M. Duan
REGISTERED CIVIL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

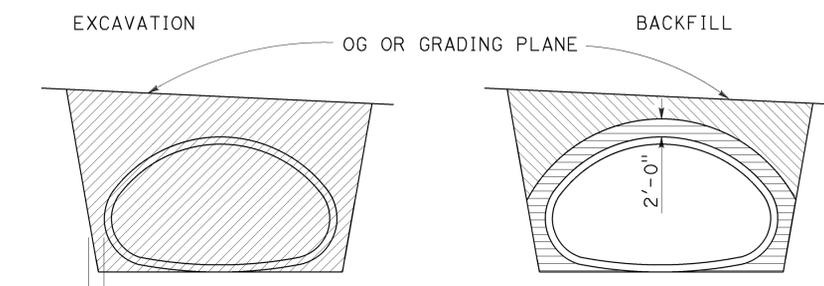
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REGISTERED PROFESSIONAL ENGINEER
Carl M. Duan
No. C59976
Exp. 6-30-16
CIVIL
STATE OF CALIFORNIA

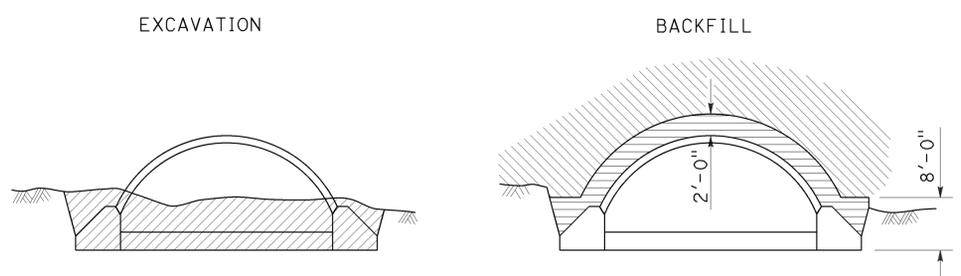
TO ACCOMPANY PLANS DATED 9-11-15



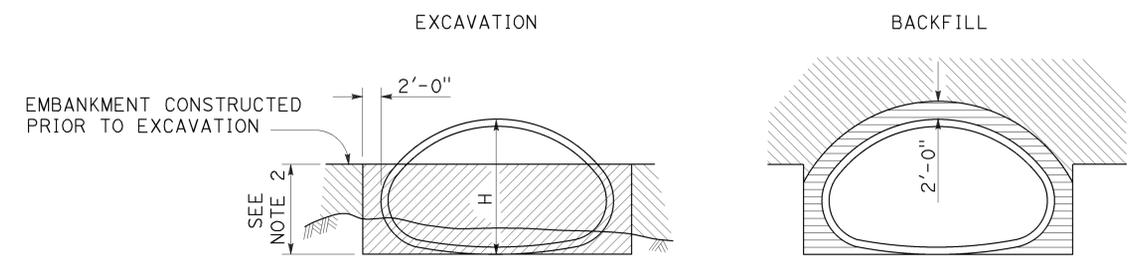
IN TRENCH



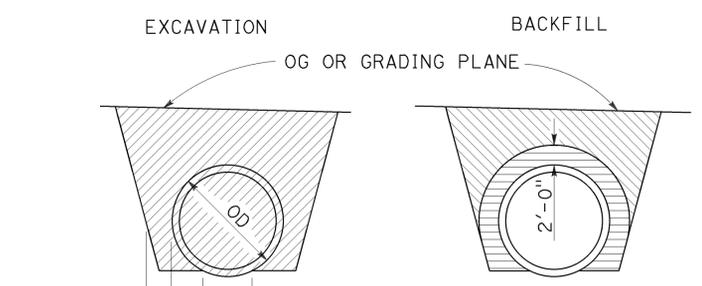
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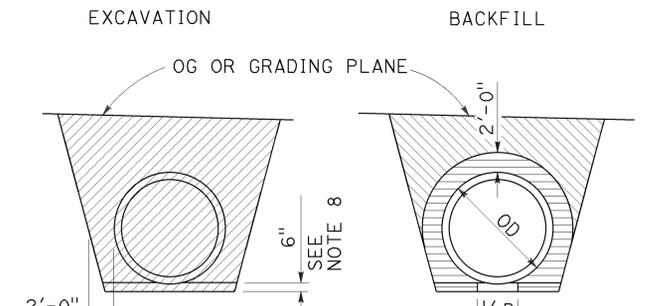
IN EMBANKMENT
STRUCTURAL STEEL PLATE ARCHES



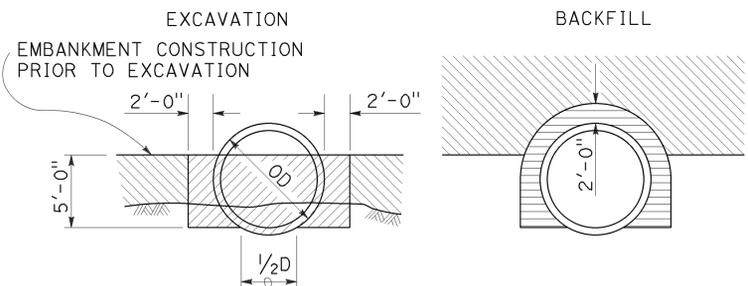
IN EMBANKMENT
STRUCTURAL STEEL PLATE PIPE ARCHES
AND VEHICULAR UNDERCROSSING



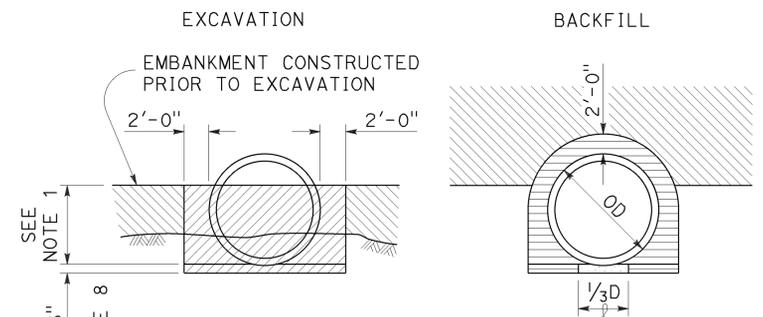
IN TRENCH



IN TRENCH



IN EMBANKMENT
PIPES
Larger than 84"



IN EMBANKMENT
METAL AND PLASTIC PIPES AND
CORRUGATED METAL PIPE ARCHES
84" or Smaller

NOTES:

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

LEGEND

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

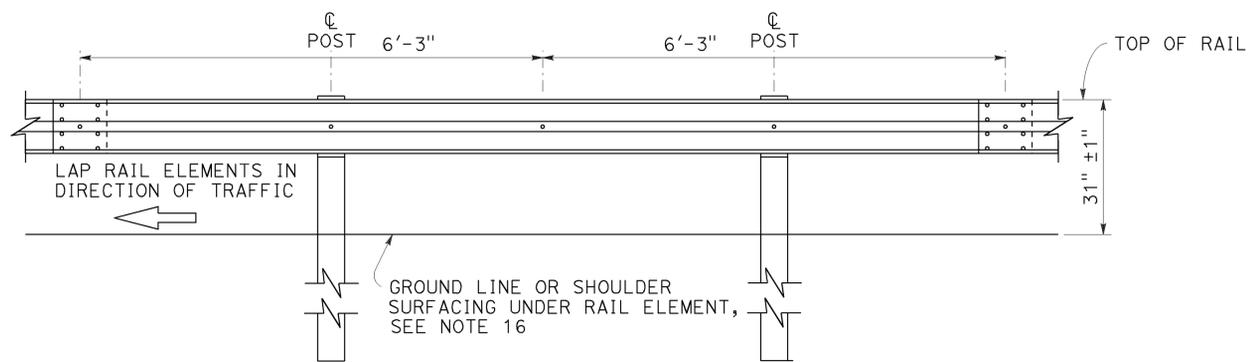
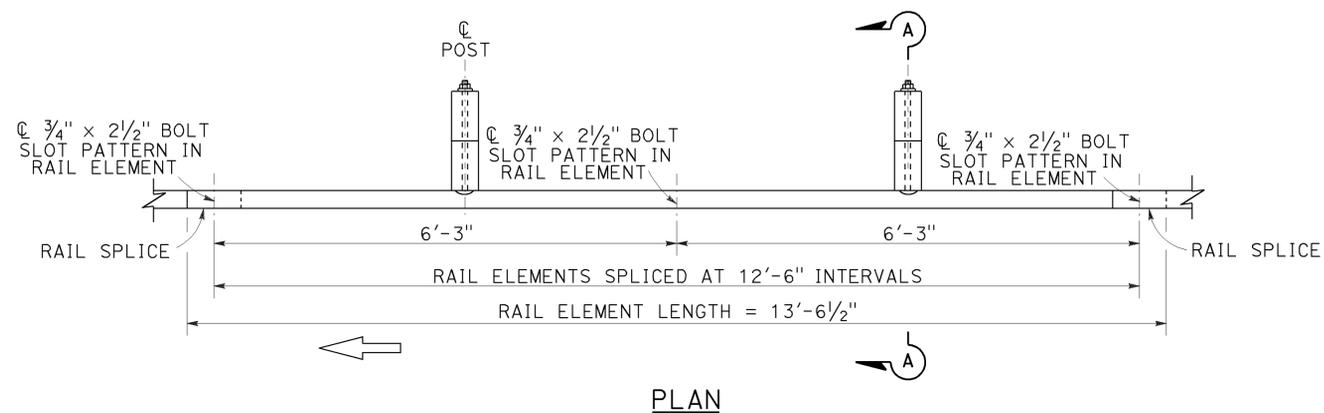
**EXCAVATION AND BACKFILL
METAL AND PLASTIC CULVERTS**
NO SCALE

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

REVISED STANDARD PLAN RSP A62F

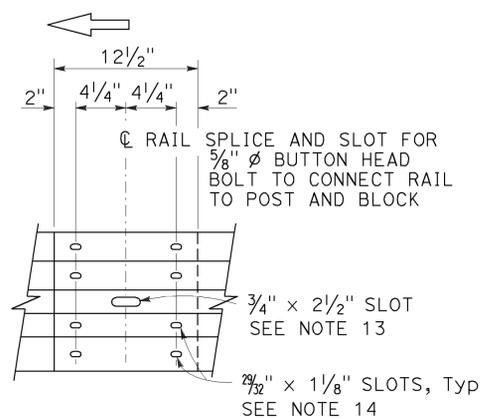
2010 REVISED STANDARD PLAN RSP A62F

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	109	212
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER July 19, 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>					
TO ACCOMPANY PLANS DATED <u>9-11-15</u>					



ELEVATION

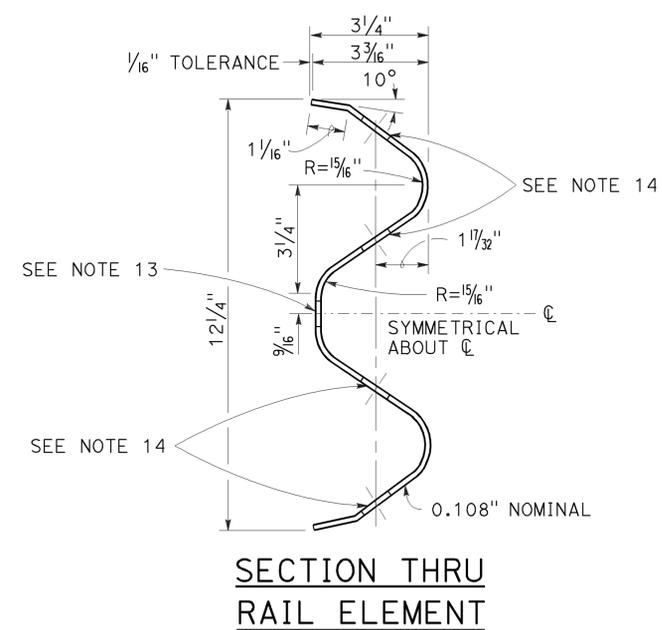
MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS



ELEVATION

RAIL ELEMENT SPLICE DETAIL

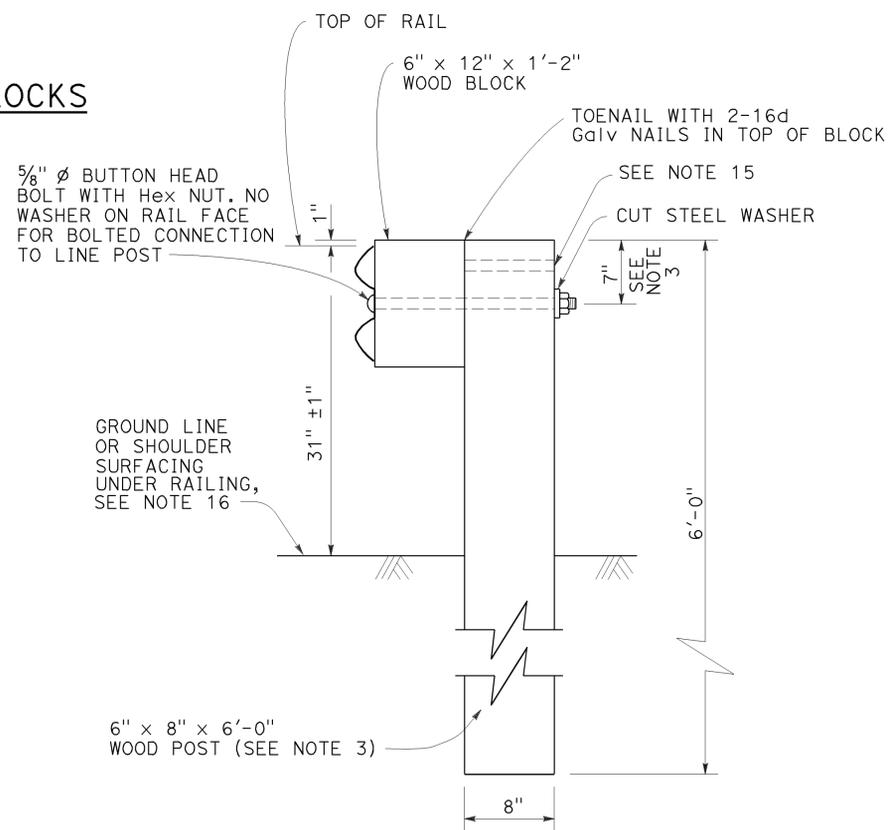
- Connect the overlapped end of the rail elements with $5/8" \phi \times 1 3/8"$ button head oval shoulder splice bolts inserted into the $3/32" \times 1 1/8"$ slots and bolted together with $5/8" \phi$ recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to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



SECTION THRU RAIL ELEMENT

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.



SECTION A-A
TYPICAL WOOD LINE
POST INSTALLATION

See Note 4

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	110	212

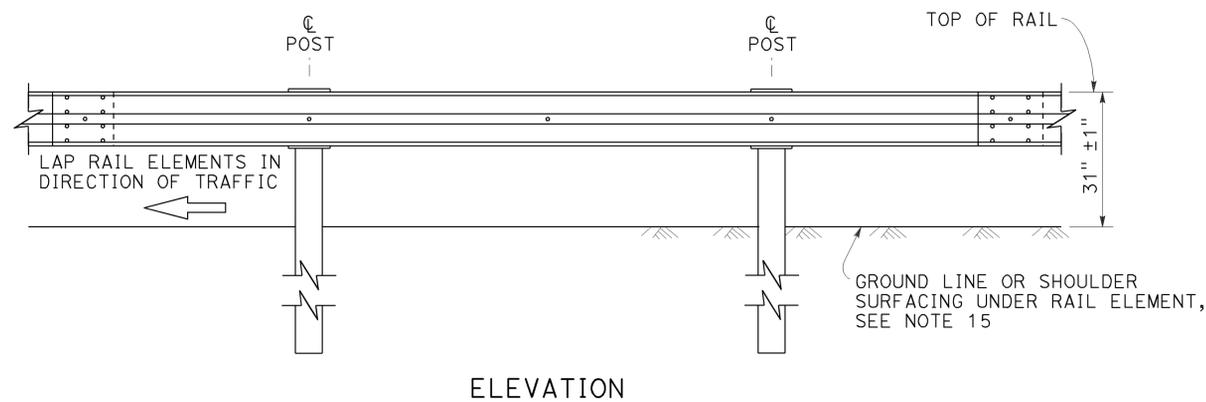
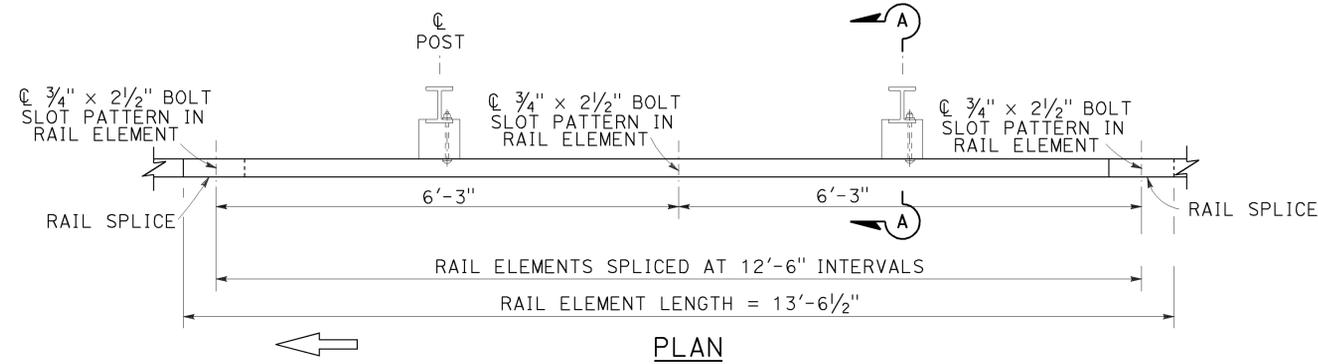
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

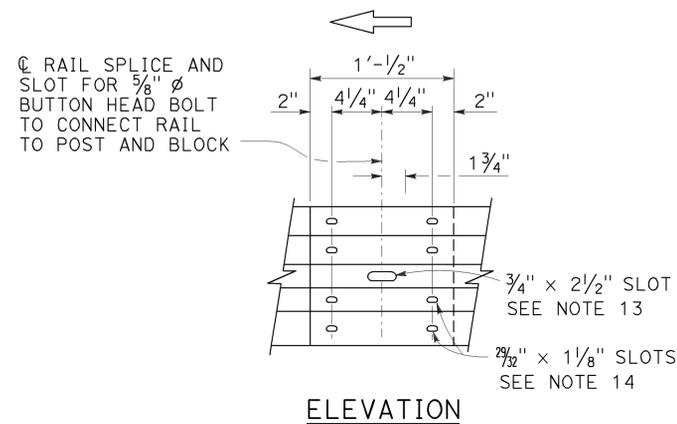
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TO ACCOMPANY PLANS DATED 9-11-15

REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA



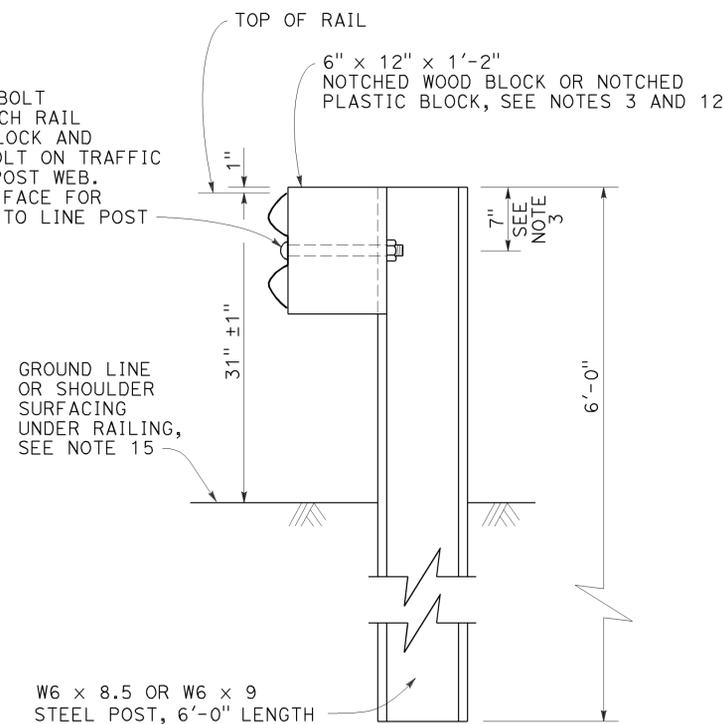
**MIDWEST GUARDRAIL SYSTEM WITH STEEL POSTS
AND NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCKS**



RAIL ELEMENT SPLICE DETAIL

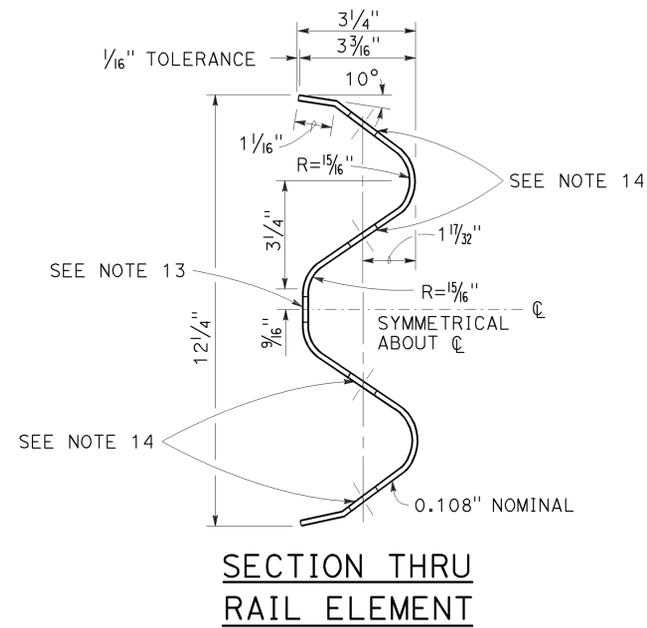
- Connect the over lapped end of the rail elements with $\frac{5}{8}$ " ϕ x $1\frac{3}{8}$ " button head oval shoulder splice bolts inserted into the $\frac{5}{32}$ " x $\frac{1}{8}$ " slots and bolted together with $\frac{5}{8}$ " ϕ recessed hex nuts. Recess of hex nut points toward rail element. A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

$\frac{5}{8}$ " ϕ BUTTON HEAD BOLT WITH Hex NUT. ATTACH RAIL ELEMENT TO WOOD BLOCK AND STEEL POST WITH BOLT ON TRAFFIC APPROACH SIDE OF POST WEB. NO WASHER ON RAIL FACE FOR BOLTED CONNECTION TO LINE POST



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

See Note 4



NOTES:

- For details of wood post installations, see Revised Standard Plan RSP A77L1.
- For details of standard hardware used to construct MGS, see Revised Standard Plan RSP A77M1.
- For details of steel posts and notched wood blocks used to construct MGS, see Revised Standard Plan RSP A77N2.
- 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 railings, see Revised Standard Plans RSP A77U1, RSP A77U2 and RSP A77V1.
- For dike positioning and MGS delineation details, see Revised Standard Plan RSP A77N4.
- Notched face of block faces steel post.
- 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".
- Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
STANDARD RAILING SECTION
(STEEL POST WITH NOTCHED
WOOD OR NOTCHED
RECYCLED PLASTIC BLOCK)**

NO SCALE

RSP A77L2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77L2

2010 REVISED STANDARD PLAN RSP A77L2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	111	212

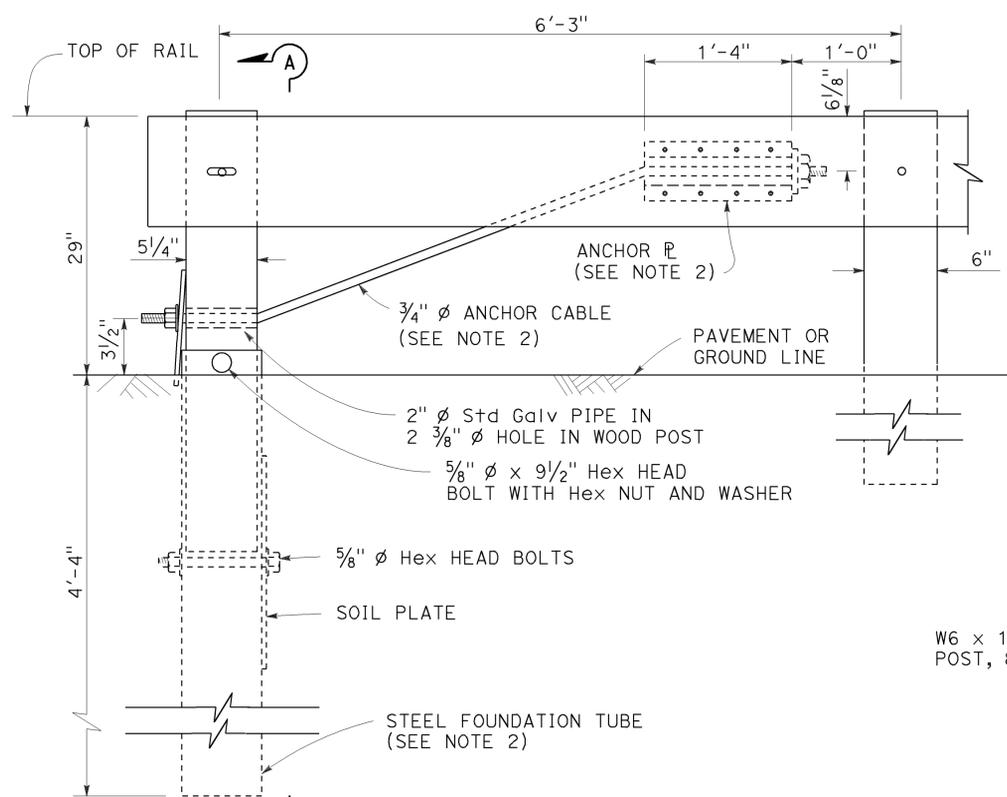
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

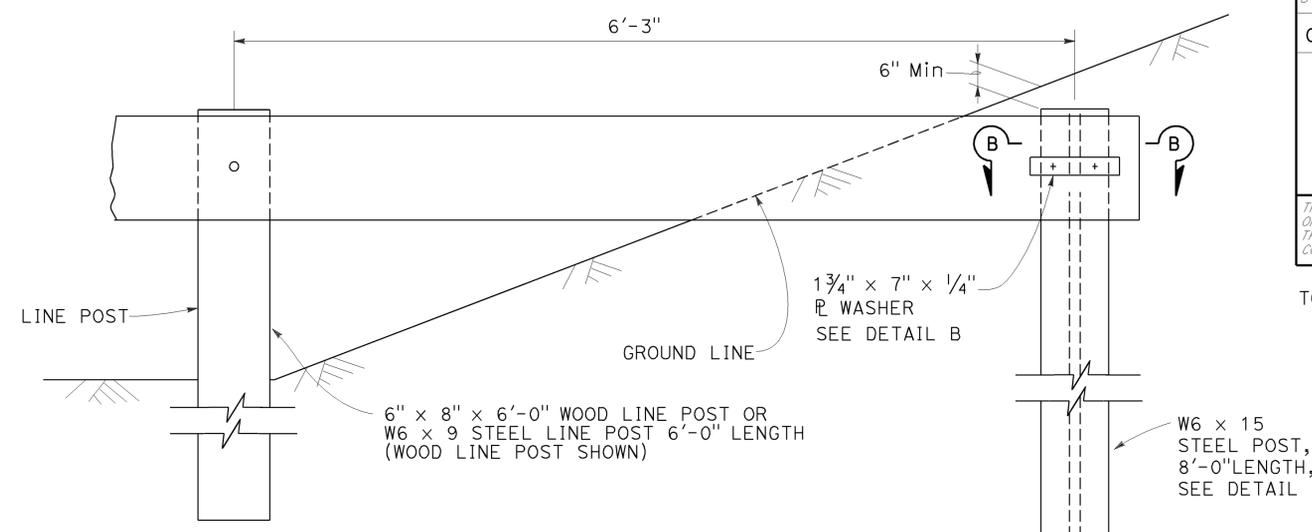
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TO ACCOMPANY PLANS DATED 9-11-15

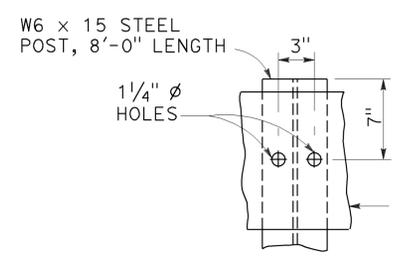
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA



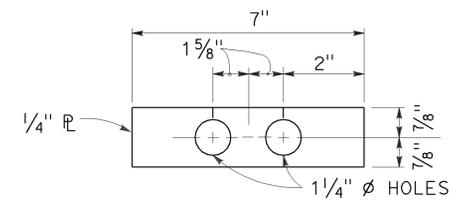
**ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)**



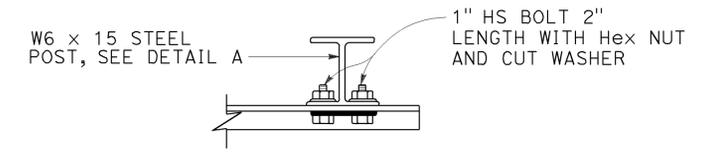
BURIED POST END ANCHOR



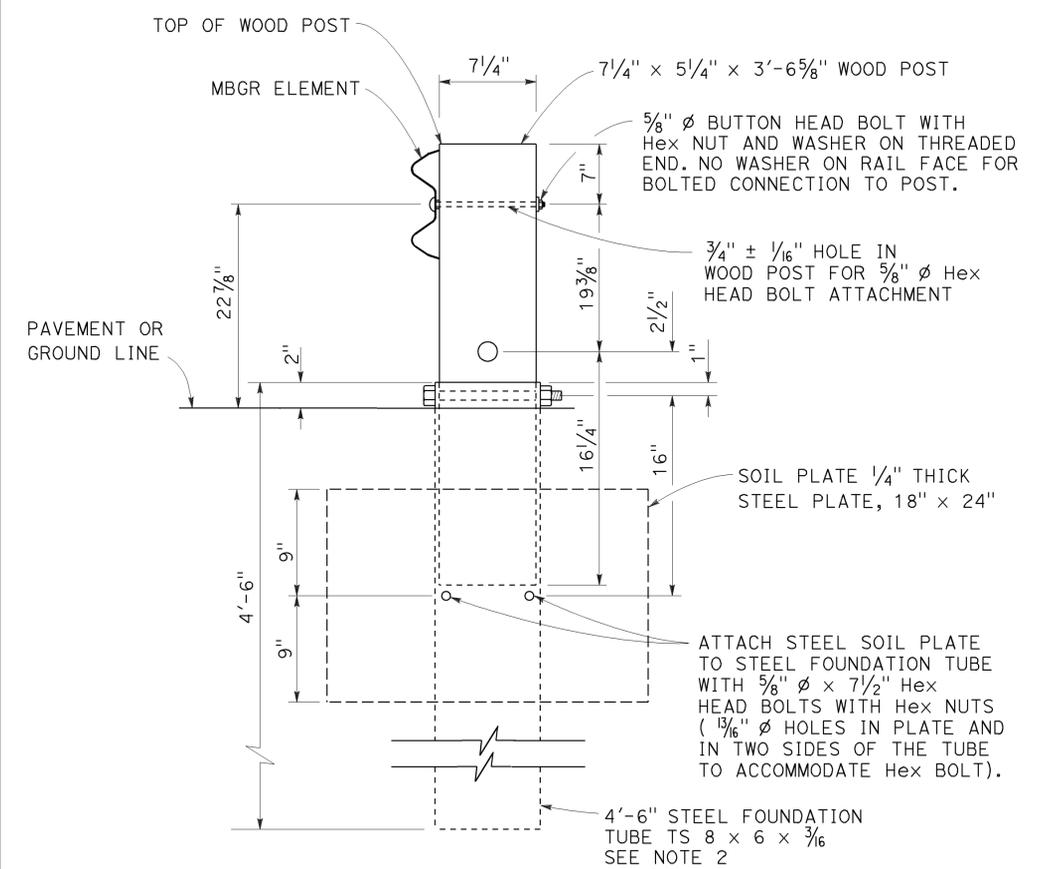
DETAIL A



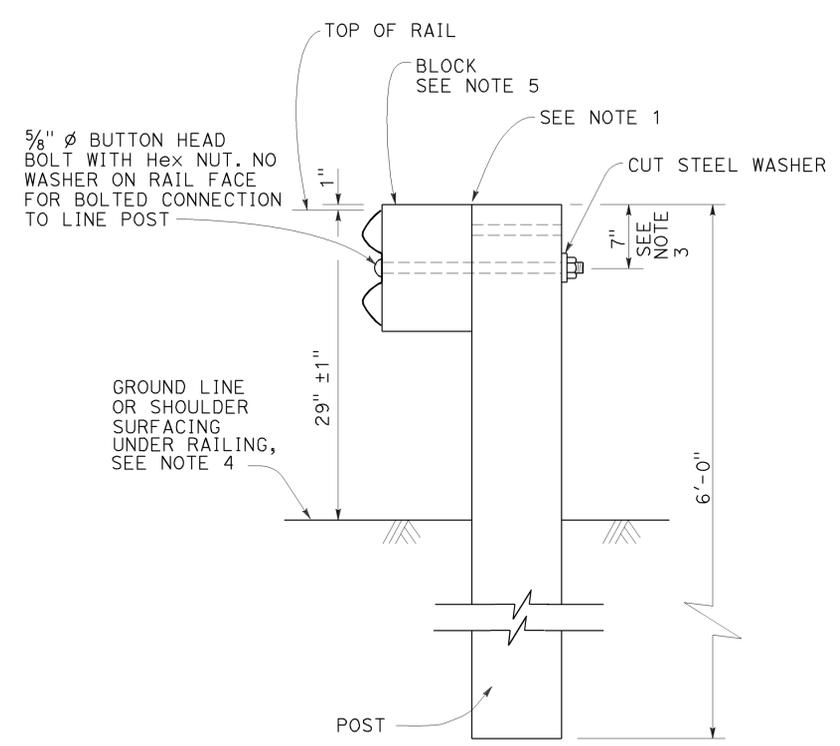
DETAIL B



SECTION B-B



SECTION A-A



**TYPICAL LINE
POST INSTALLATION**

NOTES:

1. For wood post and wood block, toenail with 2-16d Galv nails in top of block. For steel post and notched wood or plastic block, notched face of block faces steel post.
2. 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.
3. To connect railing to 27" terminal system end treatment, transition the top of railing height at a ratio of 120:1 to terminal system end treatment height plus one 12'-6" standard railing section at the transitioned height for a horizontal connection to the end treatment.
4. Install posts in soil.
5. See Revised Standard Plans RSP A77N1 and RSP A77N2 for details.
6. Holes excavation in the slope to construct the buried post end anchor shall be backfilled with selected earth, placed in layers approximately 1'-0" thick. Each layer shall be moistened and thoroughly compacted.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**METAL BEAM GUARD RAILING
RECONSTRUCT INSTALLATION**

NO SCALE

RSP A77L3 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77L3

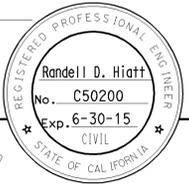
2010 REVISED STANDARD PLAN RSP A77L3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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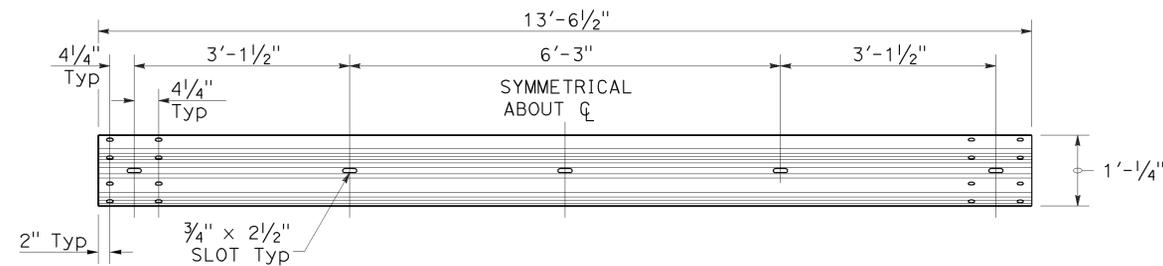
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
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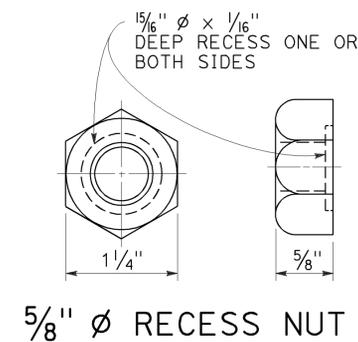
TO ACCOMPANY PLANS DATED 9-11-15



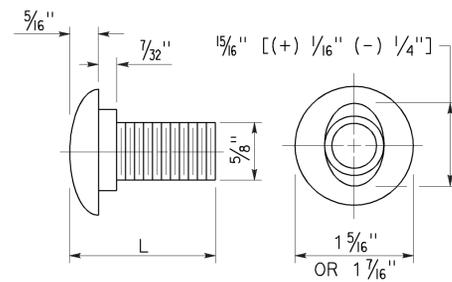
TYPICAL RAIL ELEMENT

NOTE:

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



5/8" Ø RECESS NUT



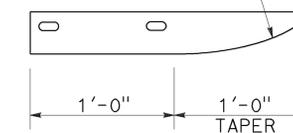
5/8" Ø BUTTON HEAD BOLT

BUTTON HEAD BOLT

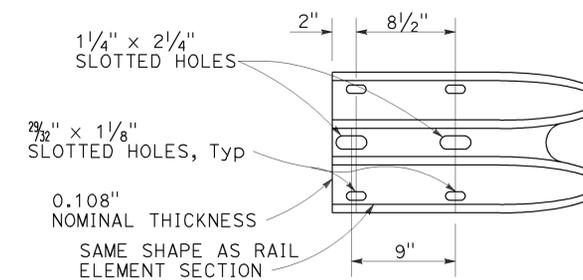
L	THREAD LENGTH
1 3/8"	FULL THREAD LENGTH
2"	FULL THREAD LENGTH
10"	4" Min THREAD LENGTH
18"	4" Min THREAD LENGTH
20"	4" Min THREAD LENGTH
22"	4" Min THREAD LENGTH
26"	4" Min THREAD LENGTH
36"	4" Min THREAD LENGTH
** 2 3/4"	2" Min THREAD LENGTH
** 19"	4" Min THREAD LENGTH

** For nested rail applications.

SEE NOTE 1



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
08	SBd	138	R17.1/R19.2	113	212

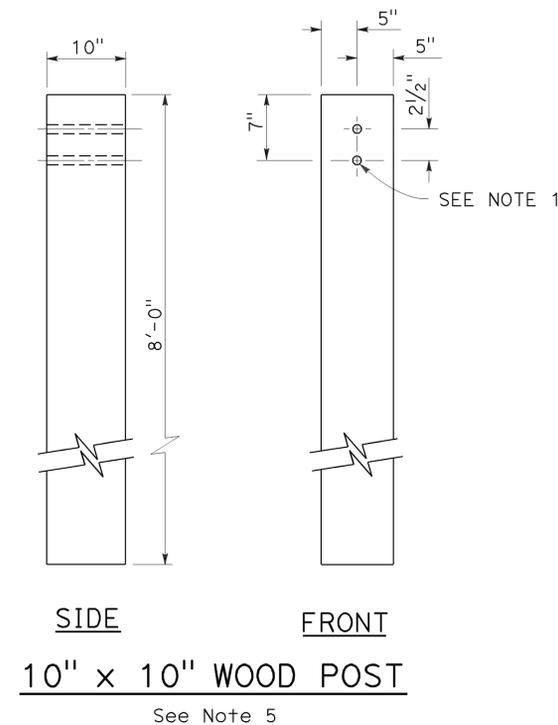
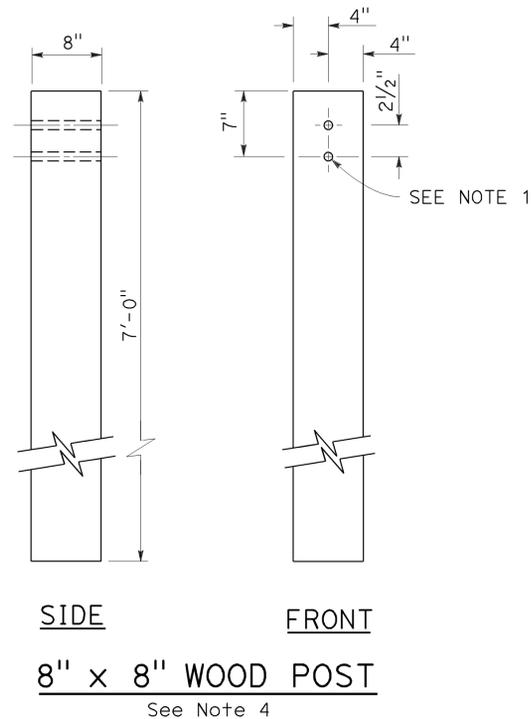
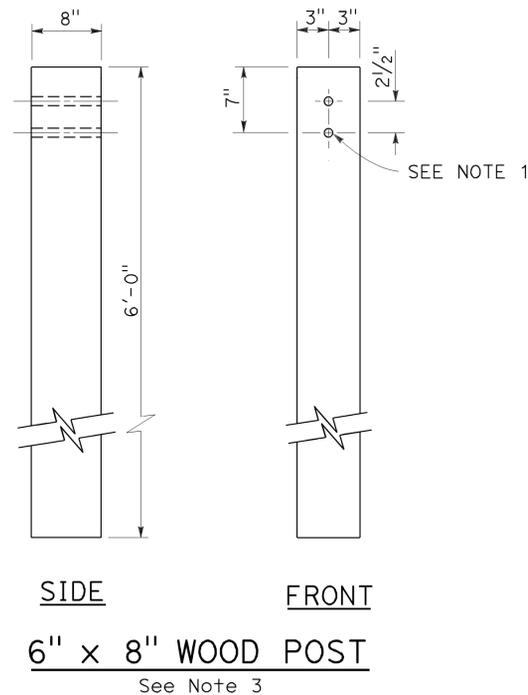
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REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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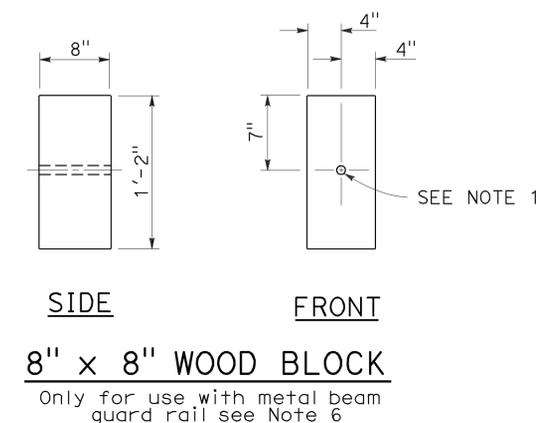
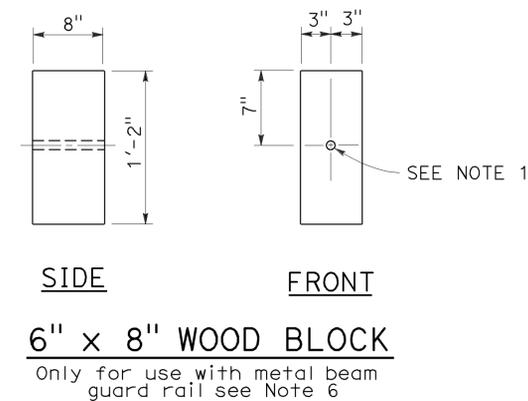
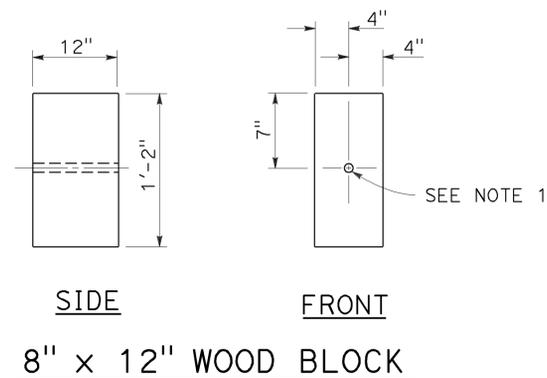
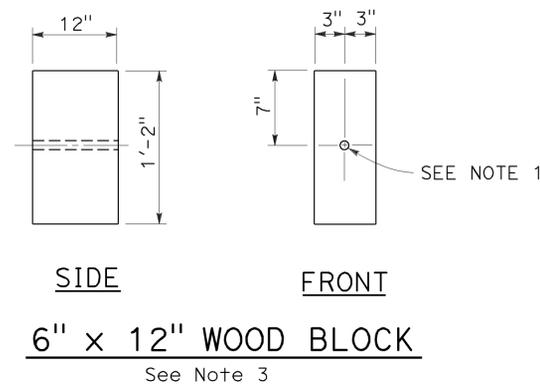
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 9-11-15



NOTES:

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

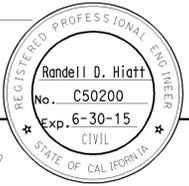
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	114	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013

PLANS APPROVAL DATE

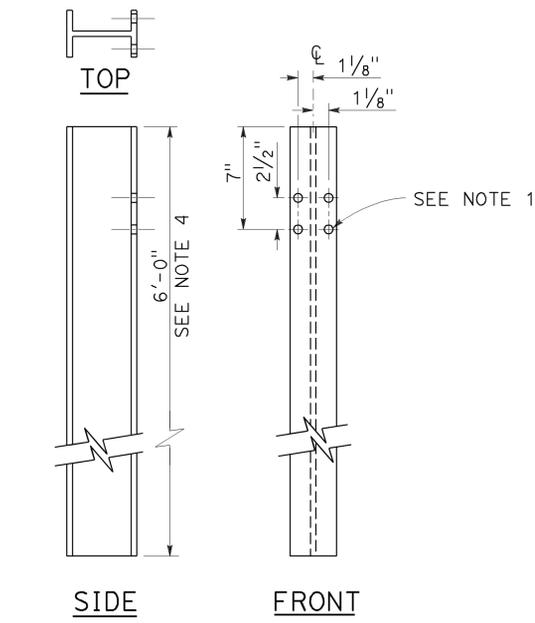
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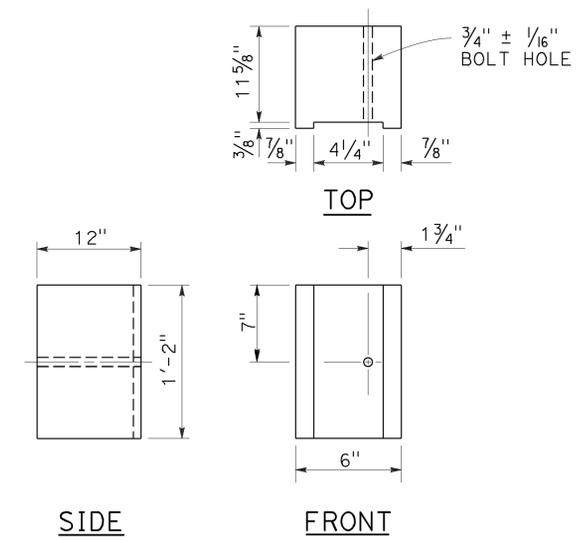
TO ACCOMPANY PLANS DATED 9-11-15

NOTES:

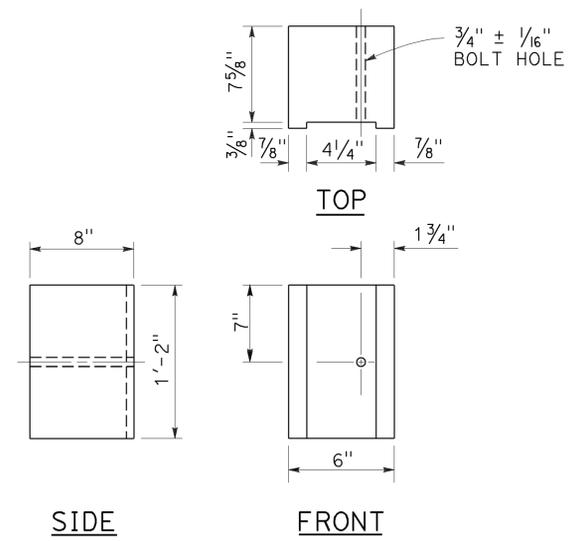
1. All holes in steel post shall be $\frac{13}{16}$ " Dia maximum.
2. Dimensions shown for wood block are nominal.
3. Notched face of block faces steel post.
4. 6'-0" length posts to be used for typical roadway installation. See Revised Standard Plan RSP A77N3.
5. See Revised Standard Plan RSP A77L3 for use of 6" x 8" and 8" x 8" notched wood blocks.
6. This post and 8" x 12" block combination to be used for line post sections of MGS on narrow roadways and where strengthened line post sections of MGS are warranted to shield fixed objects.



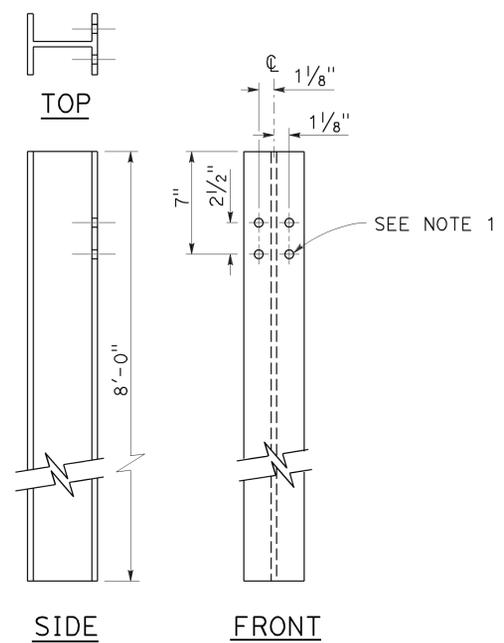
**W6 x 9 OR W6 x 8.5
STEEL POST**
See Note 4



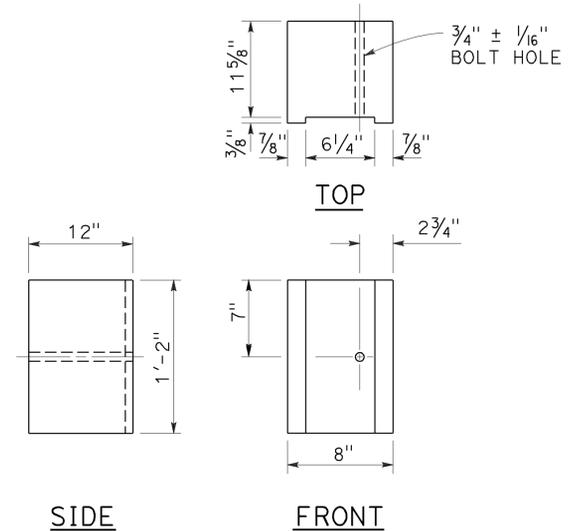
**6" x 12"
NOTCHED WOOD BLOCK**
See Notes 2 and 3



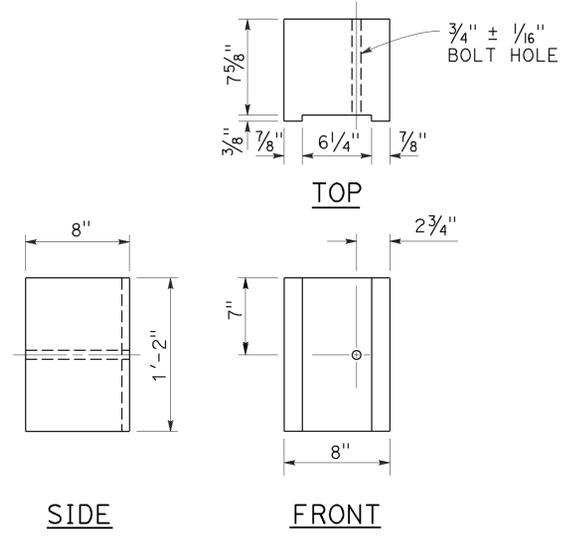
**6" x 8"
NOTCHED WOOD BLOCK**
Only for use with metal beam
guard railing. See Note 5



**W6 x 15
STEEL POST**
See Note 6



**8" x 12"
NOTCHED WOOD BLOCK**
See Notes 2 and 3



**8" x 8"
NOTCHED WOOD BLOCK**
Only for use with metal beam
guard railing. See Note 5

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

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

NO SCALE

RSP A77N2 DATED NOVEMBER 15, 2013 SUPERSEDES RSP A77N2
DATED JULY 19, 2013 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N2

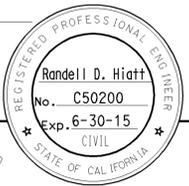
2010 REVISED STANDARD PLAN RSP A77N2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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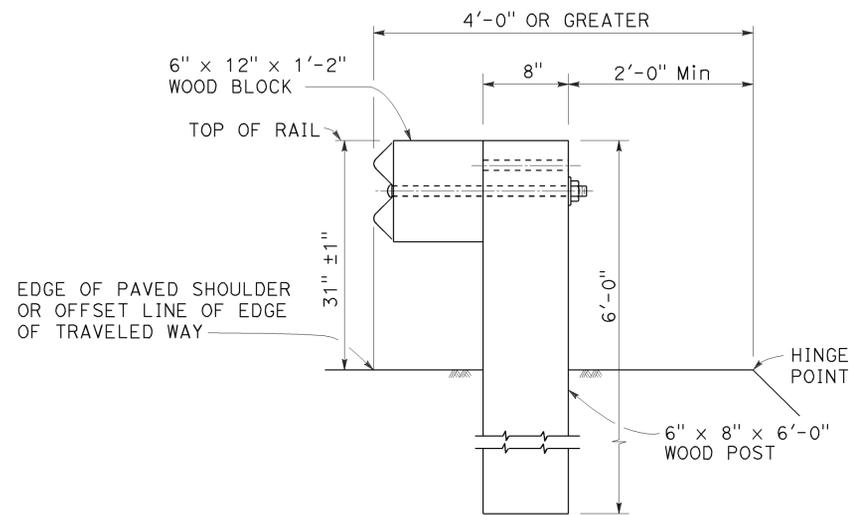
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

November 15, 2013
PLANS APPROVAL DATE

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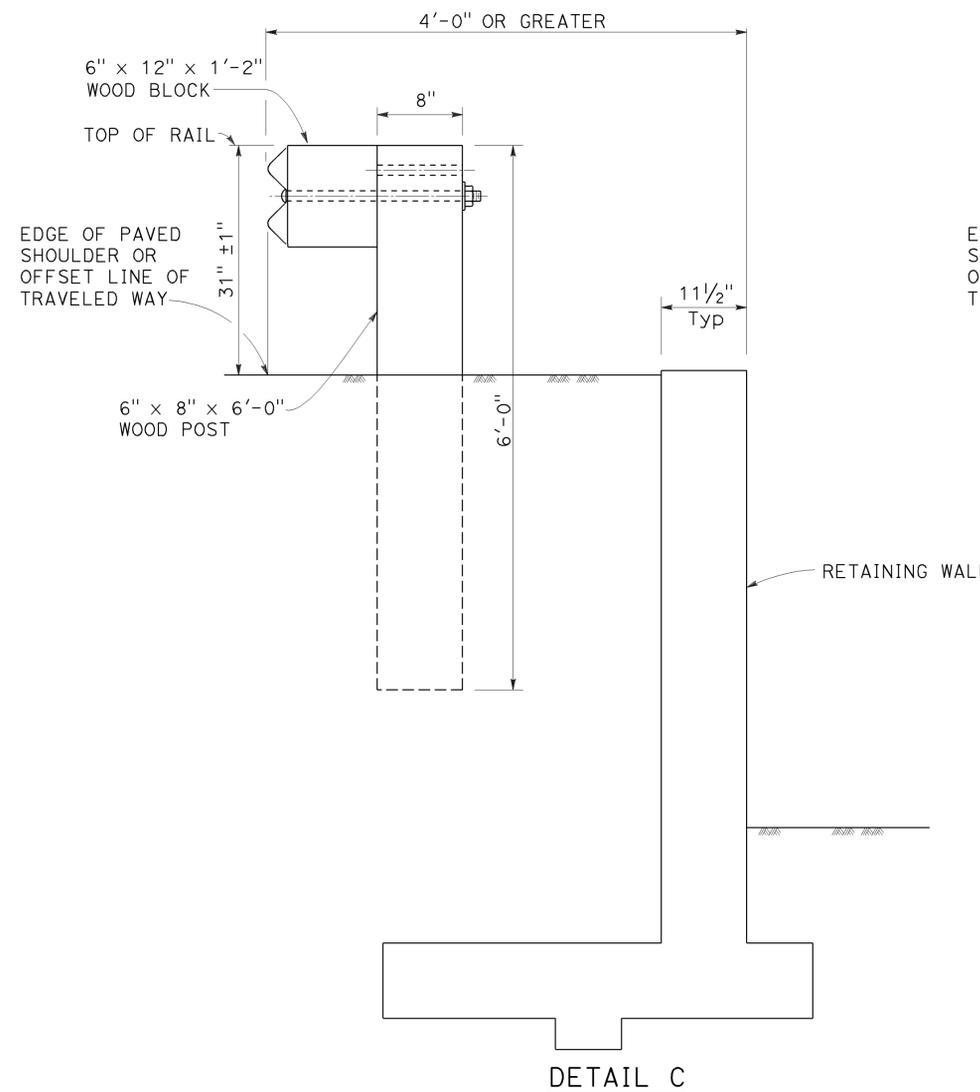


TO ACCOMPANY PLANS DATED 9-11-15

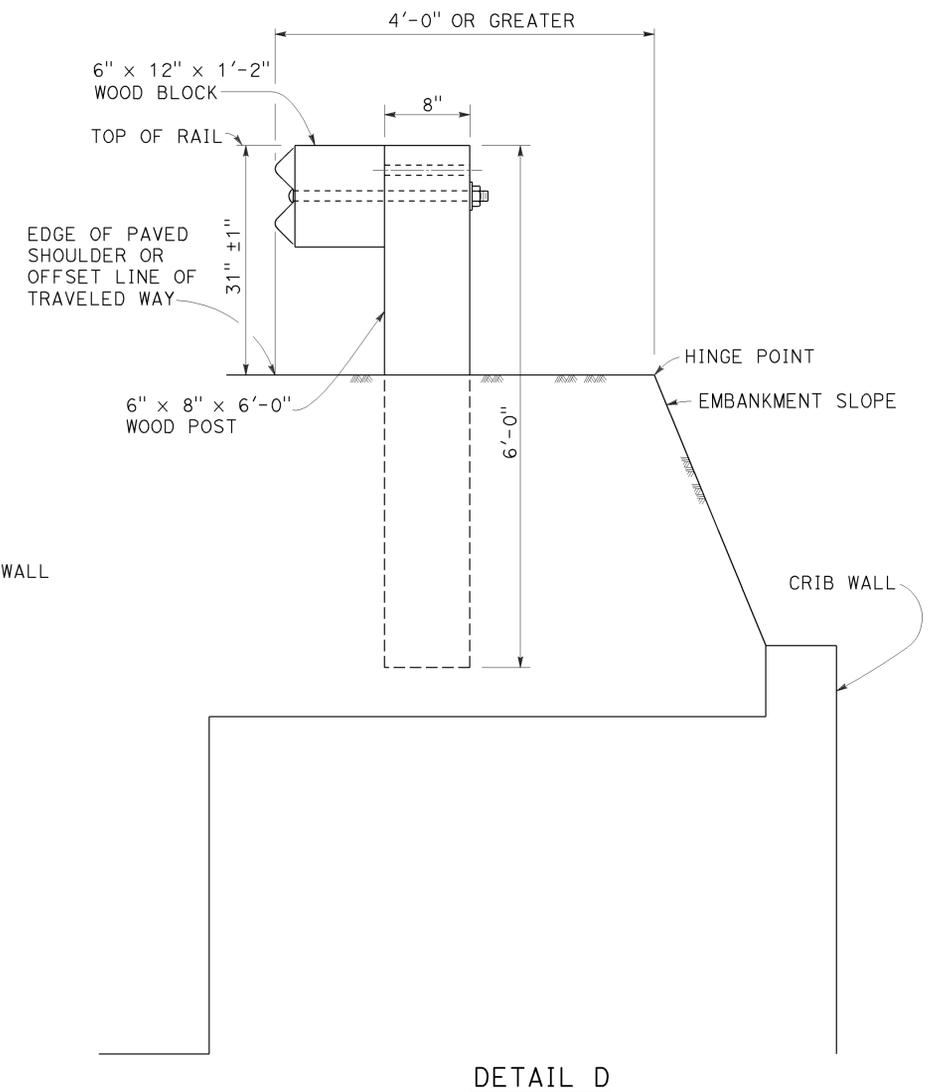


DETAIL A
TYPICAL ROADWAY
INSTALLATION

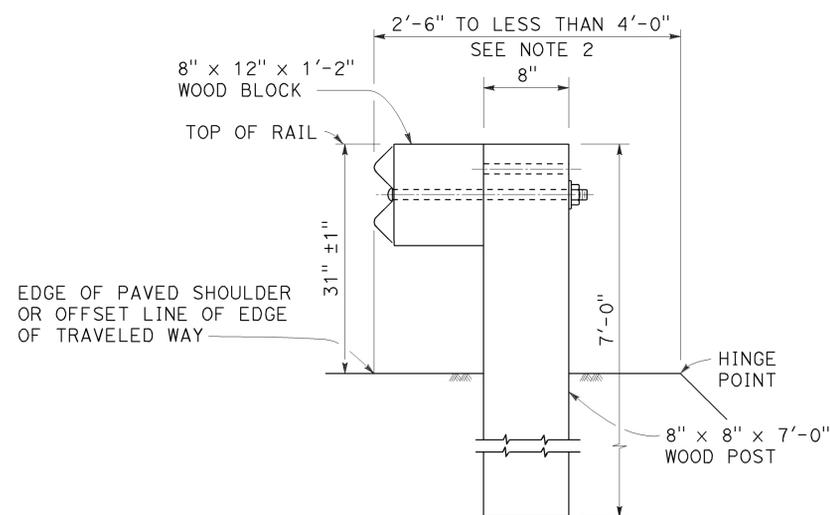
See Note 1



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
08	SBd	138	R17.1/R19.2	116	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

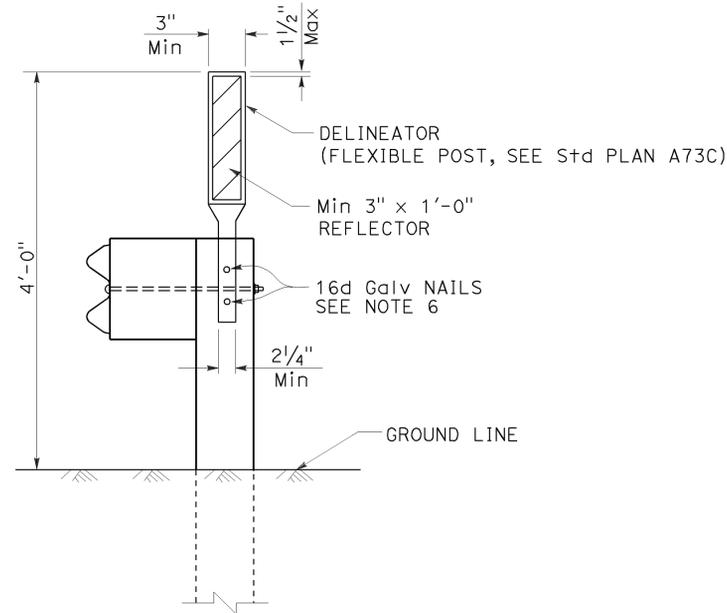
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Randell D. Hiatt
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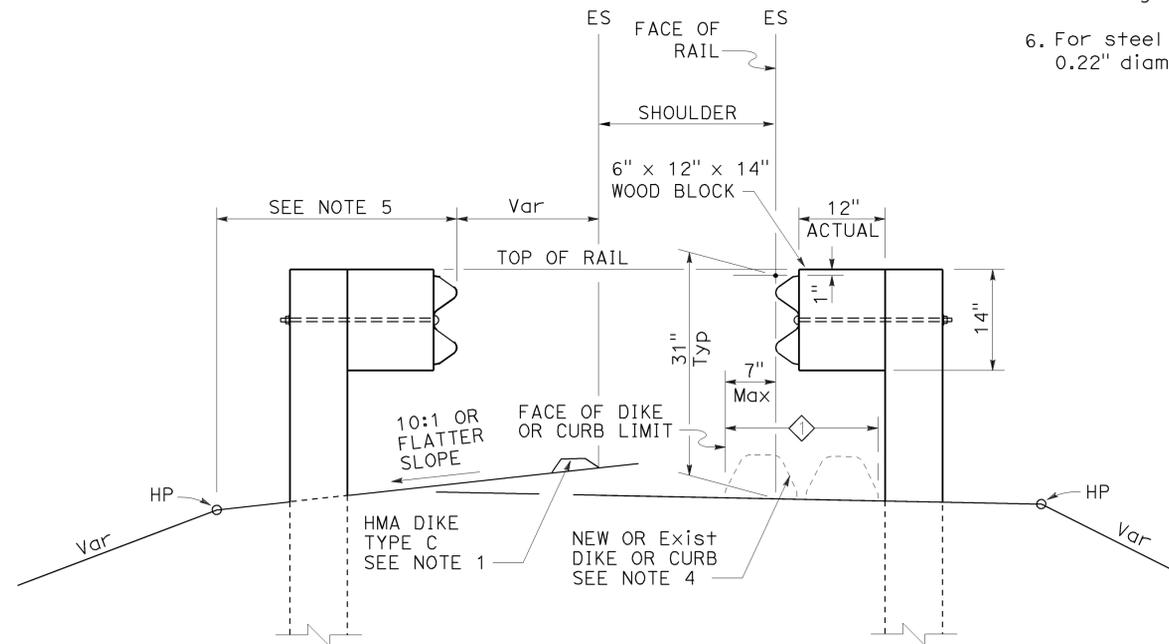
NOTES:

- 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.
- For standard railing post embedment, see Revised Standard Plan RSP A77N3.
- MGS delineation to be used where shown on the Project Plans.
- 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.
- For details of typical distance between the face of rail and hinge point, see Revised Standard Plan RSP A77N3.
- For steel line posts, use 1/4" - 20 self-tapping screws in 0.22" diameter holes or 1/4" bolts in 3/32" diameter holes.



MGS DELINEATION

See Note 3



DIKE POSITIONING

See Note 1

◇ PERMISSIBLE DIKE OR CURB PLACEMENT AREA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL RAILING DELINEATION
AND DIKE POSITIONING DETAILS**

NO SCALE

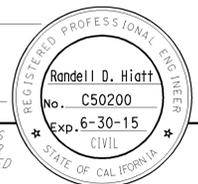
RSP A77N4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77N4

2010 REVISED STANDARD PLAN RSP A77N4

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	117	212

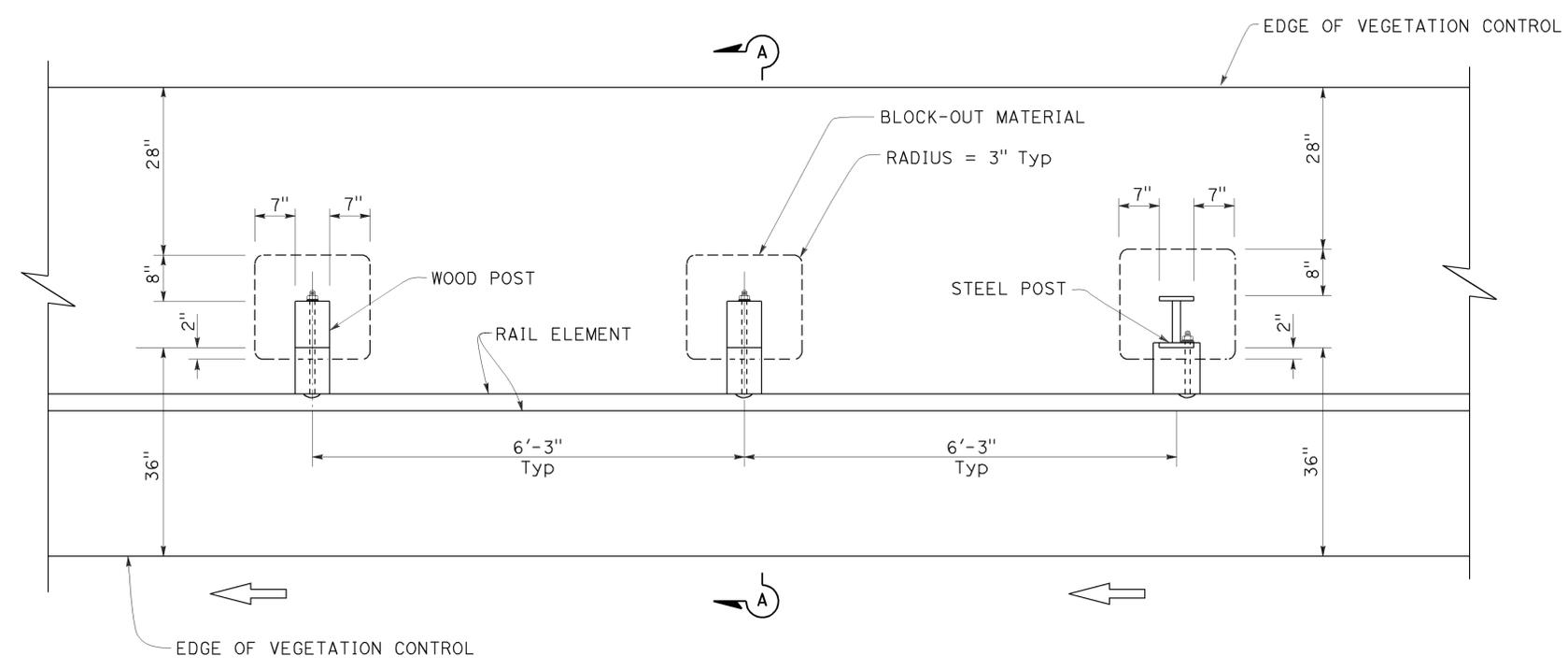
Randell D. Hiatt
REGISTERED CIVIL ENGINEER



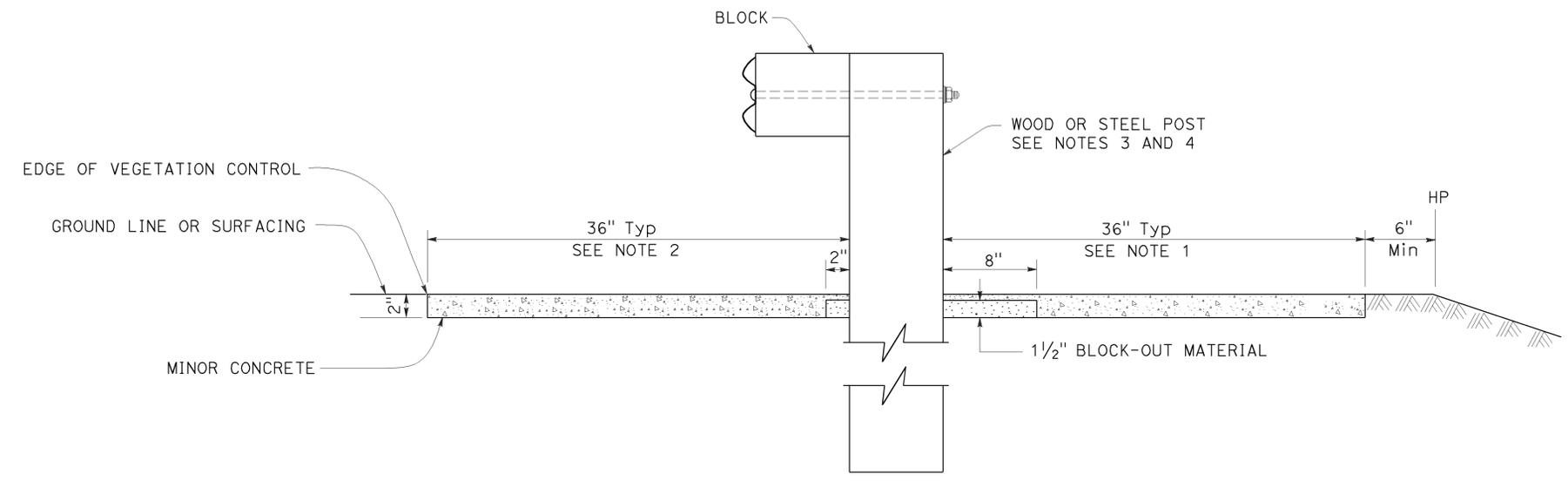
July 19, 2013
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED 9-11-15



PLAN



SECTION A-A

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.

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

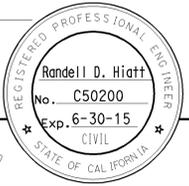
2010 REVISED STANDARD PLAN RSP A77N5

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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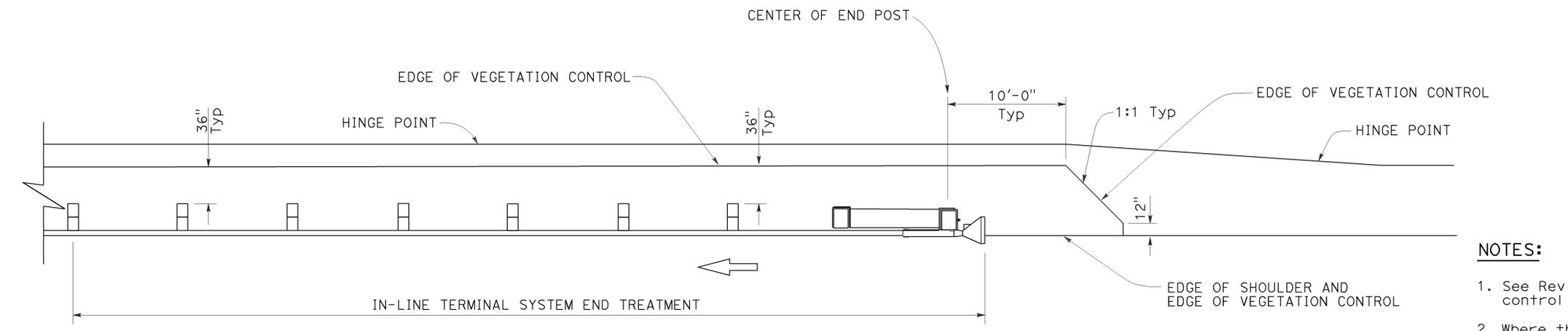
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

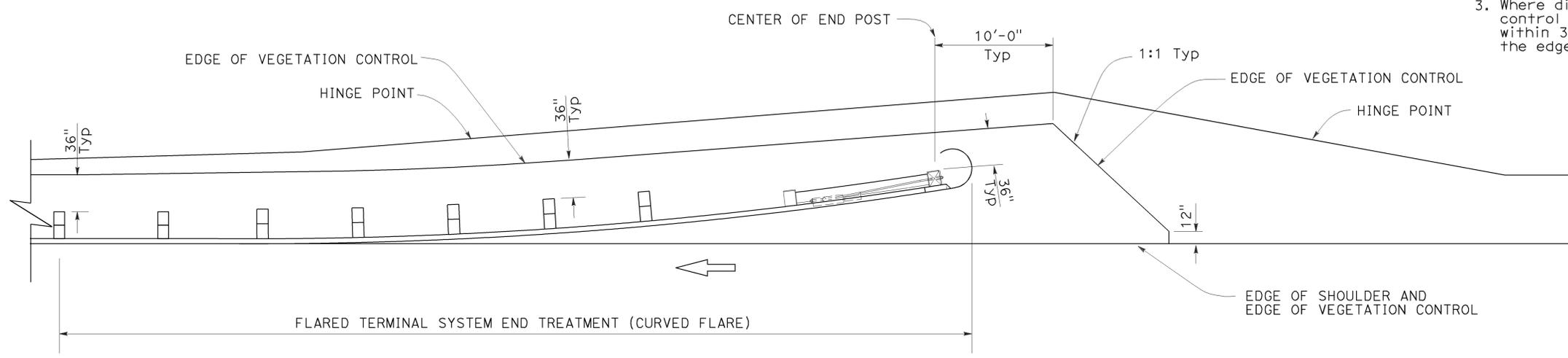
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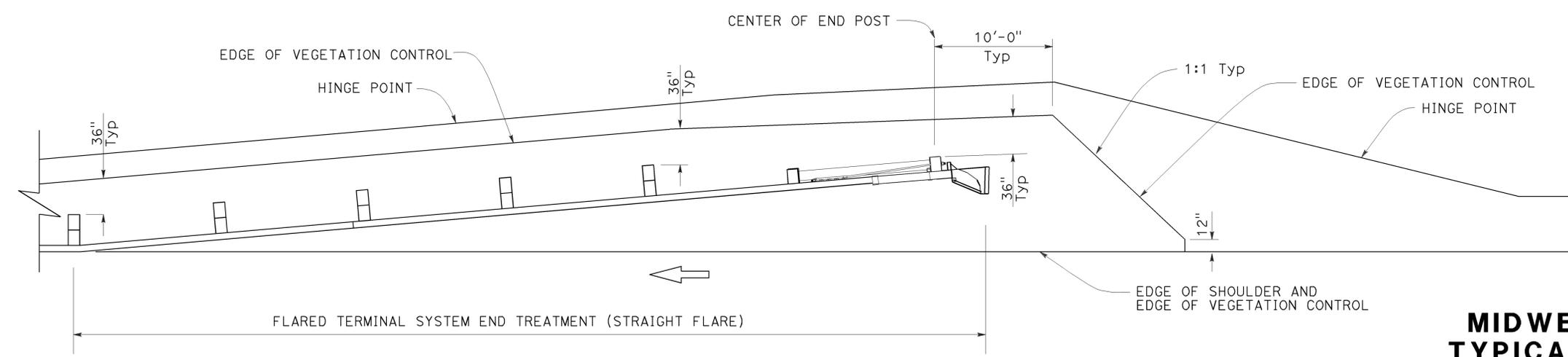
TO ACCOMPANY PLANS DATED 9-11-15



PLAN



PLAN



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.

STATE OF CALIFORNIA
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**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

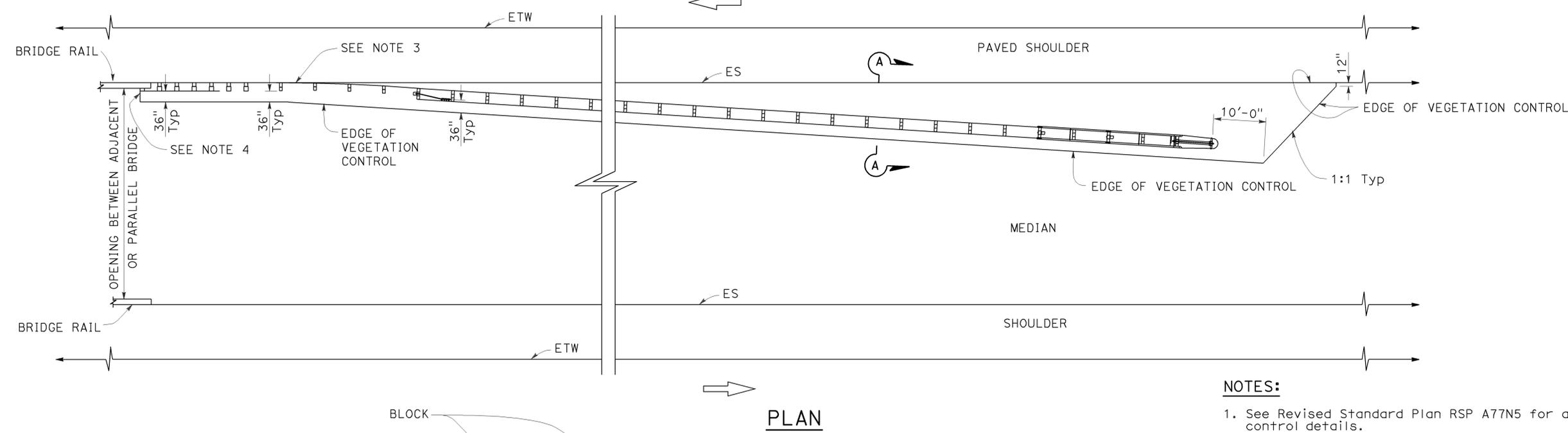
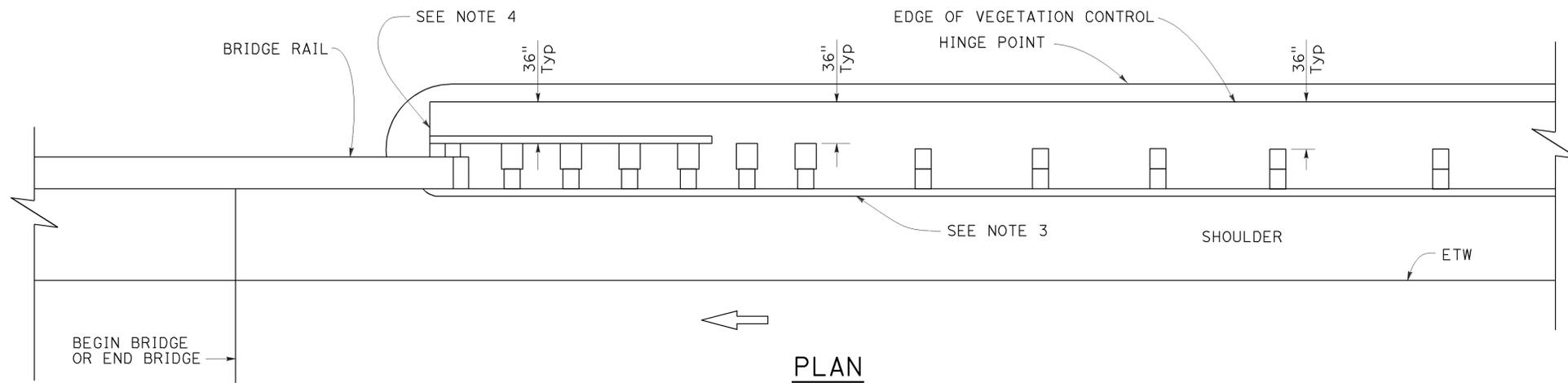
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	119	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

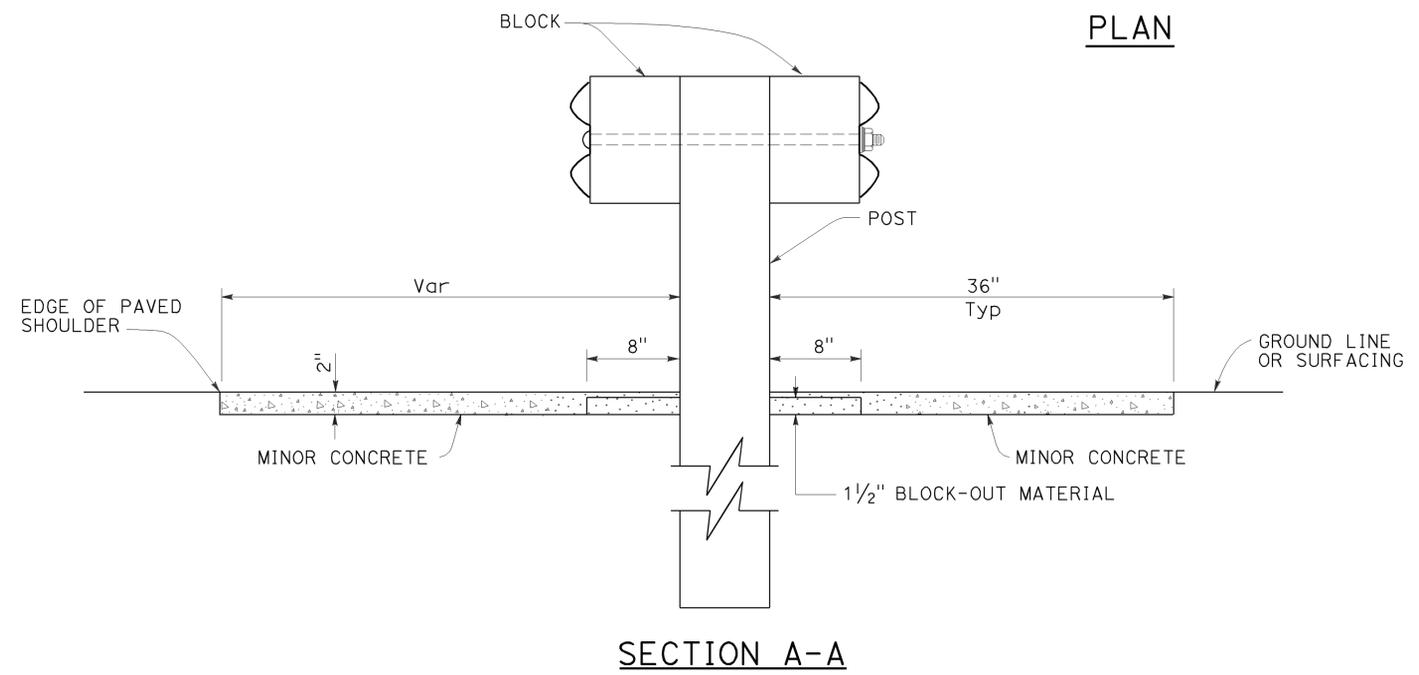
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TO ACCOMPANY PLANS DATED 9-11-15



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

2010 REVISED STANDARD PLAN RSP A77N7

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	120	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

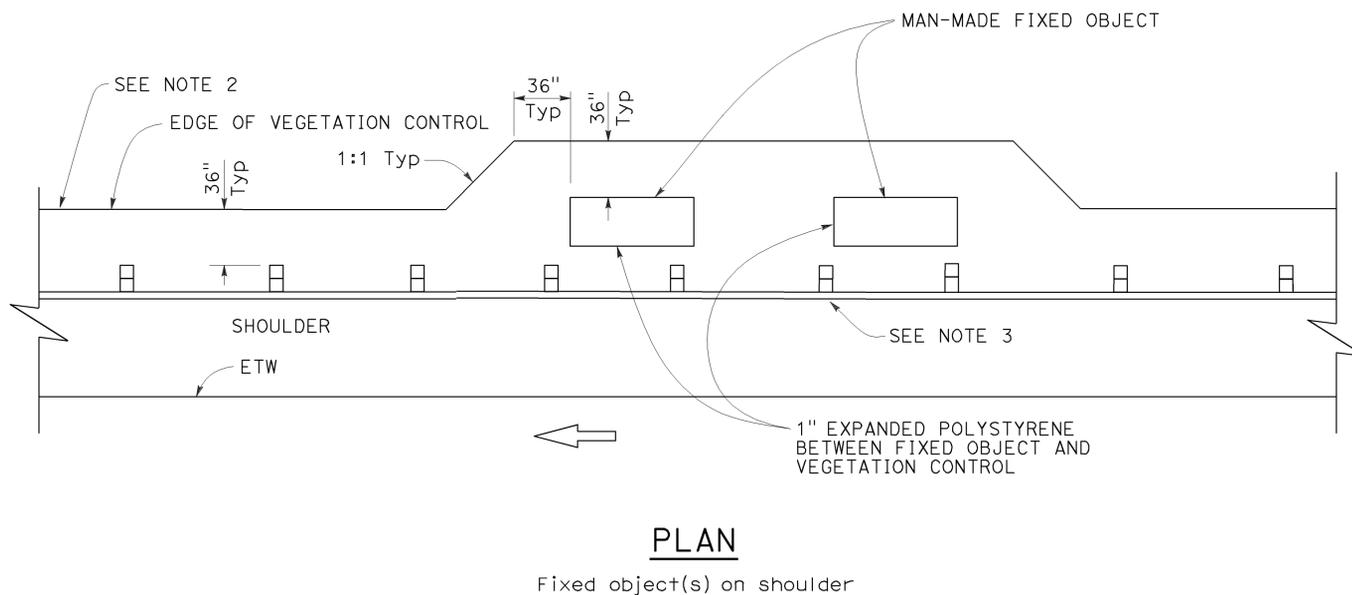
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REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 9-11-15

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.



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

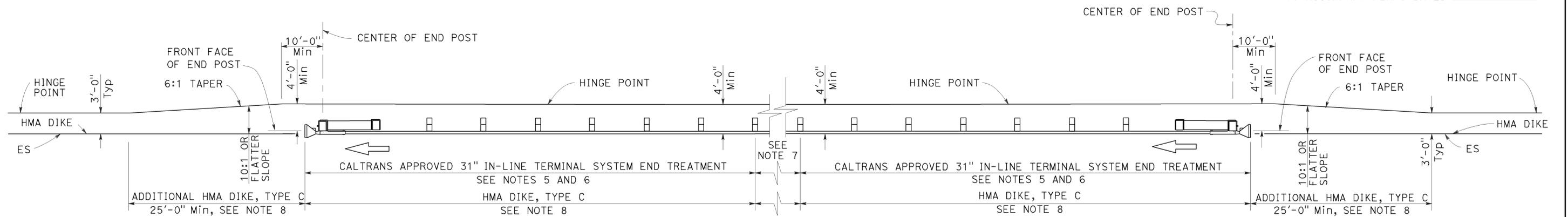
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	121	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

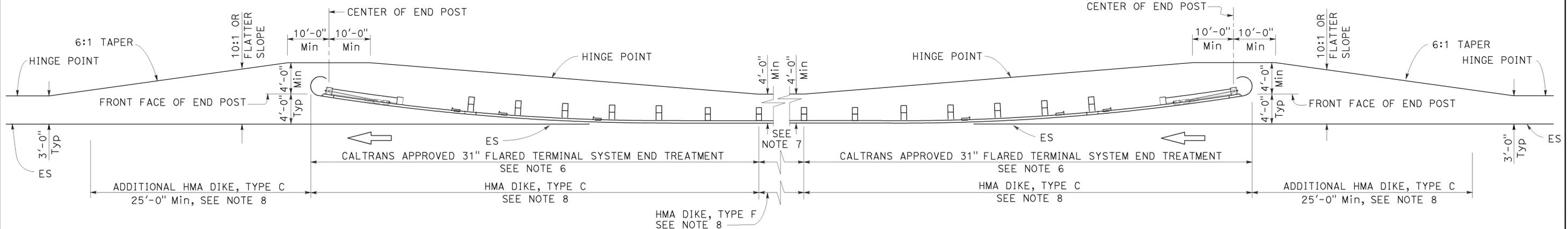
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TO ACCOMPANY PLANS DATED 9-11-15



TYPE 11D LAYOUT

(Embankment MGS installation with 31" in-line end treatment at each end of railing)
See Note 4



TYPE 11E LAYOUT

(Embankment MGS installation with 31" flared end treatment at each end of railing)
See Note 4

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or plastic blocks may be used for 6" x 8" x 6'-0" wood post with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- Layout Types 11D through 11L, shown on the A77P Series of Standard Plans, are typically used where MGS is recommended to shield embankment slopes and a crashworthy 31" end treatment is required for both directions of traffic.
- 31" in-line terminal system end treatments are used where site conditions will not accommodate a flared end treatment.
- The type of 31" terminal system end treatment to be used will be shown on the Project Plans.
- Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS FOR
EMBANKMENTS**

NO SCALE

RSP A77P2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77P2

2010 REVISED STANDARD PLAN RSP A77P2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	122	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

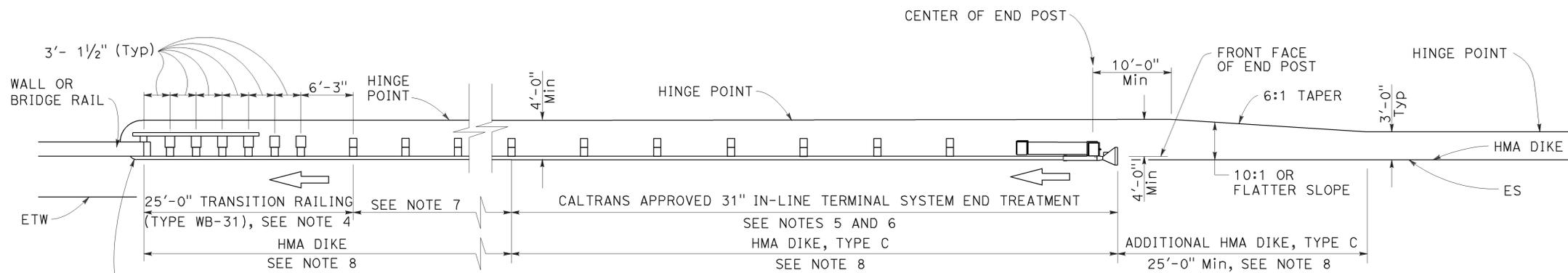
July 19, 2013
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED 9-11-15

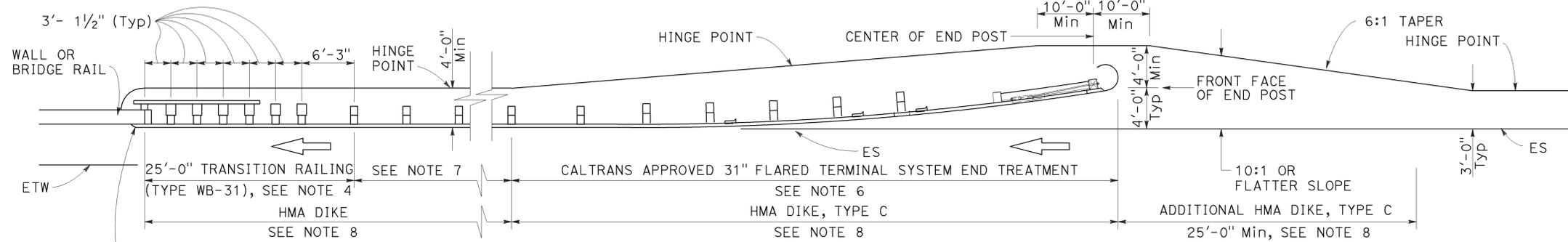


2010 REVISED STANDARD PLAN RSP A77Q1



TYPE 12A LAYOUT

(MGS installation at structure approach with 31" In-line end treatment at traffic approach end of railing)
See Notes 5 and 6
SEE NOTE 8



TYPE 12B LAYOUT

(MGS installation at structure approach with 31" Flared end treatment at traffic approach end of railing)
SEE NOTE 6
SEE NOTE 8

NOTES:

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

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

NO SCALE

RSP A77Q1 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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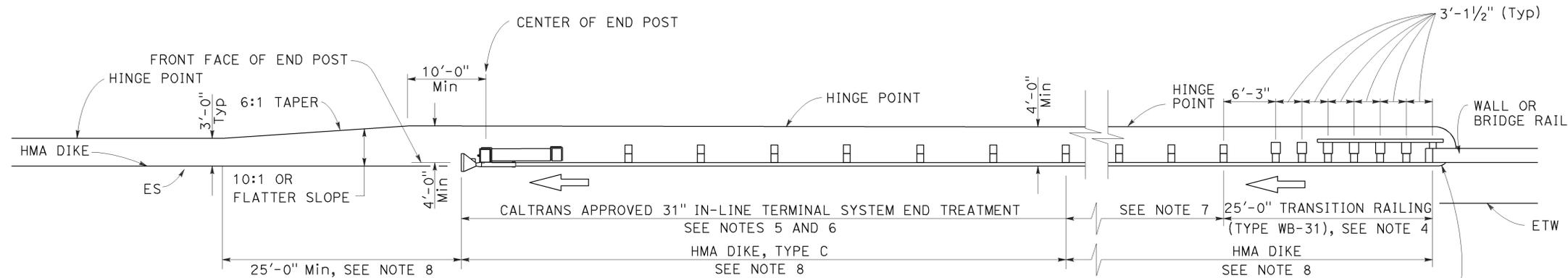
Randell D. Hiatt
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

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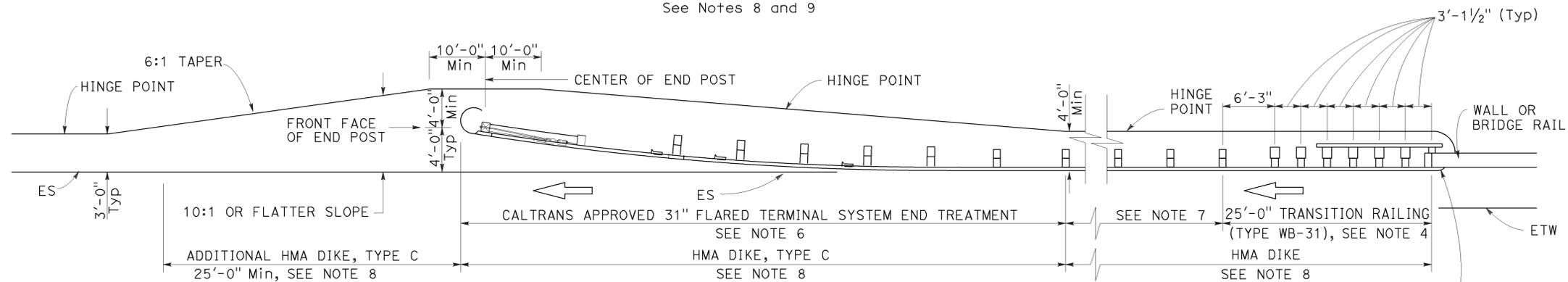
TO ACCOMPANY PLANS DATED 9-11-15

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



TYPE 12AA LAYOUT

(MGS installation at structure departure with 31" in-line end treatment at trailing end of railing)
See Notes 8 and 9



TYPE 12BB LAYOUT

(MGS installation at structure departure with 31" flared end treatment at trailing end of railing)
See Notes 8 and 9

NOTES:

- Line post, blocks and hardware to be used are shown on Revised Standard Plans RSP A77L1, RSP A77L2, RSP A77M1, RSP A77N1 and RSP A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 12" x 1'-2" wood blocks. W6 x 8.5 or W6 x 9 steel posts, 6'-0" in length, with 6" x 12" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 12" x 1'-2" wood blocks where applicable and when specified.
- For Transition Railing (Type WB-31) details for Types 12AA and 12BB Layouts, see Revised Standard Plan RSP A77U4.
- 31" in-line terminal system 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.
- Dependent on site conditions (embankment height, side slopes, other fixed objects), it may be advisable to construct additional MGS (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and 31" end treatments.
- Where placement of dike is required with MGS installations, see Revised Standard Plan RSP A77N4 for dike positioning details.
- Type 12AA or Type 12BB Layouts are typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- For additional details of typical connections to bridge rail, see Connection Detail CC on Revised Standard Plan RSP A77U2 and Connection Detail HH on Revised Standard Plan RSP A77V2.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE DEPARTURE

NO SCALE

RSP A77Q4 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77Q4

2010 REVISED STANDARD PLAN RSP A77Q4

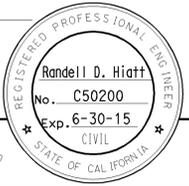
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	124	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

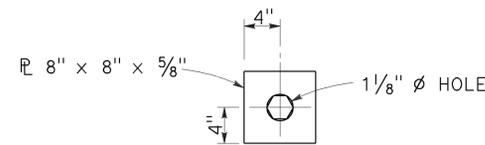
November 15, 2013

PLANS APPROVAL DATE

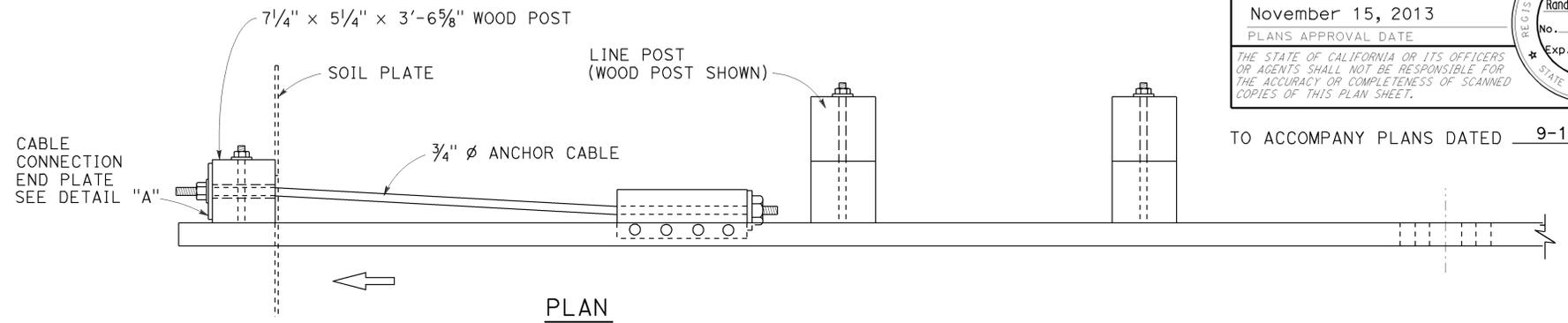
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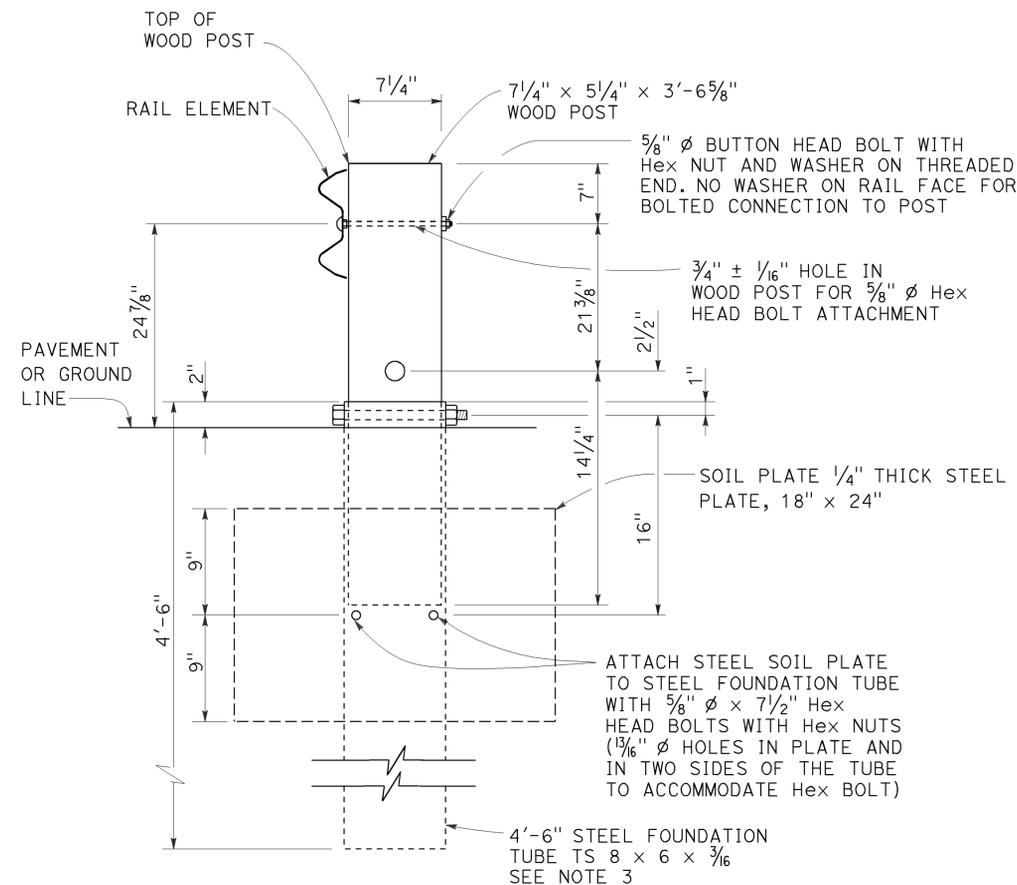
TO ACCOMPANY PLANS DATED 9-11-15



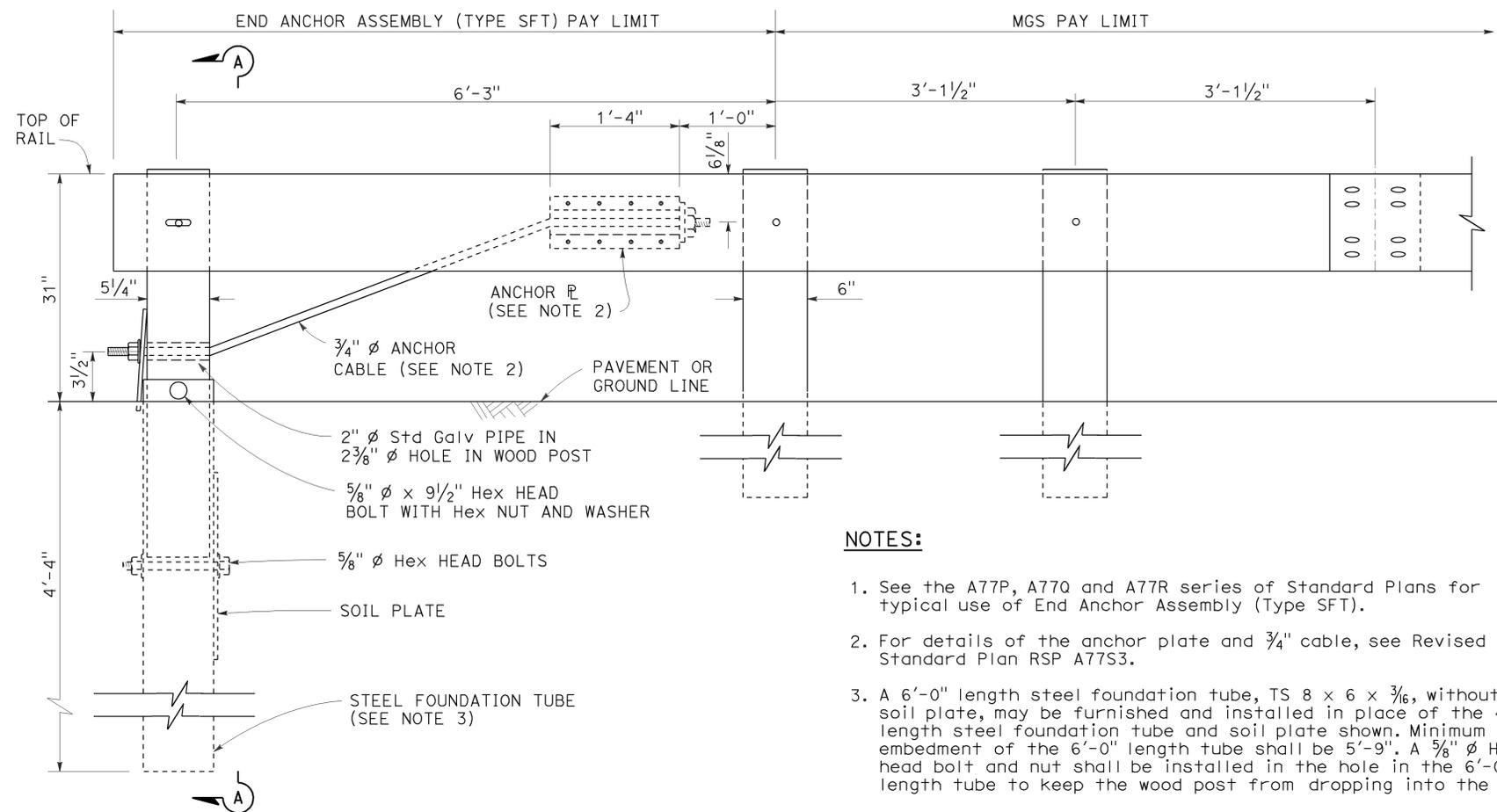
DETAIL "A"
CABLE CONNECTION
END PLATE



PLAN



SECTION A-A



ELEVATION

END ANCHOR
ASSEMBLY (TYPE SFT)

See Note 1

NOTES:

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

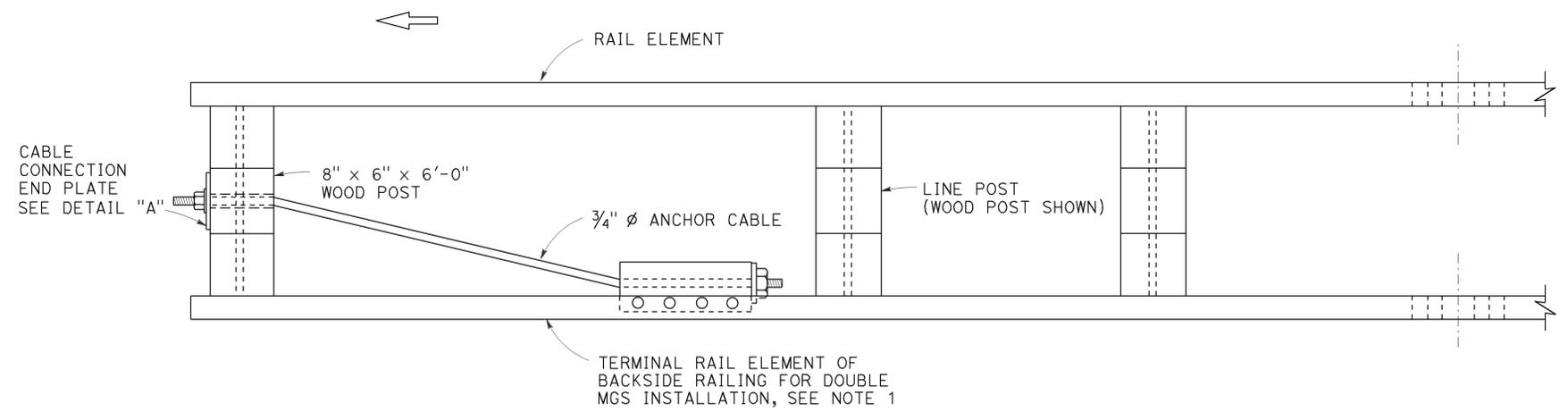
REVISED STANDARD PLAN RSP A77S1

2010 REVISED STANDARD PLAN RSP A77S1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	125	212
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
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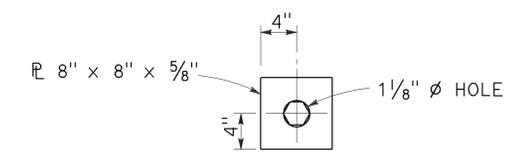
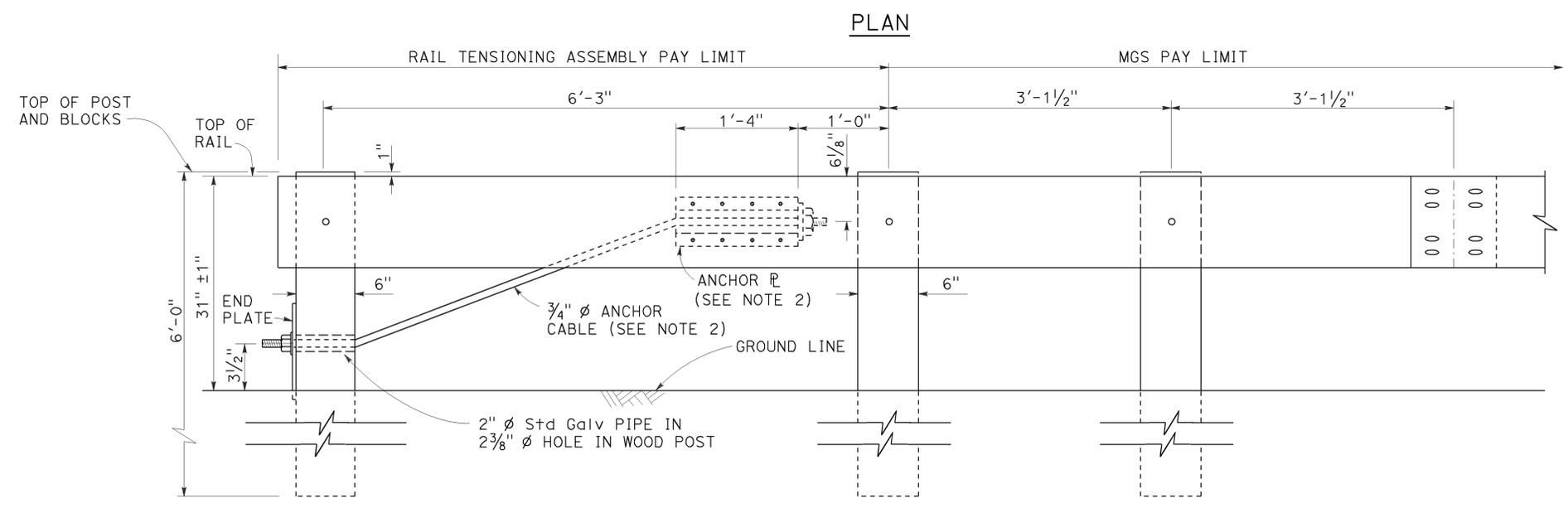


TO ACCOMPANY PLANS DATED 9-11-15



NOTES:

1. See Revised Standard Plans RSP A7703 and RSP A77R1 for typical use of rail tensioning assembly.
2. For details of the anchor plate and 3/4" cable, see Revised Standard Plan RSP A77S3.



DETAIL "A"
CABLE CONNECTION
END PLATE

ELEVATION
RAIL TENSIONING
ASSEMBLY
 See Note 1

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
RAIL TENSIONING ASSEMBLY

NO SCALE

RSP A77S2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77S2

2010 REVISED STANDARD PLAN RSP A77S2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	126	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

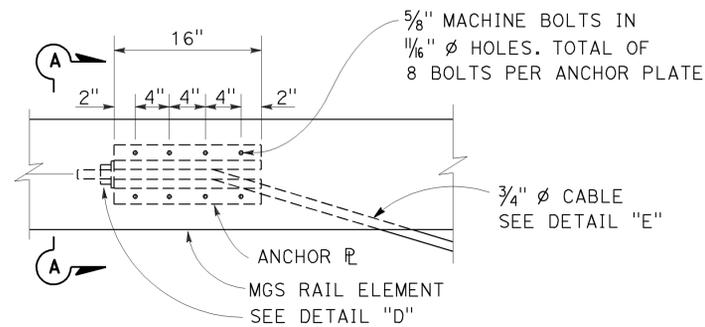
November 15, 2013
PLANS APPROVAL DATE

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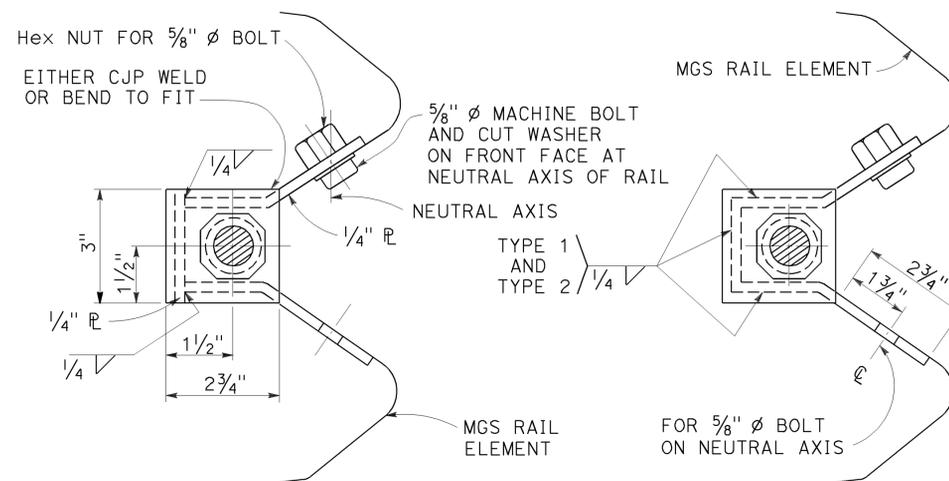
REGISTERED PROFESSIONAL ENGINEER
Randell D. Hiatt
No. C50200
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED 9-11-15

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



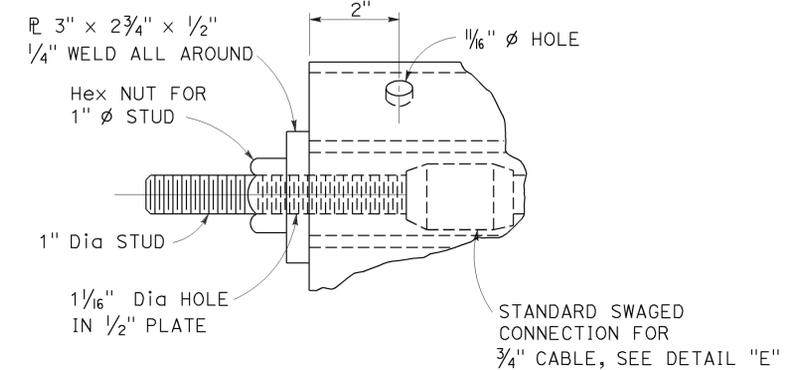
ANCHOR PLATE DETAIL
(MGS shown, TBB similar)



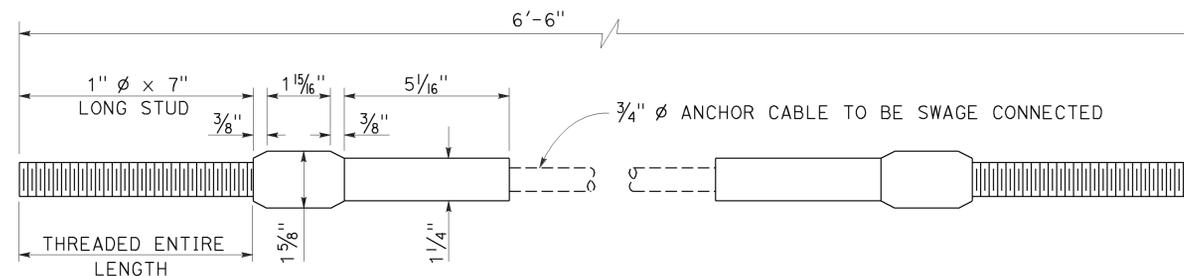
NOTE:
Dimensioning applies to both types.

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.

REVISED STANDARD PLAN RSP A77S3

2010 REVISED STANDARD PLAN RSP A77S3

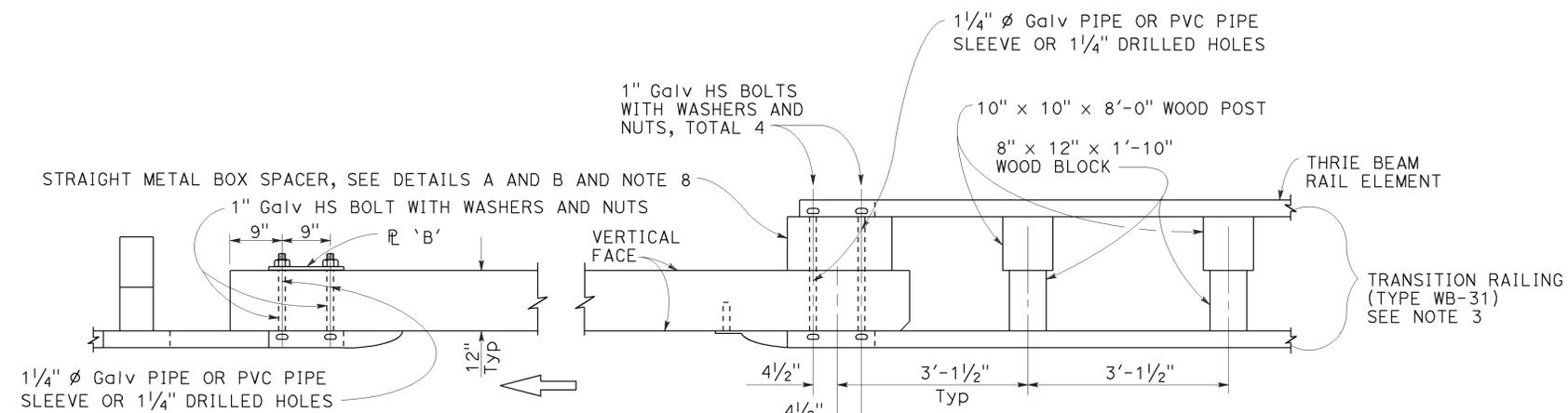
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	127	212

Randell D. Hiatt
REGISTERED CIVIL ENGINEER

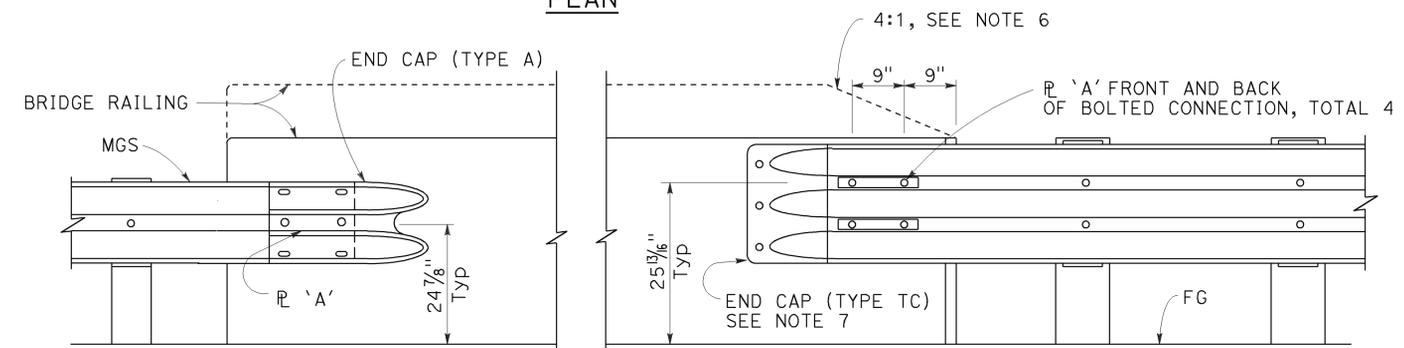
July 19, 2013
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED 9-11-15



PLAN

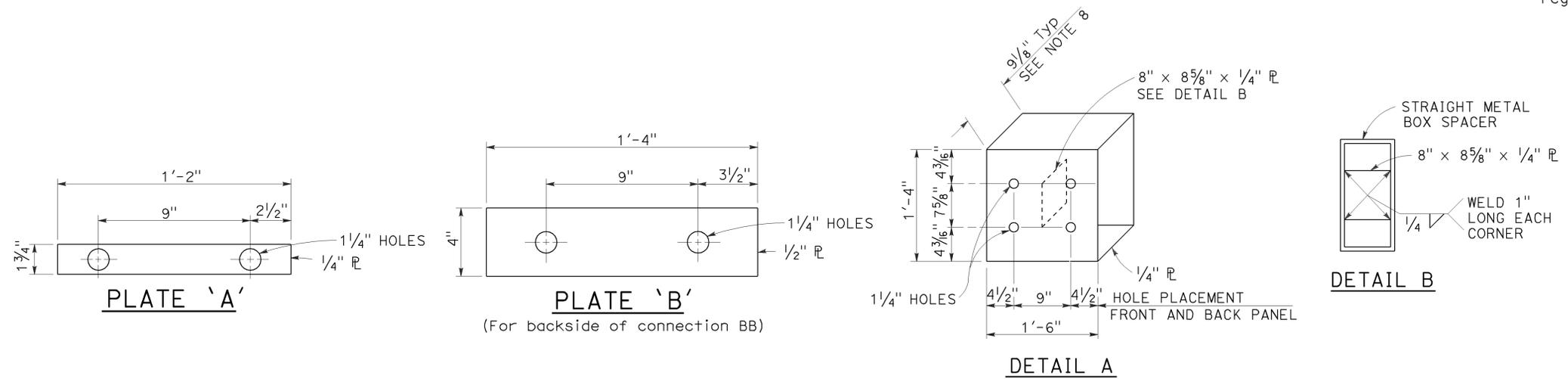


ELEVATION

MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

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



STRAIGHT METAL BOX SPACER

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

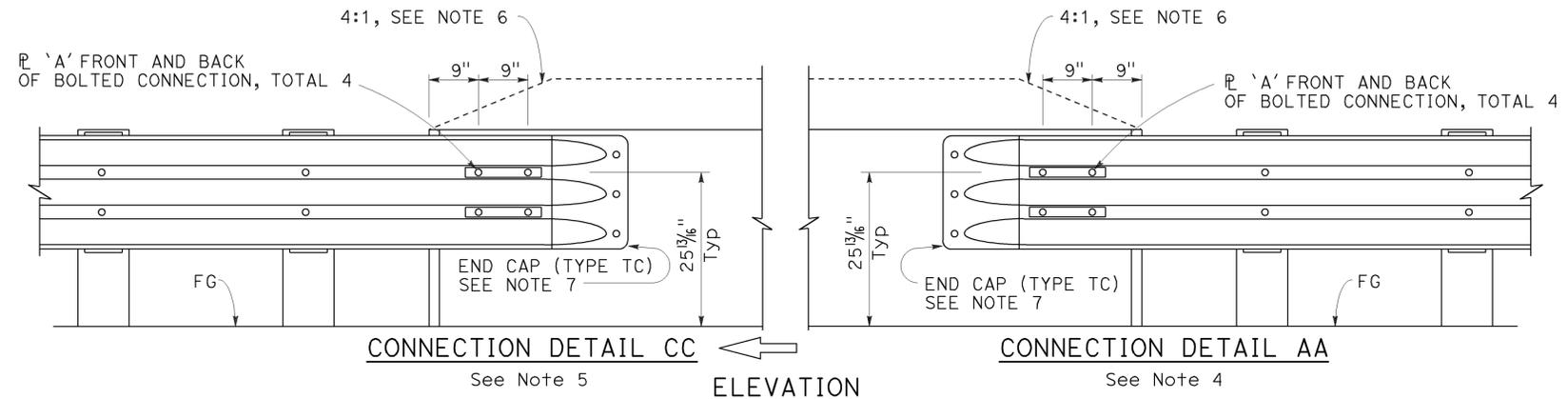
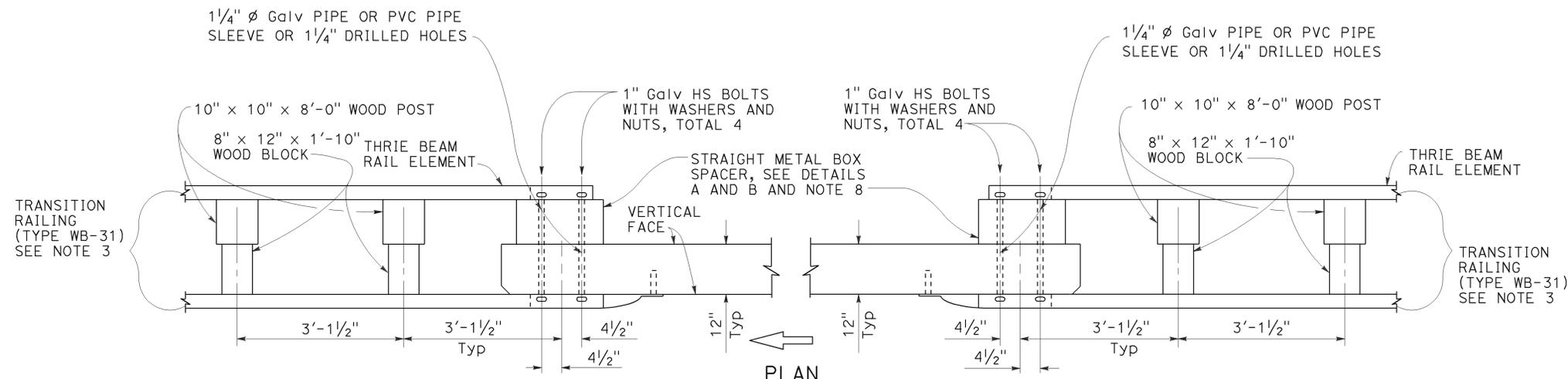
NO SCALE

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

REVISED STANDARD PLAN RSP A77U1

2010 REVISED STANDARD PLAN RSP A77U1

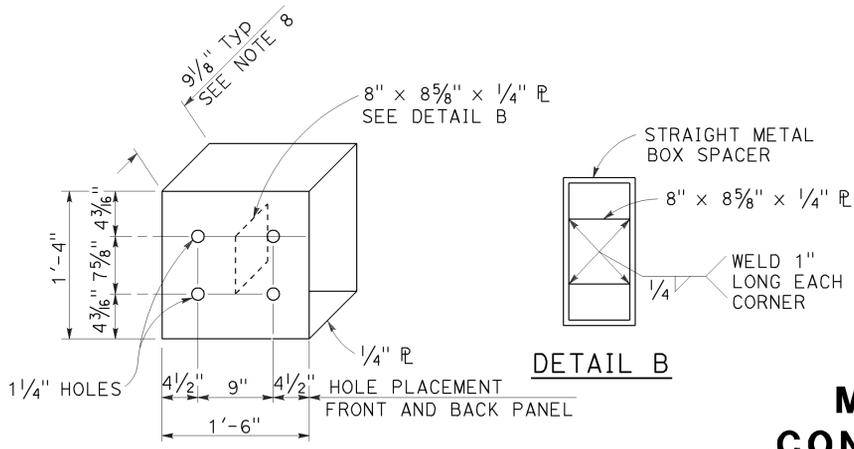
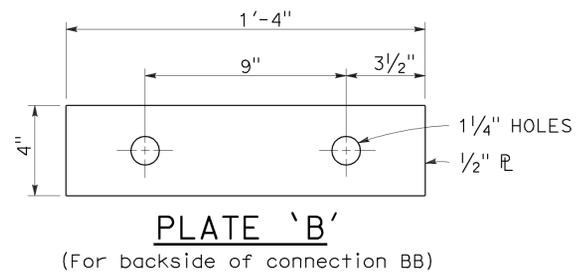
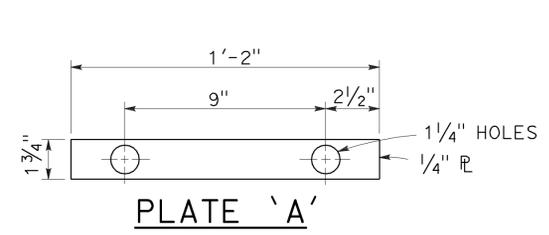
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	128	212
<i>Randell D. Hiatt</i> REGISTERED CIVIL ENGINEER					
July 19, 2013 PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
TO ACCOMPANY PLANS DATED <u>9-11-15</u>					



MIDWEST GUARDRAIL SYSTEM CONNECTION TO BRIDGE RAILING WITHOUT SIDEWALK

NOTES:

1. See Revised Standard Plan RSP A77U1 for additional connection details to bridges without sidewalks.
2. Additional details of posts, blocks and hardware are shown on Revised Standard Plans RSP A77M1, RSP A77N1 and RSP A77N2.
3. For additional details of Transition Railing (Type WB-31), see Revised Standard Plan RSP A77U4. Transition Railing (Type WB-31) transitions the 12 gauge MGS railing section to a heavier gage nested thrie beam railing section which is connected to the concrete bridge railing.
4. For typical use of Connection Detail AA, see Layout Types 12A and 12B on Revised Standard Plan RSP A7701, Layout Types 12C and 12D on Revised Standard Plan RSP A7702, and Layout Type 12E on Revised Standard Plan RSP A7703.
5. For typical use of Connection Detail CC, see Layout Types 12AA and 12BB on Revised Standard Plan RSP A7704 and Layout Type 12CC on Revised Standard Plan RSP A7705.
6. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail AA and connection Detail CC, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
7. For details of End Cap (Type TC), see Revised Standard Plan RSP A77U4.
8. See Revised Standard Plan RSP A77U4 for additional details regarding depth dimension for straight metal box spacer.



**DETAIL A
STRAIGHT METAL BOX SPACER**

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**MIDWEST GUARDRAIL SYSTEM
 CONNECTIONS TO BRIDGE RAILINGS
 WITHOUT SIDEWALKS DETAILS No. 2**
 NO SCALE

RSP A77U2 DATED JULY 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A77U2

2010 REVISED STANDARD PLAN RSP A77U2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	129	212

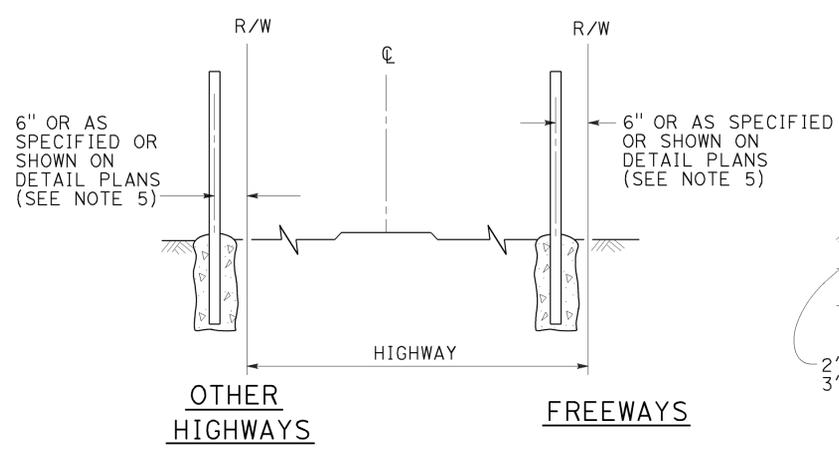
Glenn DeCou
REGISTERED CIVIL ENGINEER

July 18, 2014
PLANS APPROVAL DATE

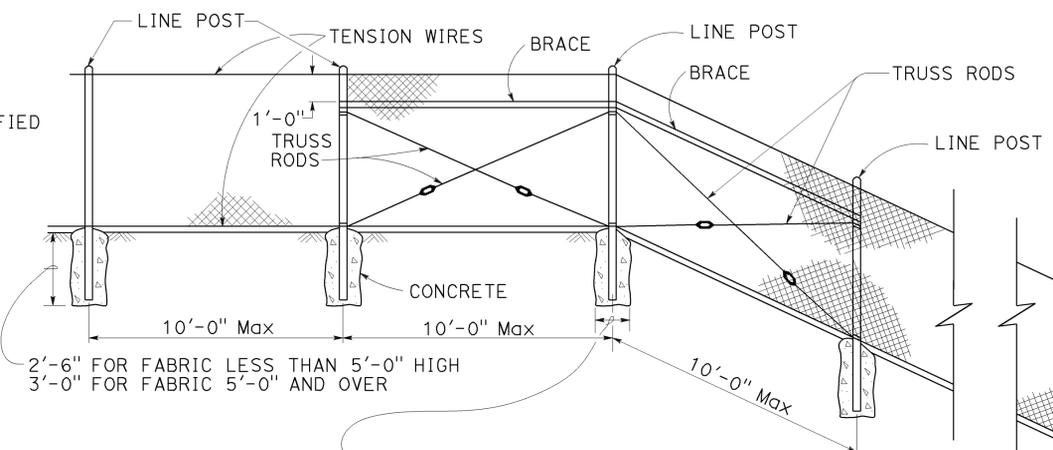
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 9-11-15

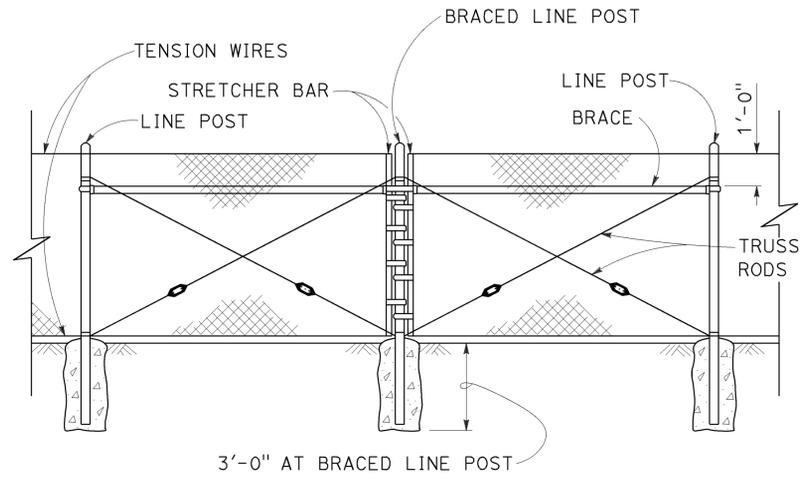
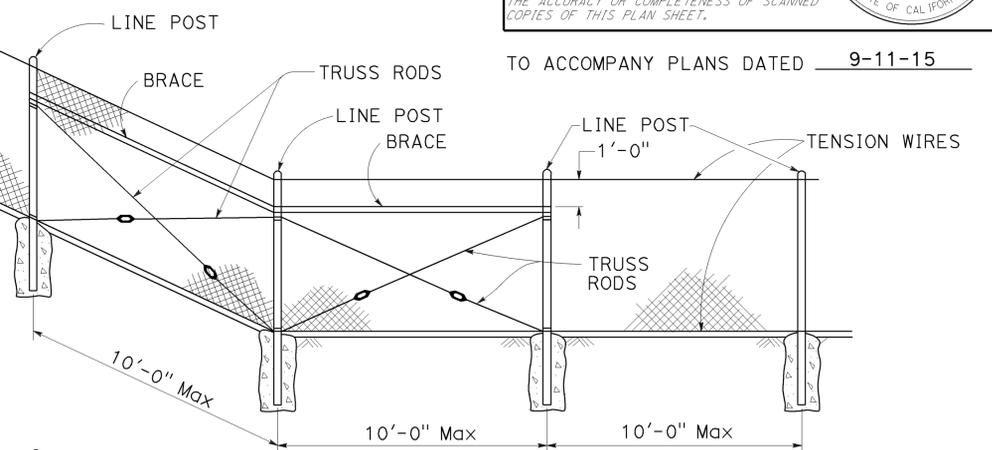
Glenn DeCou
No. C34547
Exp. 9-30-15
REGISTERED PROFESSIONAL ENGINEER
CIVIL
STATE OF CALIFORNIA



FENCE LOCATION

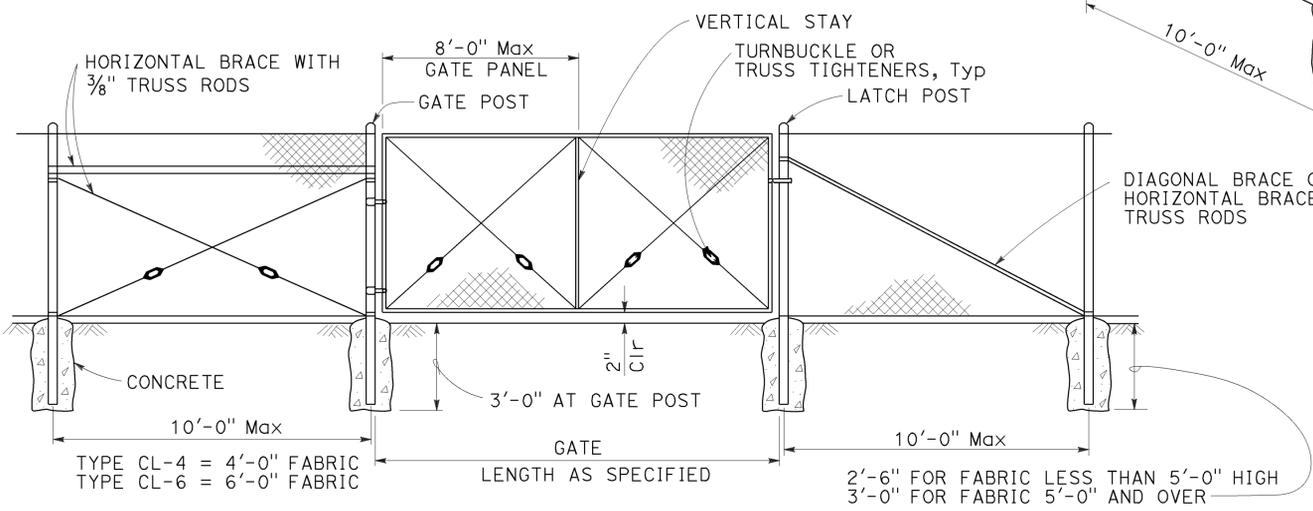


CHAIN LINK FENCE ON SHARP BREAK IN GRADE



BRACED LINE POST INSTALLATION

Braced line post at intervals not exceeding 1000'



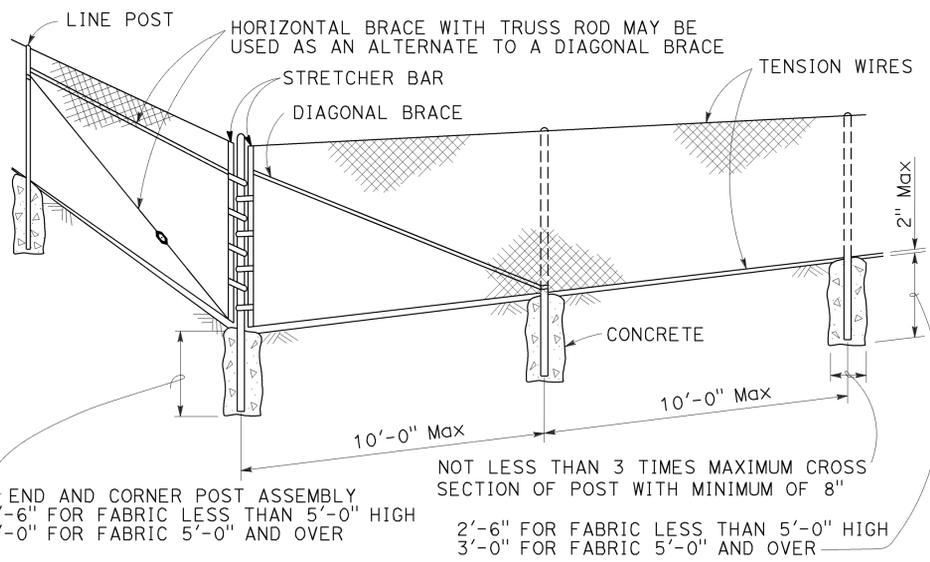
CHAIN LINK GATE INSTALLATION

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.

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 18'-0" TO 24'-0" Max	6.625"	18.99
OVER 6'-0" TO 8'-0" Max	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.



CORNER POST

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)		
			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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CHAIN LINK FENCE
NO SCALE

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

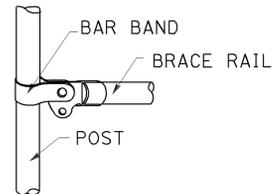
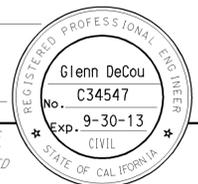
REVISED STANDARD PLAN RSP A85

2010 REVISED STANDARD PLAN RSP A85

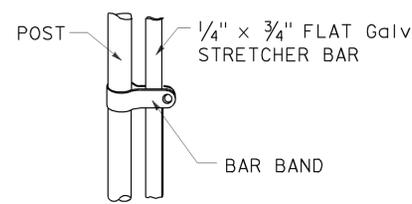
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	130	212

Glenn DeCou
 REGISTERED CIVIL ENGINEER
 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.

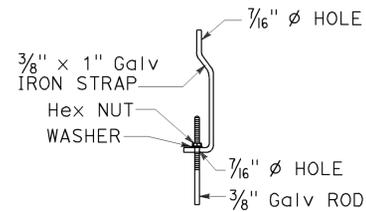
TO ACCOMPANY PLANS DATED 9-11-15



BRACE RAIL



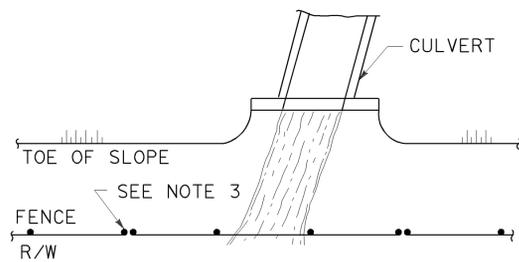
STRETCHER BAR



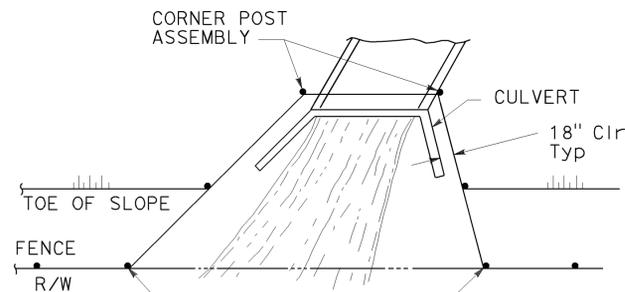
TRUSS TIGHTENER

NOTES:

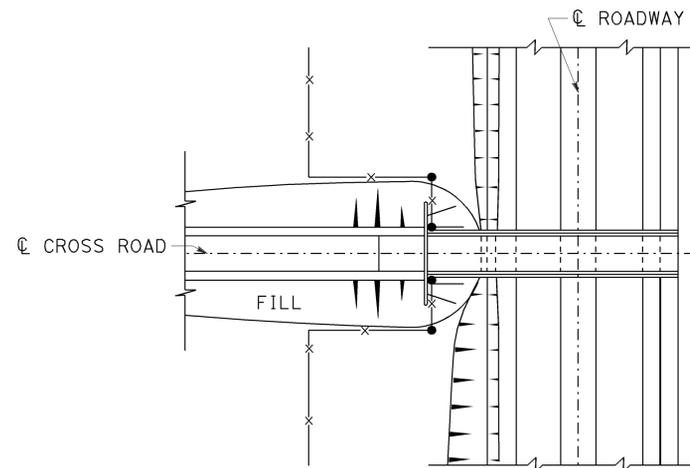
1. All material for abutment connection to be galvanized.
2. The chain link fabric shall be replaced by barbed wire strands at 12" maximum centers between the double posts.
3. When the width of the culvert makes it necessary to anchor a post to the top of the culvert, a cast iron shoe or other device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



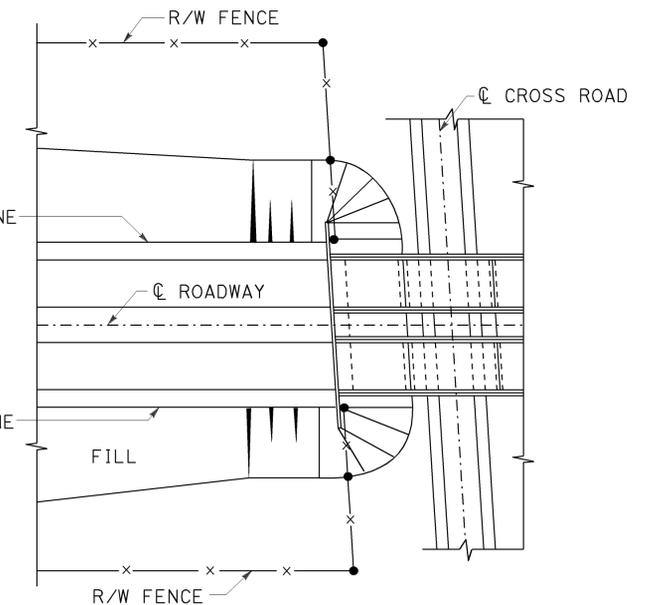
PLAN



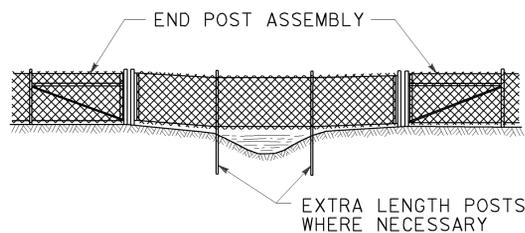
PLAN



PLAN OF ROADWAY - OVERCROSSING

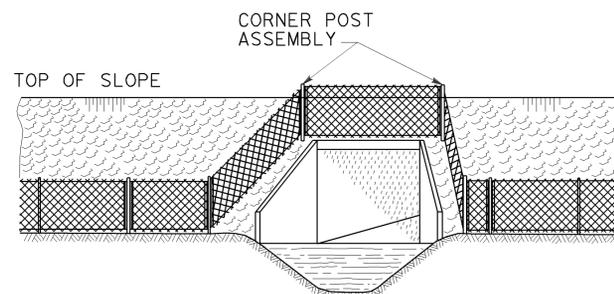


PLAN OF ROADWAY - UNDERCROSSING



ELEVATION

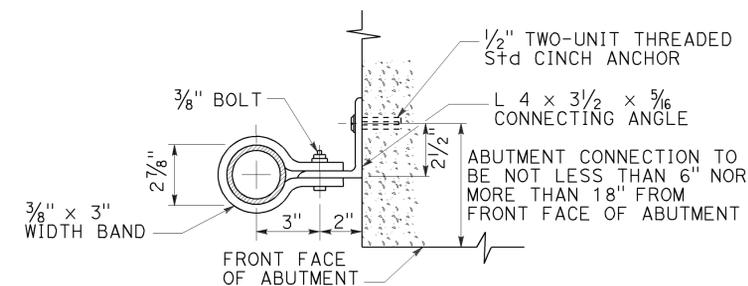
INSTALLATION OVER STREAM



ELEVATION

INSTALLATION AROUND HEADWALL

See Note 4



ABUTMENT CONNECTION

TYPICAL INSTALLATION AT BRIDGES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CHAIN LINK FENCE DETAILS

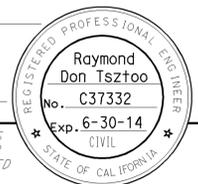
NO SCALE

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

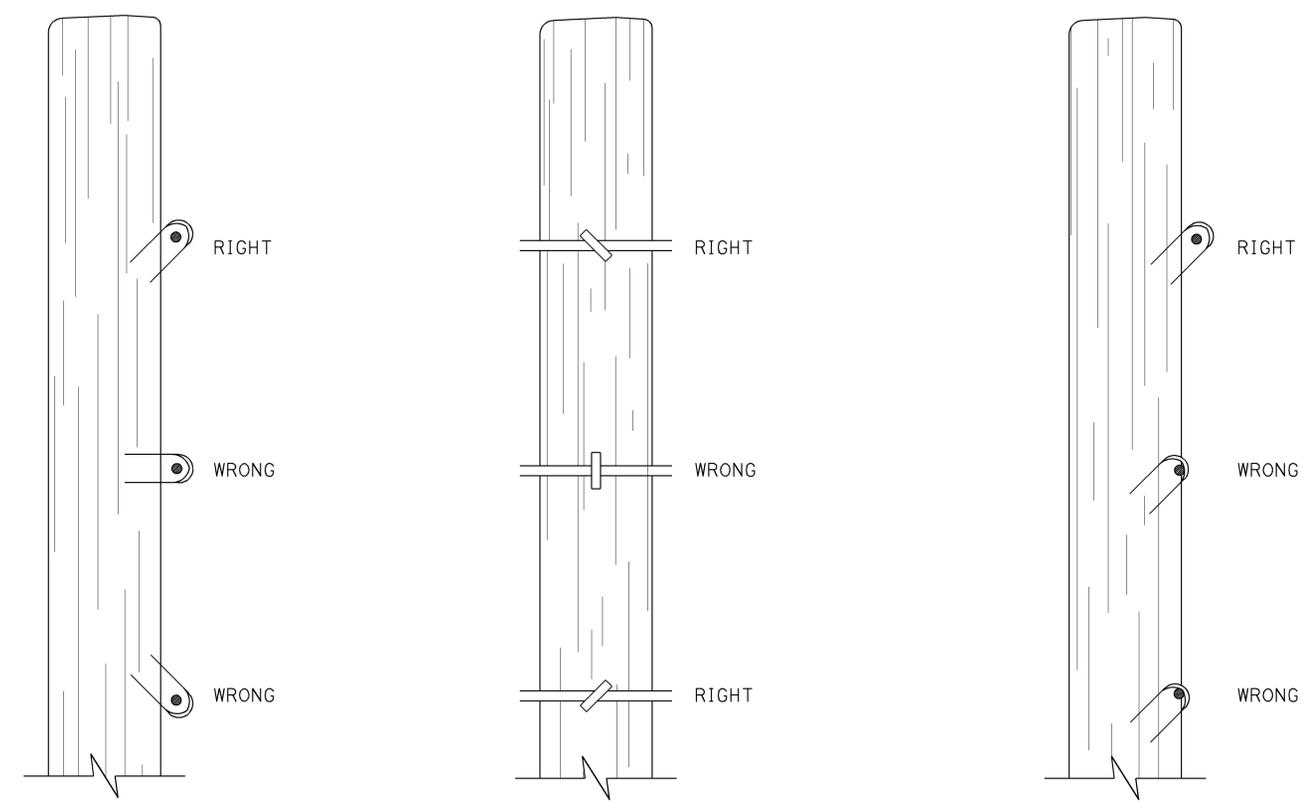
REVISED STANDARD PLAN RSP A85B

2010 REVISED STANDARD PLAN RSP A85B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	131	212
<i>Raymond Don Isztoo</i> REGISTERED CIVIL ENGINEER					
October 19, 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 9-11-15

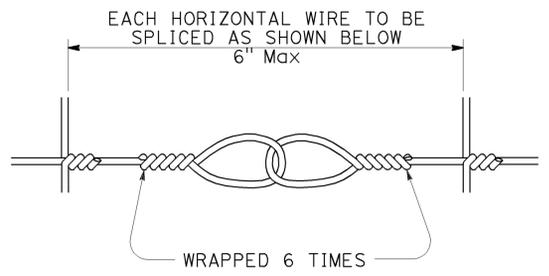


DRIVE STAPLES AT ANGLE

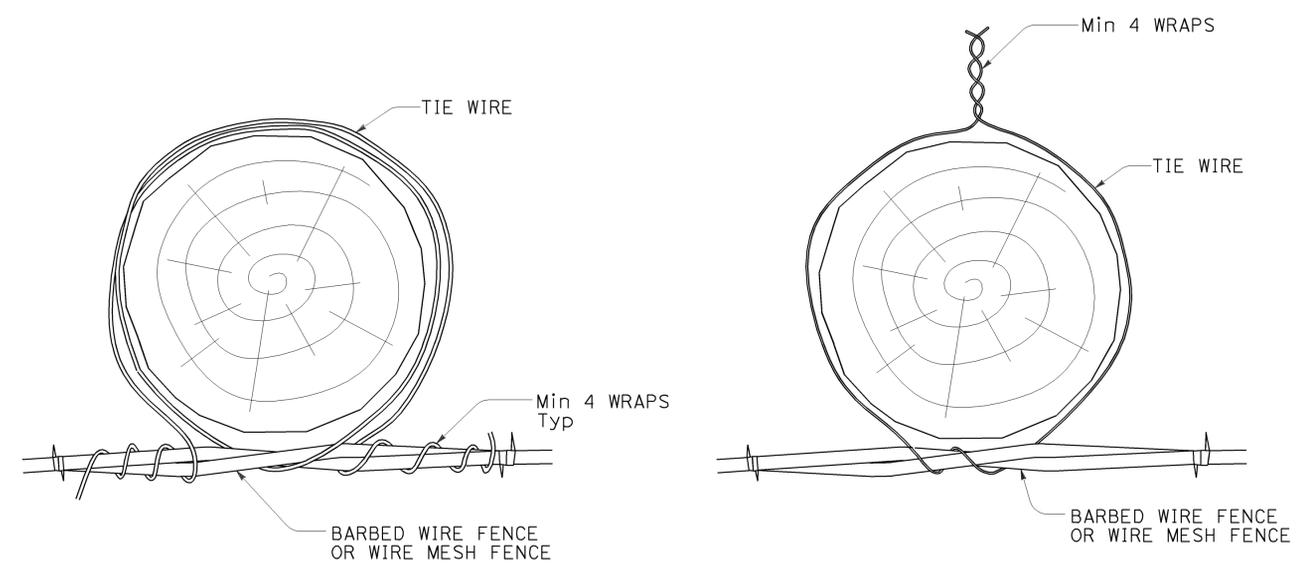
DO NOT DRIVE STAPLES PARALLEL TO SIDE OF POST

LEAVE WIRE LOOSE IN STAPLE

LINE POST STAPLING DETAILS
 (Apply to rectangular/square and round posts)
 Do not staple vertical wire in wire mesh.



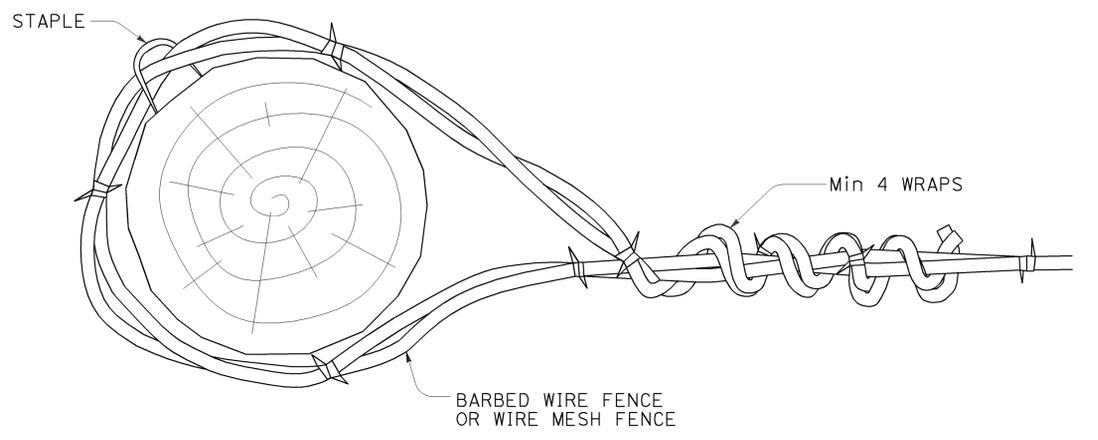
SPLICE DETAIL FOR BARBED WIRE/WIRE MESH FENCE



OPTION A

OPTION B

LINE POST WIRE TIE OPTION DETAILS
 (Option details also apply to rectangular/square posts)



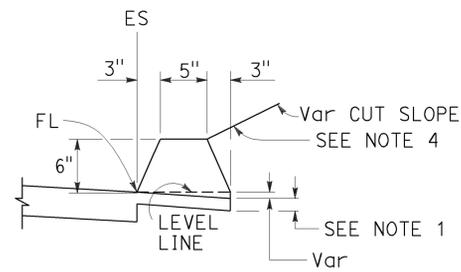
END, LATCH, PULL, AND CORNER POST DETAIL
 (Also applies to rectangular/square posts)

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
BARBED WIRE AND WIRE MESH FENCE - MISCELLANEOUS DETAILS
 NO SCALE

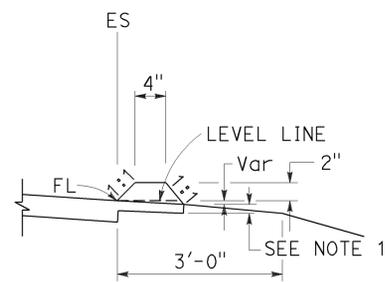
RSP A86D DATED OCTOBER 19, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

2010 REVISED STANDARD PLAN RSP A86D

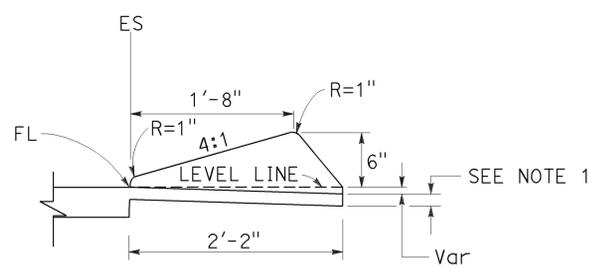
TO ACCOMPANY PLANS DATED 9-11-15



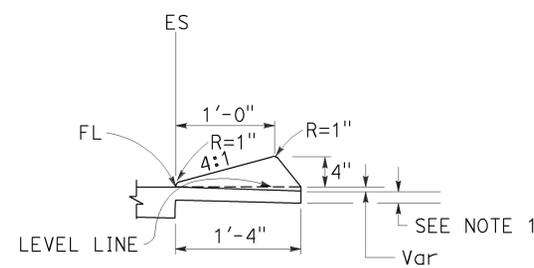
TYPE A
See Note 3



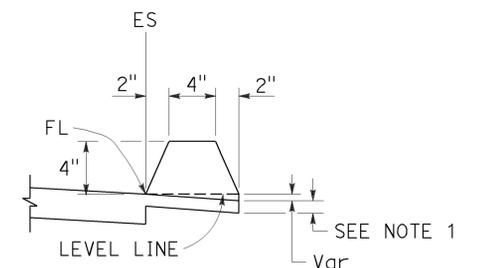
TYPE C



TYPE D

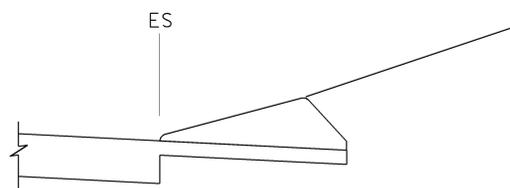


TYPE E

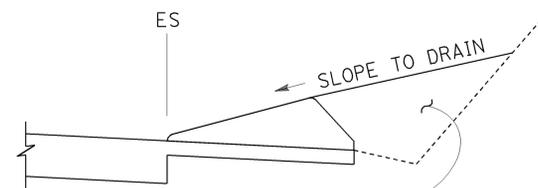


TYPE F
See Note 5

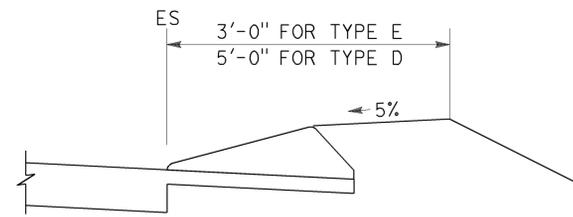
DIKES



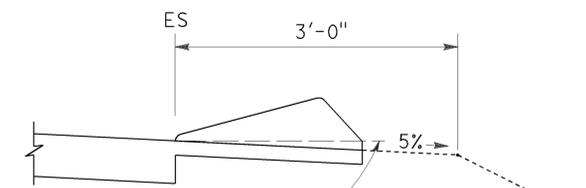
CASE C-1
Cut Slope



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

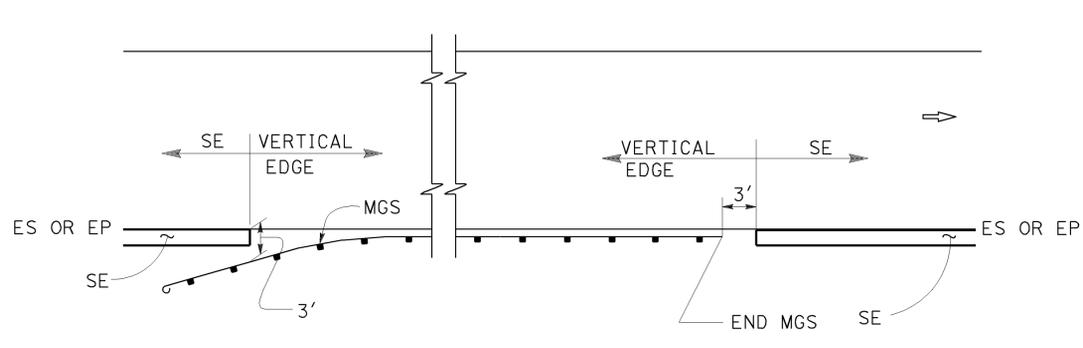
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	133	212



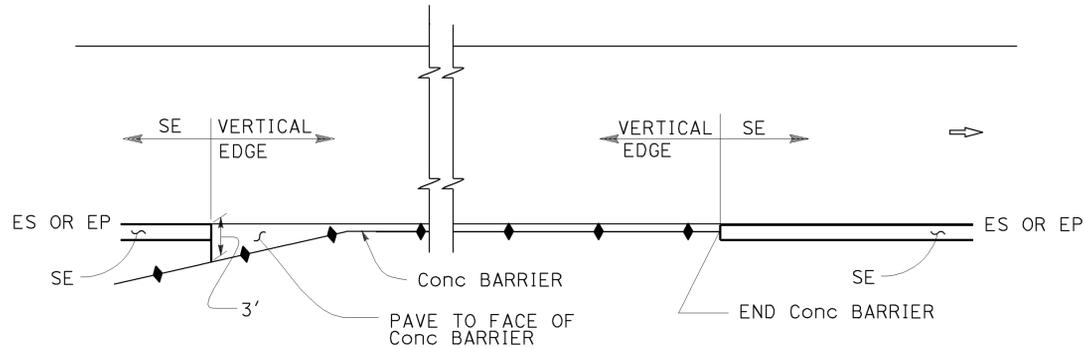
 REGISTERED CIVIL ENGINEER
 November 15, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 9-11-15

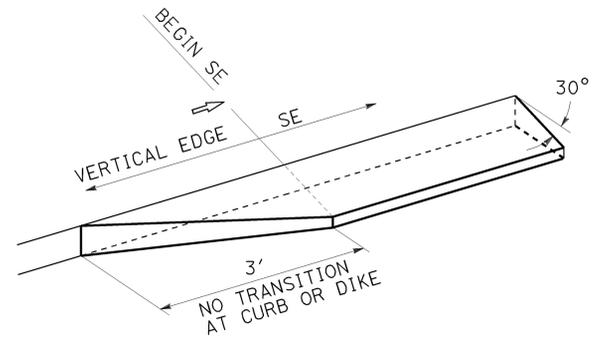
ABBREVIATIONS:
SE SAFETY EDGE



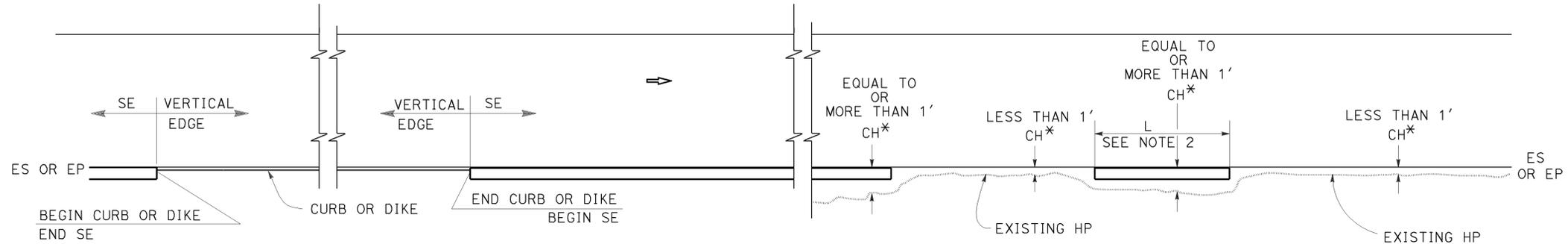
MGS



CONCRETE BARRIER



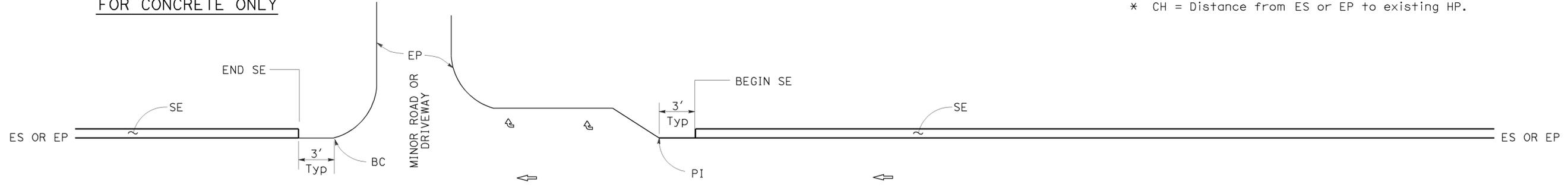
TRANSITION DETAIL FOR CONCRETE ONLY



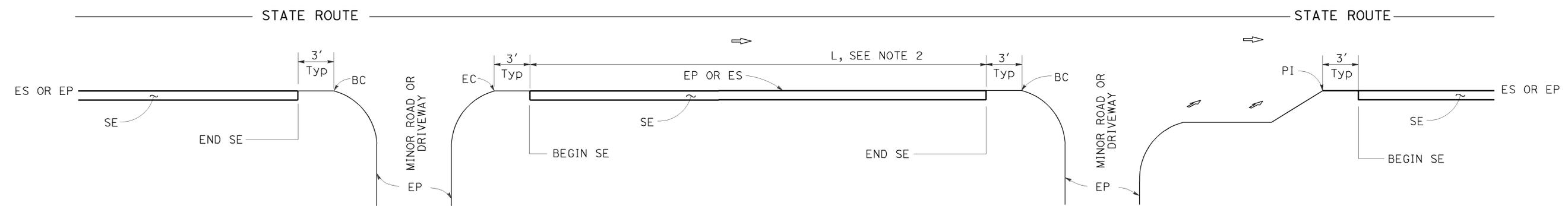
CURB OR DIKE

NARROW SIDE SLOPE

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



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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	134	212

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.

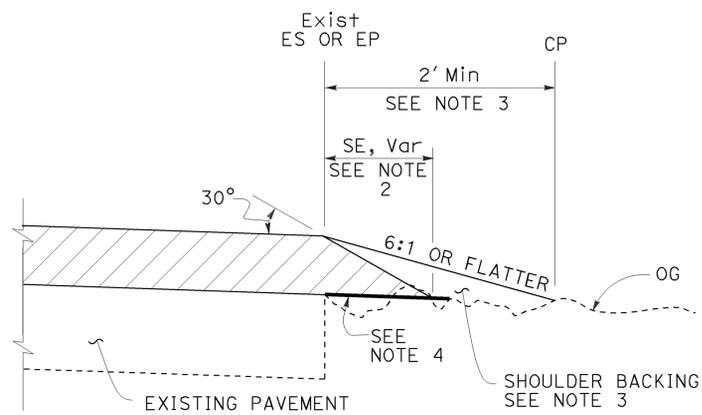
TO ACCOMPANY PLANS DATED 9-11-15
 ADDITIONAL HMA OR CONCRETE QUANTITIES FOR SE/SIDE/MILE

LEGEND:

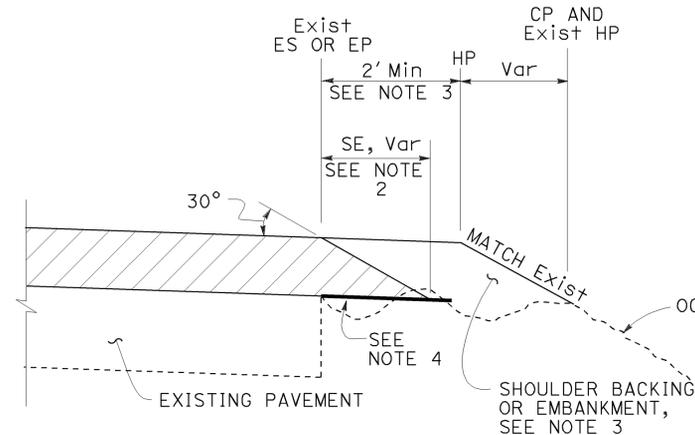
-  HMA OVERLAY
-  HMA OR CONCRETE OVERLAY
-  CONCRETE OVERLAY

ABBREVIATIONS:

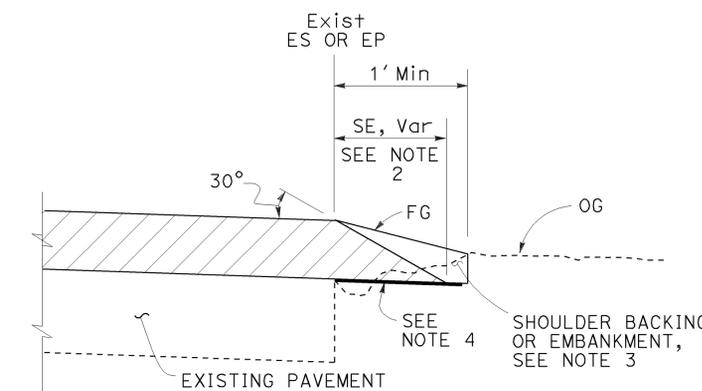
- SE SAFETY EDGE
- TT TOTAL THICKNESS OF SE



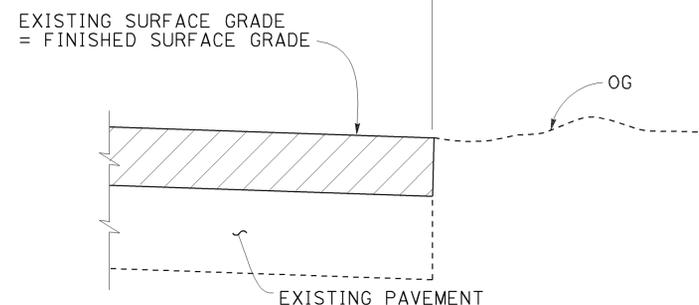
CASE A
Safety Edge



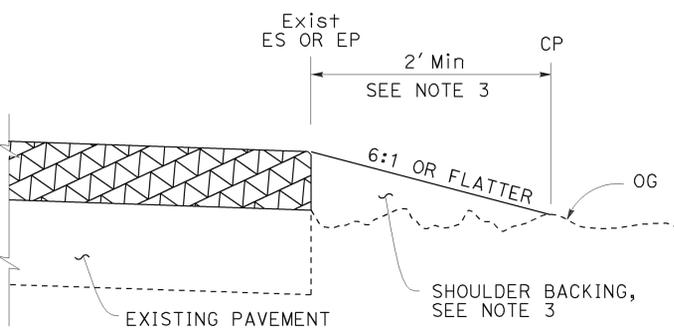
CASE B
Safety Edge



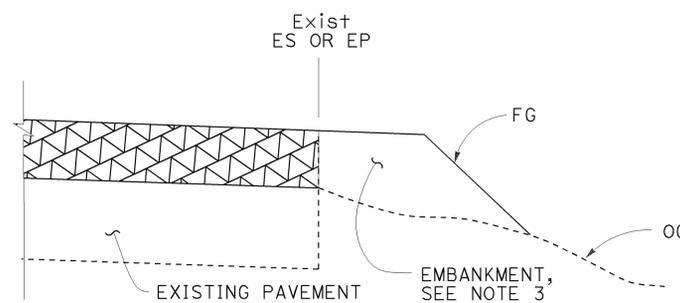
CASE C
Safety Edge



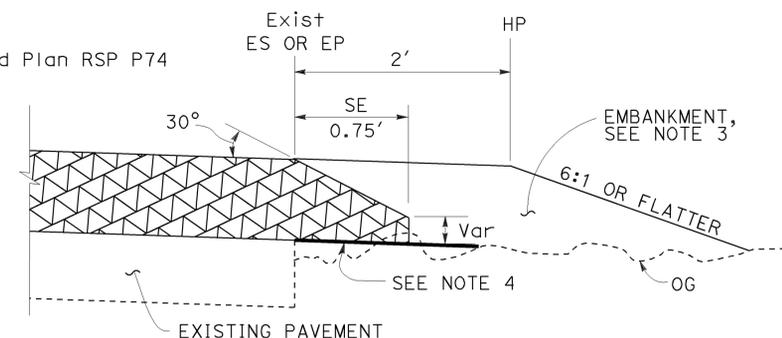
CASE D
Vertical Edge



CASE E
Vertical Edge



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

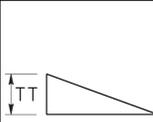
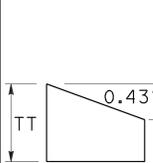


DETAIL "A"

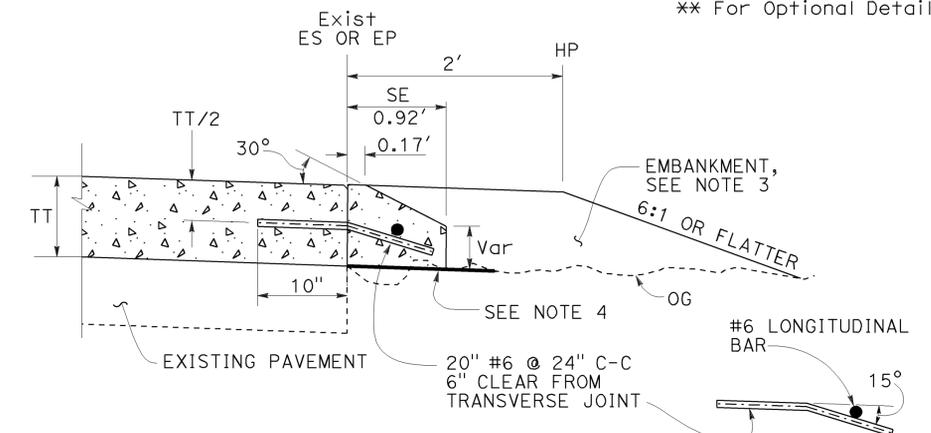
For HMA overlay thickness more than 0.43' or concrete overlay

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

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

NOTES:

- For limits of safety edge and vertical edge treatments, see Revised Standard Plan RSP P74.
- Details shown for HMA overlay thickness less than 0.43'. See Detail "A" for HMA overlay thickness more than 0.43' or concrete overlay.
- For locations and limits of shoulder backing or embankment see project plans.
- Grade existing ground to place safety edge. 1' minimum width
- Safety edge transverse joint must match overlay transverse joint. End of #6 longitudinal bar must be 2" ± 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- OVERLAYS

NO SCALE

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

REVISED STANDARD PLAN RSP P75

2010 REVISED STANDARD PLAN RSP P75

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	135	212

 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>		

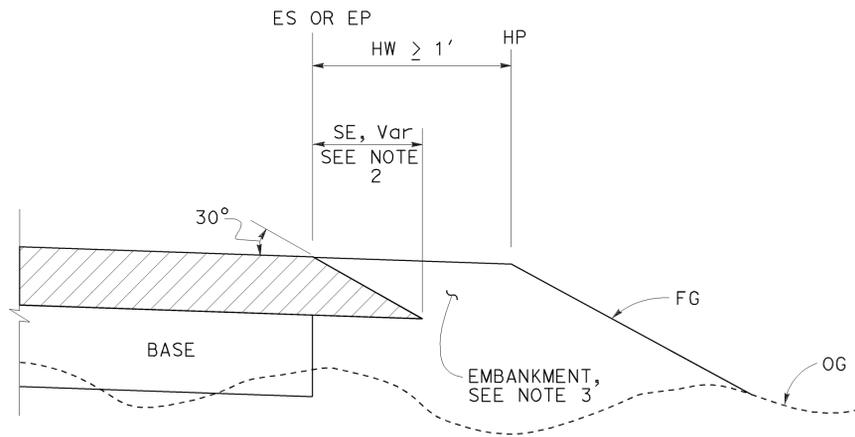
LEGEND:

-  HMA PAVEMENT
-  HMA OR CONCRETE PAVEMENT
-  CONCRETE PAVEMENT

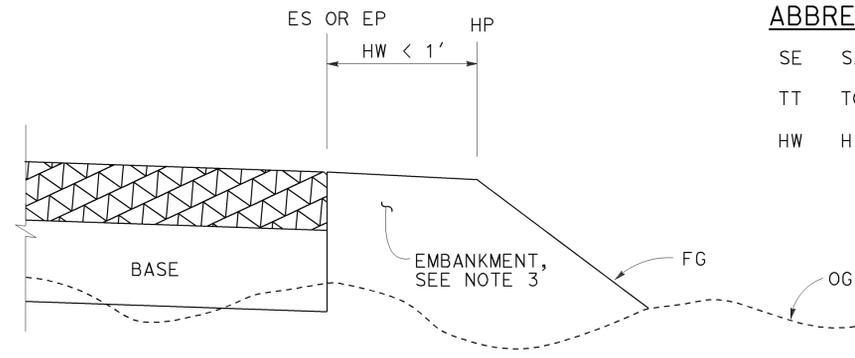
ABBREVIATIONS:

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

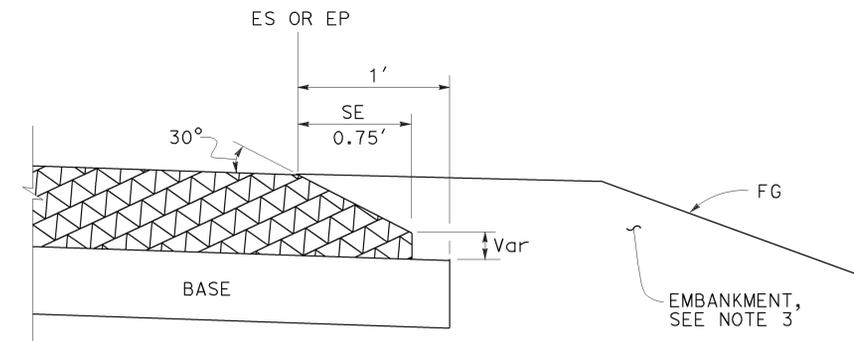
TO ACCOMPANY PLANS DATED 9-11-15



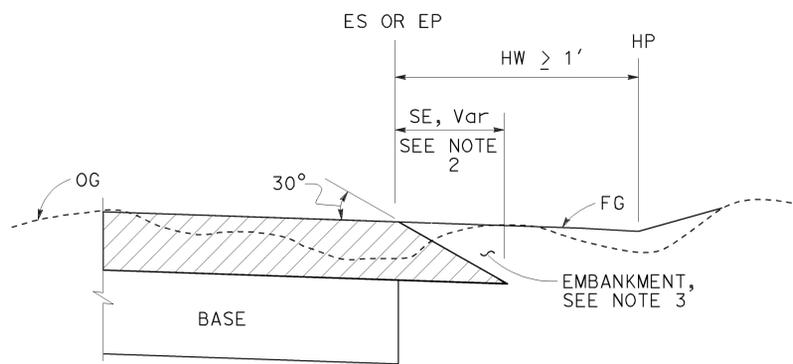
CASE K
Safety Edge - Fill Section, HW ≥ 1'



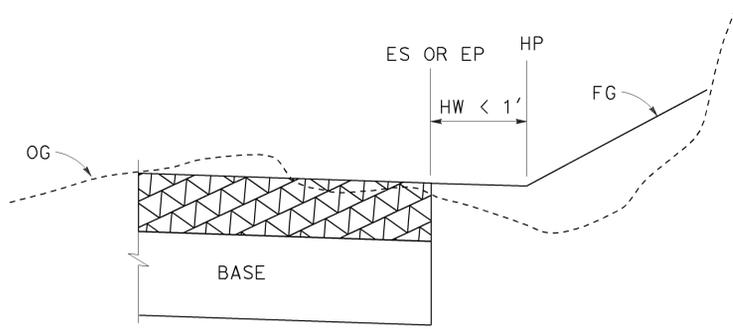
CASE L
Vertical Edge - Fill Section, HW < 1'



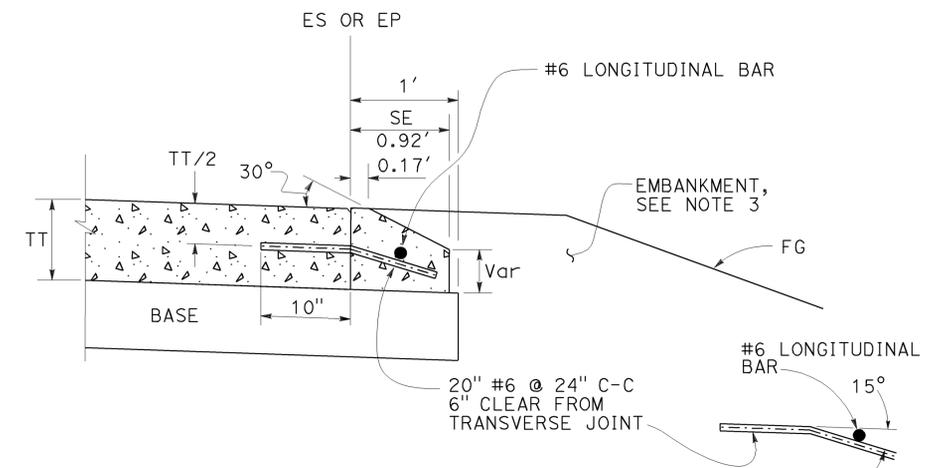
DETAIL "B"
For HMA pavement thickness more than 0.43' or concrete pavement



CASE M
Safety Edge - Cut Section, HW ≥ 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" ± 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
08	SBd	138	R17.1/R19.2	136	212

Glenn DeCou
 REGISTERED CIVIL ENGINEER
 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.

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

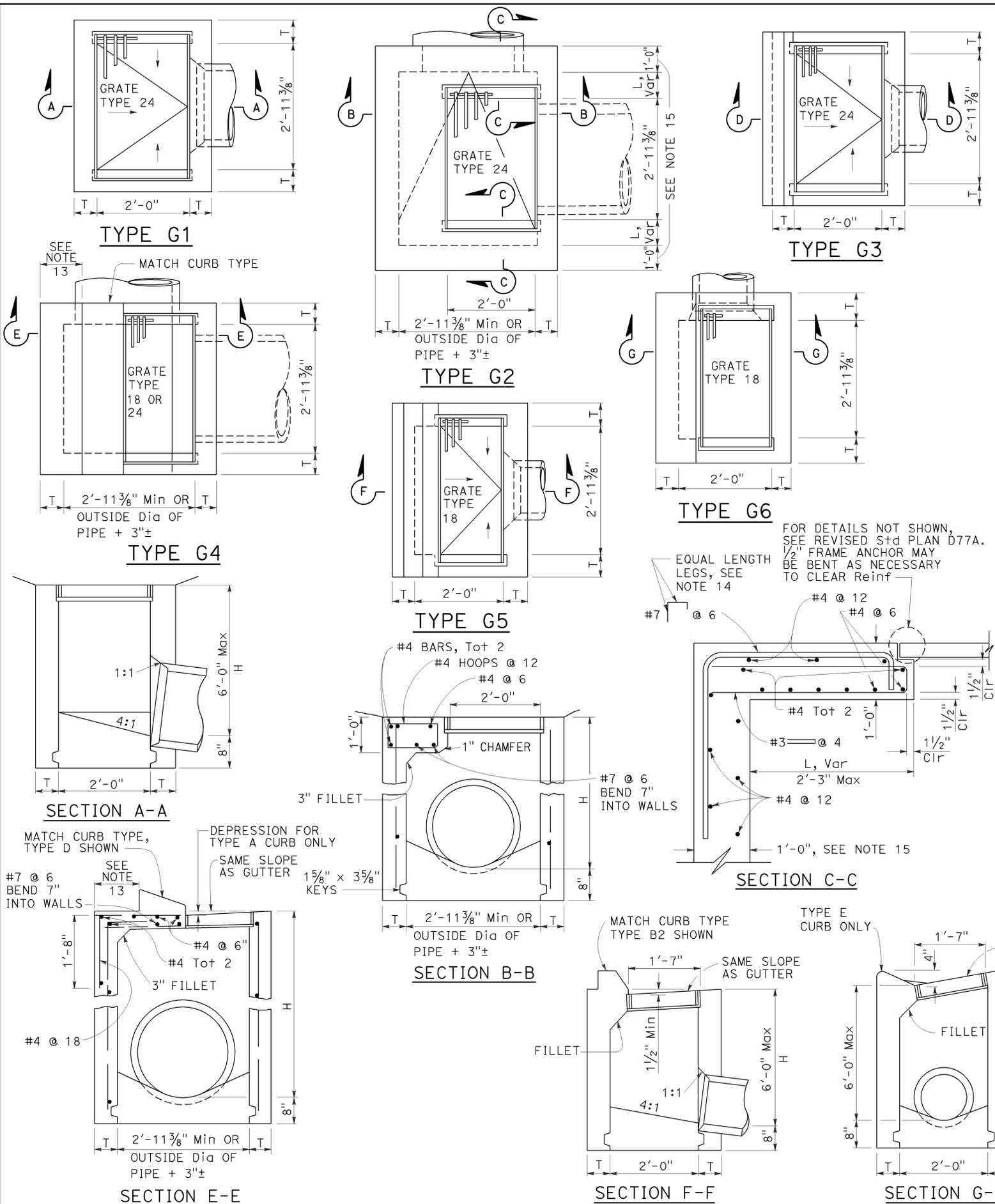


TABLE A

CONCRETE QUANTITIES

TYPE	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
	H=3'-0" (CY)	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
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.

2010 REVISED STANDARD PLAN RSP D73

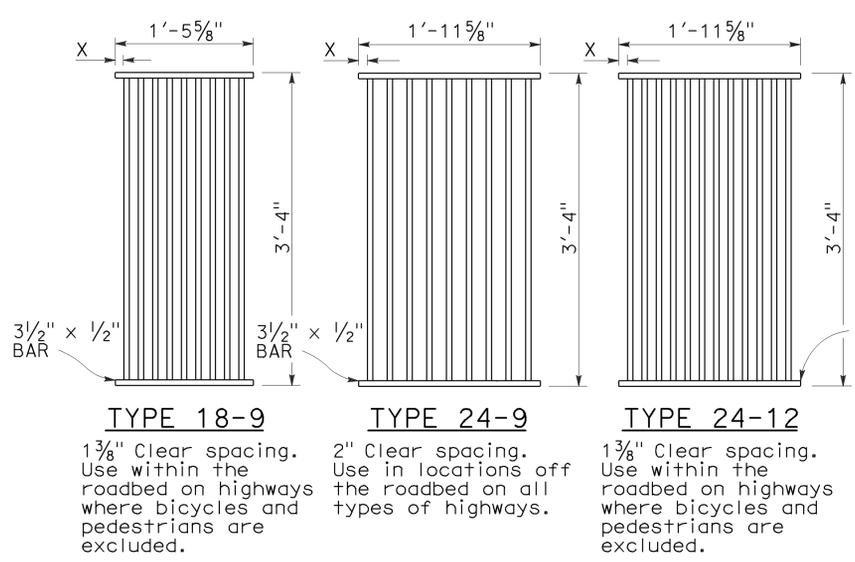
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	137	212

Raymond Don Isztou
REGISTERED CIVIL ENGINEER

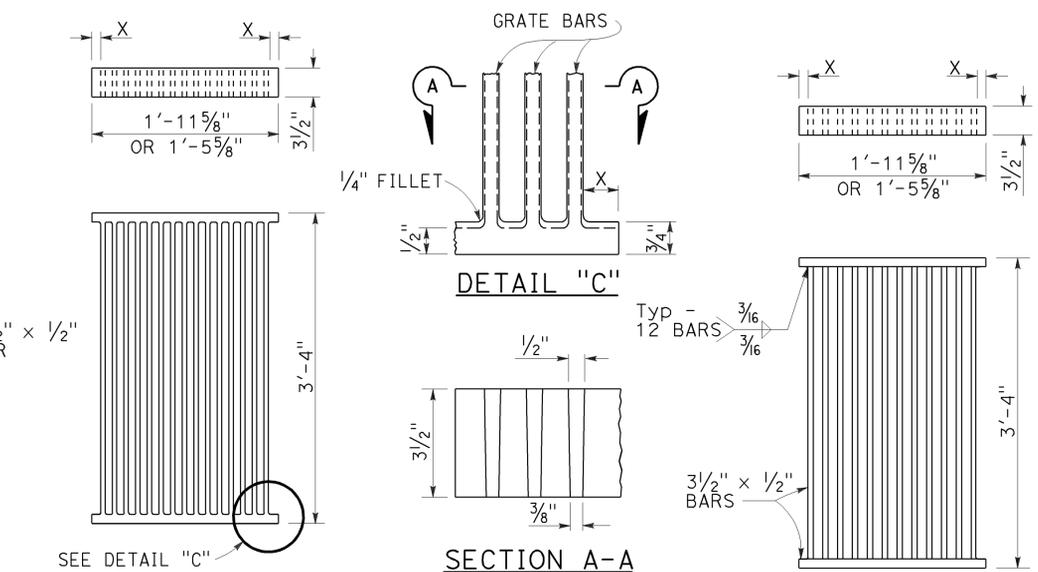
April 19, 2013
PLANS APPROVAL DATE

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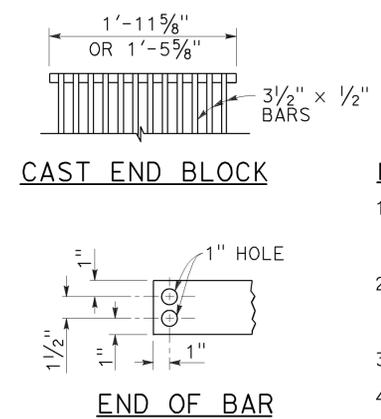
Raymond Don Isztou
REGISTERED PROFESSIONAL ENGINEER
No. C37332
Exp. 6-30-14
CIVIL
STATE OF CALIFORNIA



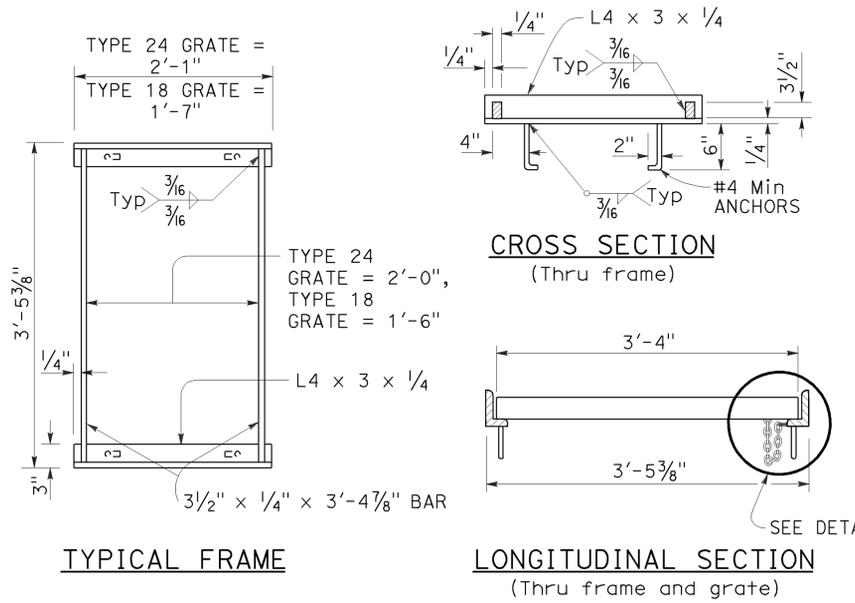
RECTANGULAR GRATE DETAILS
(See table below)



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



CAST END BLOCK
END OF BAR

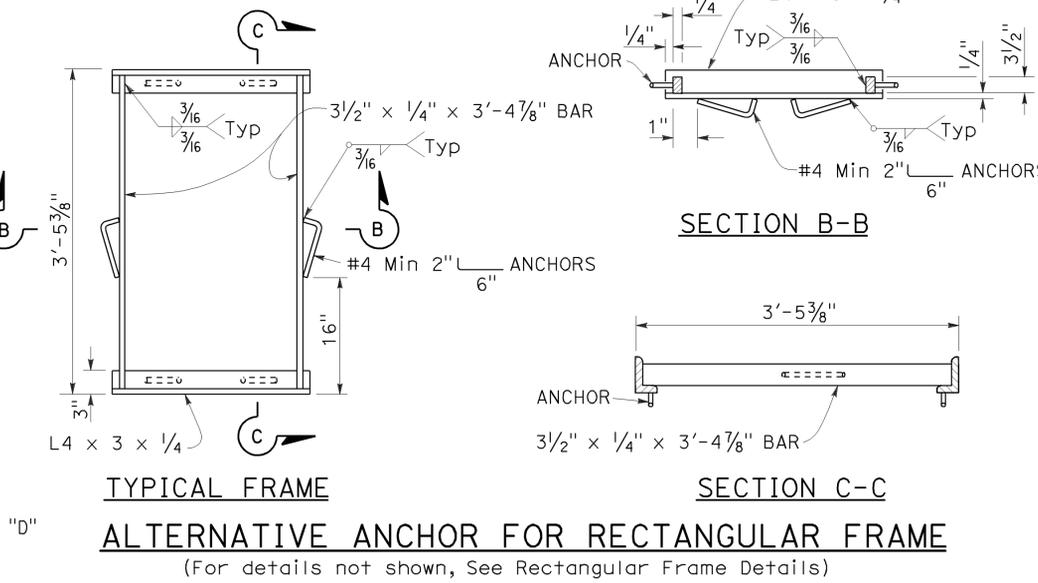


RECTANGULAR FRAME DETAILS
(For all rectangular grates)

GRATE BAR SPACING TABLE

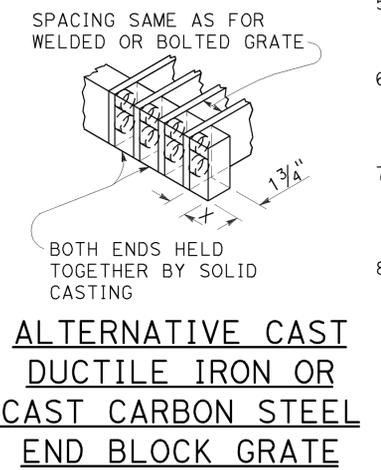
TYPE	No. OF BARS	CLEAR BAR SPACING	X
18-9	9	1 3/8"	1 1/16"
24-9	9	2"	1 9/16"
24-12	12	1 3/8"	1 1/4"

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

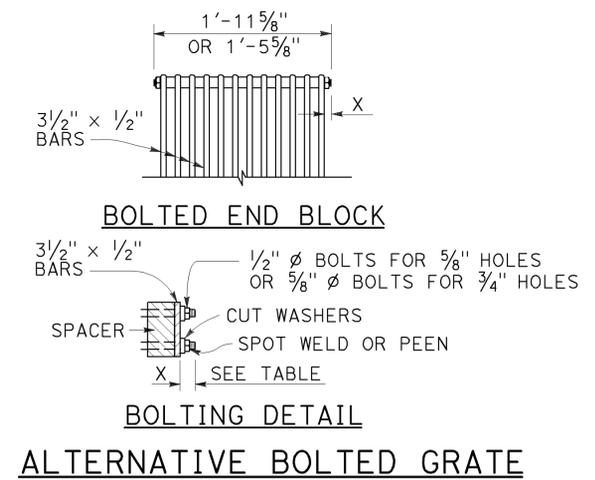


TYPICAL FRAME
ALTERNATIVE ANCHOR FOR RECTANGULAR FRAME
(For details not shown, See Rectangular Frame Details)

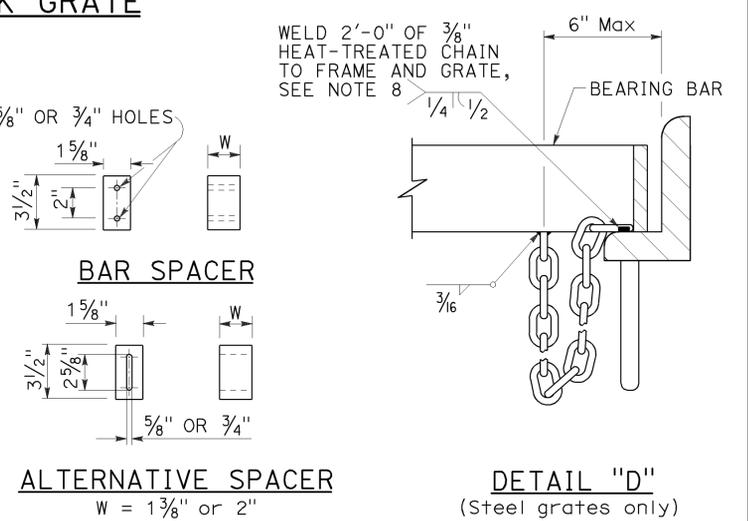
INLET TYPE	GRATE TYPE	No. OF GRATES	WEIGHT LB
GDO	24-12	2	634
GOL-7	24-12	1	326
GOL-10	24-12	1	326
G0,G1,G2,G3,G4 (TYPE 24)	24-9	1	263
	24-12	1	326
G4 (TYPE 18),G5,G6	18-9	1	249
GT1	18-9	2	498
GT2	18-9	2	498
GT3	24-12	2	652
GT4	24-12	2	652
TRASH RACK			22
GRATE CHAIN			3



ALTERNATIVE CAST DUCTILE IRON OR CAST CARBON STEEL END BLOCK GRATE



ALTERNATIVE BOLTED GRATE



BAR SPACER
ALTERNATIVE SPACER W = 1 3/8" or 2"
DETAIL "D" (Steel grates only)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
GRATE DETAILS No. 1
NO SCALE

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

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

REVISED STANDARD PLAN RSP D77A

2010 REVISED STANDARD PLAN RSP D77A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	138	212

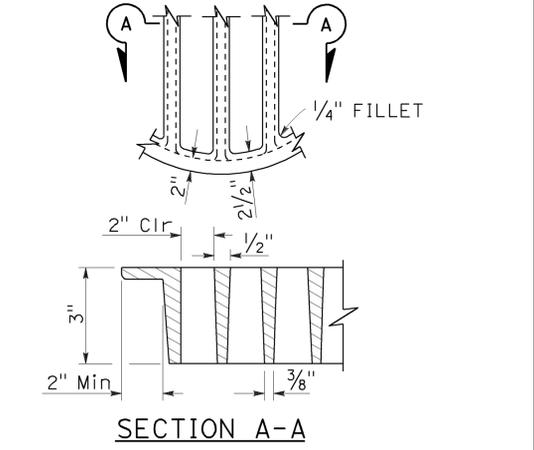
Raymond Don Jago
REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

Raymond Don Jago
REGISTERED PROFESSIONAL ENGINEER
No. C37332
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 SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 9-11-15



ALTERNATIVE CAST DUCTILE IRON GRATE OR CAST CARBON STEEL GRATE TYPE 36R AND 36RX

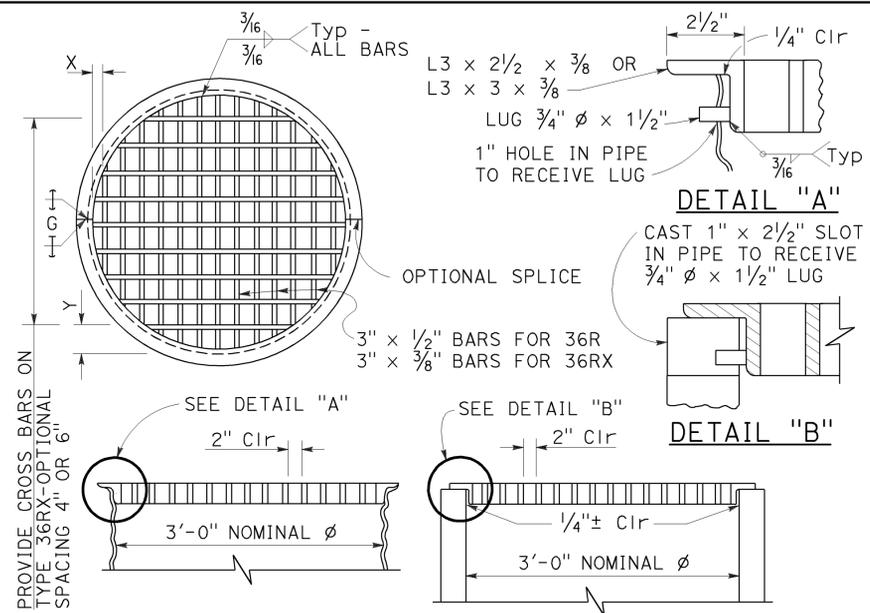
BASIS FOR Misc IRON AND STEEL FINAL PAY WEIGHTS FOR DRAINAGE INLETS

INLET TYPE	GRATE TYPE	No. OF GRATES	WEIGHT LB
GDO (SEE NOTE 4)	24-10C	2	391
	24-10S	2	456
	24-12X	2	473
G0,G0L,G1,G2, G3,G4 (TYPE 24)	24-13	2	374
	24-10C	1	202
	24-10S	1	229
	24-12X	1	239
G4 (TYPE 18) G5,G6	24-13	1	188
	18-8S	1	187
	18-9X	1	187
GT1,GT2	18-10	1	149
	18-8S	2	374
	18-9X	2	374
GT3,GT4	18-10	2	298
	24-10C	2	404
	24-10S	2	458
	24-12X	2	478
ODI	24-13	2	376
	36RX (Mod)	1	196
GMP,GCP,GCPI	36RX	1	215
	36R	1	236
TRASH RACK			22
GRATE CHAIN			3

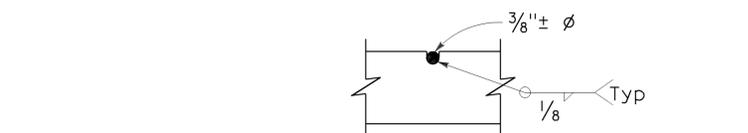
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
GRATE DETAILS No. 2
NO SCALE

RSP D77B DATED APRIL 19, 2013 SUPERSEDES RSP D77B DATED JULY 20, 2012 AND STANDARD PLAN D77B DATED MAY 20, 2011 - PAGE 165 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP D77B



TYPE 36R AND 36RX GRATE DETAILS



CROSS BAR DETAIL TYPE 36RX GRATE (WELDED STEEL)

CROSS BAR DETAIL ALTERNATIVE CAST DUCTILE IRON GRATE OR CAST CARBON STEEL GRATE TYPE 36RX MODIFIED TYPE 36R AND 36RX GRATE FOR ODI INLET

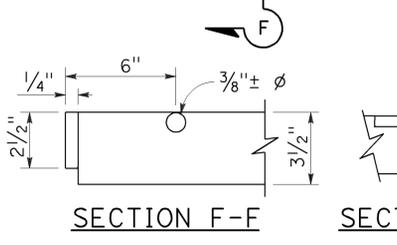
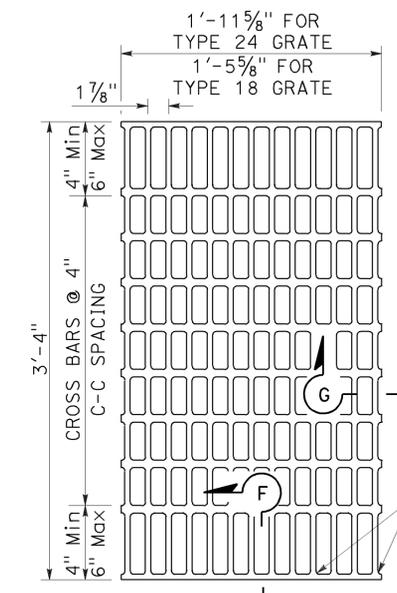
- NOTES:**
- When alternative grates are allowed - Final pay based on alternative with the lesser weight.
 - Use frame shown on Standard Plan D74A, D74B or RSP D77A as appropriate.
 - When Type 24-10S, 24-12X or 24-13 grates are used with GDO Inlets, a 1/4" x 3 1/2" x 3'-4 7/8" steel bar shall be welded across the center of inlet frame to separate the individual grates.
 - See Revised Standard Plan RSP D77A for connecting chain to welded grate and frame. When chain is required, do not use cast ductile iron grate.

GRATE BAR SPACING TABLE

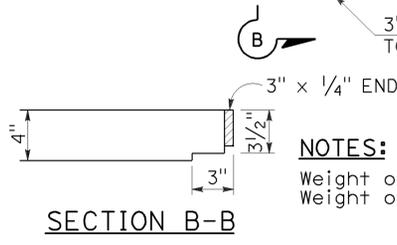
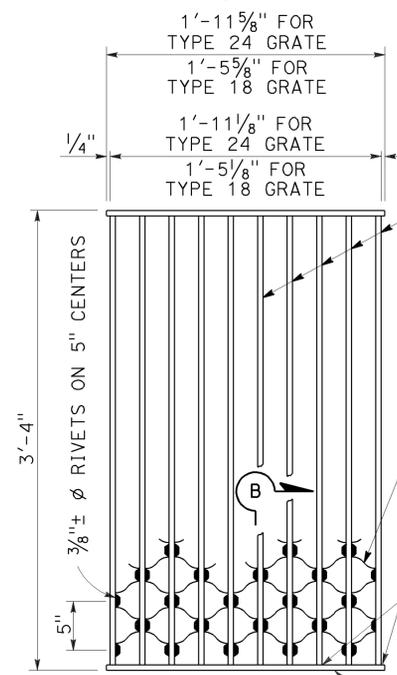
TYPE	No. OF BARS	CLEAR BAR SPACING	X	Y		Z
				4" SPACING	6" SPACING	
36R	13	2"	2 1/8"	-	-	-
36RX (STEEL)	15	2"	3/16"	3 3/4"	5 3/4"	-
36RX (CAST)	13	2"	2 1/8"	3 3/4"	5 3/4"	-
36R Mod	12	2"	2 1/8"	-	-	5"
36RX Mod (STEEL)	13	2"	3/16"	3 3/4"	5 3/4"	5 11/16"
36RX Mod (CAST)	12	2"	2 1/8"	3 3/4"	5 3/4"	5"

NOTES:

Bearing bars to be 3 1/2" x 1/4" bars on 1 7/8" centers.
3/8" ± Ø Cross bars may be fillet welded, resistance welded or electroforged to bearing bars.
Weight of Type 24 grate = 141 LBS.
Weight of Type 18 grate = 107 LBS. (Type 24 grate shown).

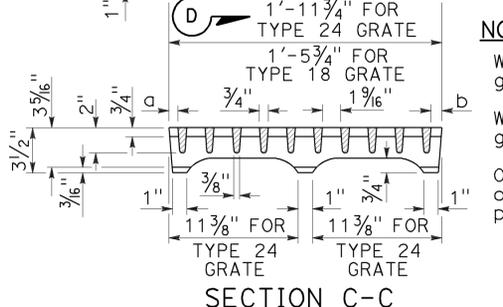
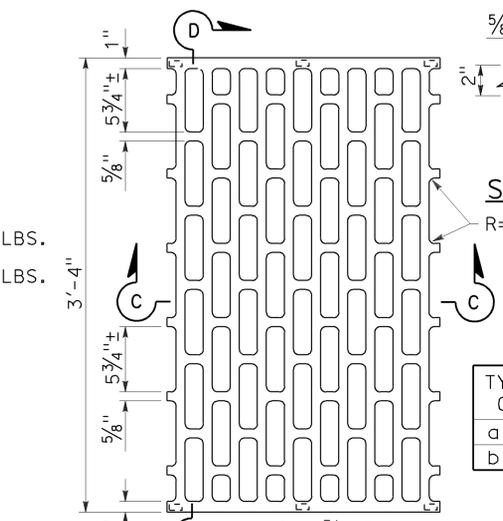


TYPE 18-10 AND 24-13 GRATE (Welded Steel)

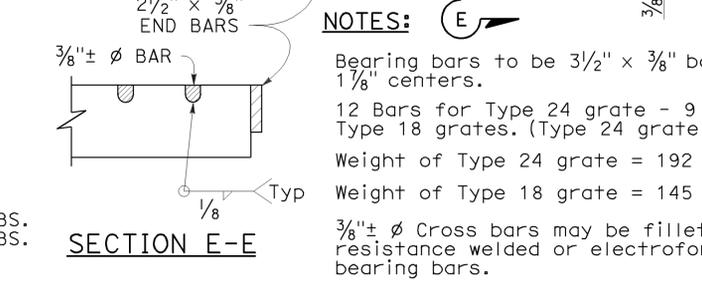
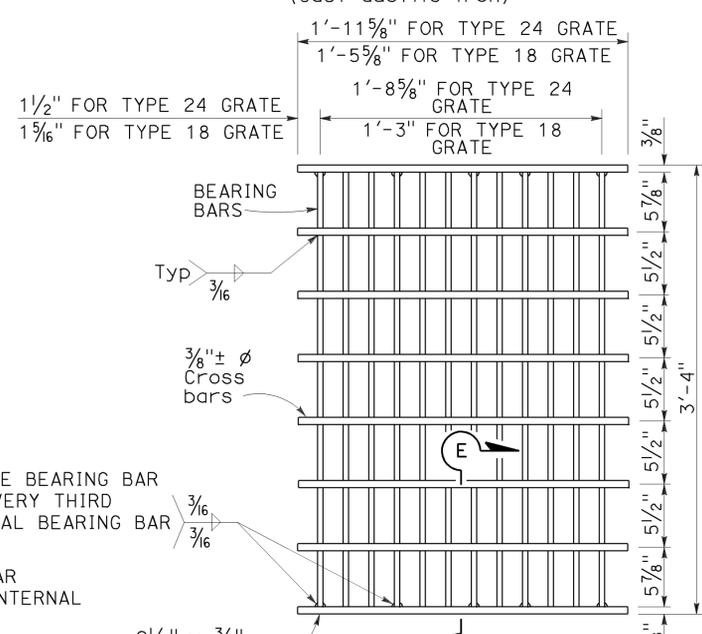


TYPE 18-8S AND 24-10S GRATE (Welded Steel) Reticuline type

NOTES:
Weight of Type 24 grate = 182 LBS.
Weight of Type 18 grate = 145 LBS.



TYPE 18-8C AND 24-10C GRATE (Cast ductile iron)



TYPE 18-9X AND 24-12X GRATE (Welded Steel)

NOTES:
Bearing bars to be 3 1/2" x 3/8" bars on 1 7/8" centers.
12 Bars for Type 24 grate - 9 bars for Type 18 grates. (Type 24 grate shown).
Weight of Type 24 grate = 192 LBS.
Weight of Type 18 grate = 145 LBS.
3/8" ± Ø Cross bars may be fillet welded, resistance welded or electroforged to bearing bars.

TYPE 18 GRATE	TYPE 24 GRATE
a = 3/8"	a = 7/8"
b = 3/8"	b = 3/4"

NOTES:
Weight of Type 24 grate = 155 LBS.
Weight of Type 18 grate = 130 LBS.
On Type 18 grate omit center bearing point.

2010 REVISED STANDARD PLAN RSP D77B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	139	212

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

TO ACCOMPANY PLANS DATED 9-11-15

ANNULAR AND HELICAL PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (CSP ONLY)				ANGLE								
				CSP	CAP	CSP	CAP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND		
												CSP	CAP	CSP	CAP	CSP	CAP	CSP		
TWO PIECE INTEGRAL FLANGE	1/2' x 1/4"	6"	7"	0.064"-0.168"		0.052"														
	1/2' x 1/4"	8"-10"	7"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"													
ANNULAR	2 2/3" x 1/2"	THROUGH 24"	12"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"							2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"
HUGGER	2 2/3" x 1/2" REROLLED END	THROUGH 24"	10 1/2"	0.064"-0.168"		0.064"		0.079"	1/2"	7/8"	32 ksi									

NOTES:

- For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
- Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
- Use 1/4" gage line dimension on attached angle leg for rivets and spot welds.
- Band thickness shall not be less than:
 - 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
 - 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
- Dimensions, thicknesses and strengths shown are minimum.
- For pipe arches use same width band as for round pipe of equal periphery.
- Fillet welds of equivalent strength may be substituted for spot welds or rivets.
- Spot welds shall develop minimum required strength of strap.
- Pipe with rerolled ends having at least two 2 2/3" x 1/2" annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having 2 2/3" x 1/2" corrugations.
- For downrain applications, two piece integral flange couplers shall have factory applied sleeve type rubber gaskets with a minimum length of 7" measured along the length of the pipe.

SPIRAL RIB PROFILE

COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (SSRP ONLY)				ANGLE								
				SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	DIMENSIONS		BOLTS (No.- Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND		
												SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP		
ANNULAR	2 2/3" x 1/2" * REROLLED END	24"	12"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"							2" x 2" x 3/16"	2" x 2" x 3/16"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"
HUGGER	2 2/3" x 1/2" * REROLLED END	24"	10 1/2"	0.064"-0.168"		0.064"		0.079"	1/2"	7/8"	32 ksi									

* See Note 11.

11. All profiles of Spiral Rib Pipe (3/4" x 3/4" ribs at 7/2" pitch and 3/4" x 1" ribs at 1 1/2" pitch in both steel and aluminum and 3/4" x 1" ribs at 8 1/2" pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be 2 2/3" x 1/2" annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**CORRUGATED METAL PIPE
COUPLING DETAILS No. 7
DOWNDRAIN**

NO SCALE

RSP D97G DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN D97G DATED MAY 20, 2011 - PAGE 202 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP D97G

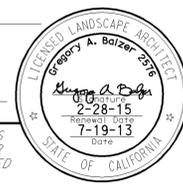
2010 REVISED STANDARD PLAN RSP D97G

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	140	212

Gregory A. Balzer
LICENSED LANDSCAPE ARCHITECT

July 19, 2013
PLANS APPROVAL DATE

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TO ACCOMPANY PLANS DATED 9-11-15

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 Ctd 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

M

Max MAXIMUM
MBGR METAL BEAM GUARD RAILING
MCV MANUAL CONTROL VALVE
MIC MASTER IRRIGATION CONTROLLER
Min MINIMUM
MIPT MALE IRON PIPE THREAD
Misc MISCELLANEOUS
Mtl 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
PKt 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

NOTES:

See Revised Standard Plan RSP T9 for tables.

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

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

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	141	212

Devinder Singh
REGISTERED CIVIL ENGINEER

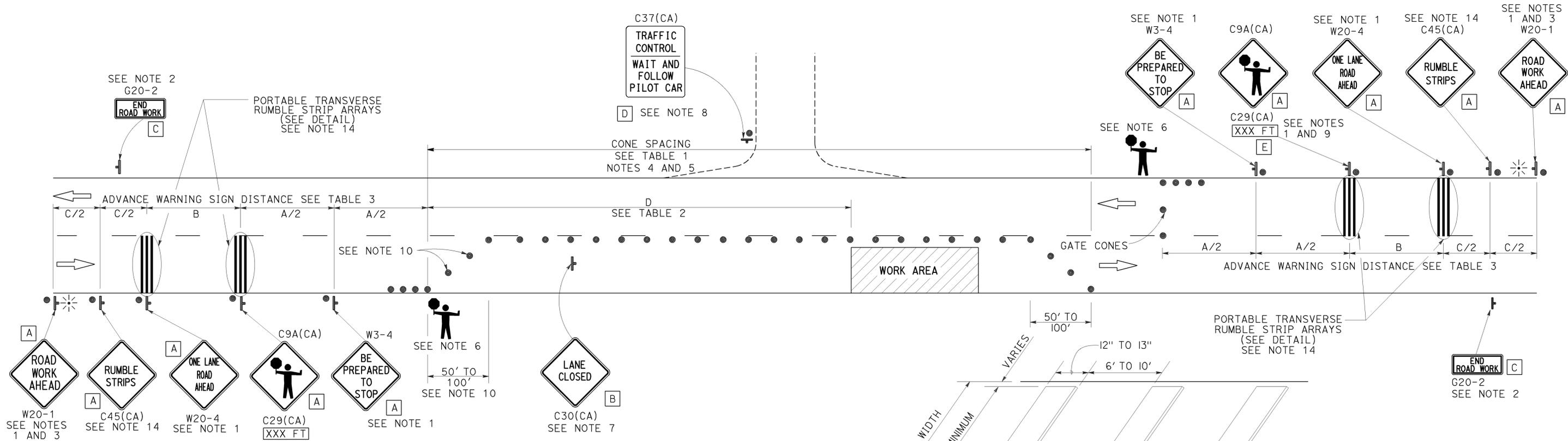
October 17, 2014
PLANS APPROVAL DATE

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
Devinder Singh
No. C50470
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL

TO ACCOMPANY PLANS DATED 9-11-15



NOTES:

- Each advance warning sign in each direction of travel shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
- A G20-2 "END ROAD WORK" sign, as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious, or ends within a larger project's limits.
- If the W20-1 sign would follow within 2000' of a stationary W20-1 or G20-1 "ROAD WORK NEXT _____ MILES", use a W20-4 sign for the first advance warning sign.
- All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
- Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime closures only.
- Additional advance flaggers may be required. Flagger should stand in a conspicuous place, be visible to approaching traffic as well as approaching vehicles after the first vehicle has stopped. During the hours of darkness, the flagging station and flagger shall be illuminated and clearly visible to approaching traffic. The illumination footprint of the lighting on the ground shall be at least 20' in diameter. Place a minimum of four cones at 50' intervals in advance of flagger station as shown.
- Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals throughout extended work areas. They are optional if the work area is visible from the flagger station.
- When a pilot car is used, place a C37(CA) "TRAFFIC CONTROL-WAIT AND FOLLOW PILOT CAR" sign with black legend on white background at all intersections, driveways and alleys without a flagger within traffic control area. Signs shall be clean and visible at all times. Where traffic can not be effectively self-regulated, at least one flagger shall be used at each intersection within traffic control area.
- An optional C29(CA) sign may be placed below the C9A(CA) sign.
- Either traffic cones or barricades shall be placed on the taper. Barricades shall be Type I, II, or III.
- The color of the portable transverse rumble strips shall be black or orange. Use 2 arrays, each array shall consist of 3 rumble strips.
- Portable transverse rumble strips shall not be placed on sharp horizontal or vertical curves nor shall they be placed through pedestrian crossings.
- If the portable transverse rumble strips become out of alignment (skewed) by more than 6 inches, measured from one end to the other, they shall be readjusted to bring the placement back to the original location.
- Portable transverse rumble strips are not required if any one of the following conditions is satisfied:
 - Work duration occupies a location for four hours or less
 - Posted speed limit is below 45 MPH
 - Work is of emergency nature
 - Work zone is in snow or icy weather conditions

LEGEND

- TRAFFIC CONE
- † TEMPORARY TRAFFIC CONTROL SIGN
- ⚡ PORTABLE FLASHING BEACON
- 🚧 FLAGGER

PORTABLE TRANSVERSE RUMBLE STRIP ARRAY DETAIL

LANE WIDTH 10' MINIMUM

VARIES

50' TO 100'

12" TO 13"

6' TO 10'

5/8" TO 3/4"

SIGN PANEL SIZE (Min)

- A 48" x 48"
- B 30" x 30"
- C 36" x 18"
- D 36" x 42"
- E 20" x 7"

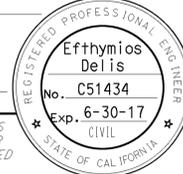
TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON TWO LANE CONVENTIONAL HIGHWAYS

NO SCALE

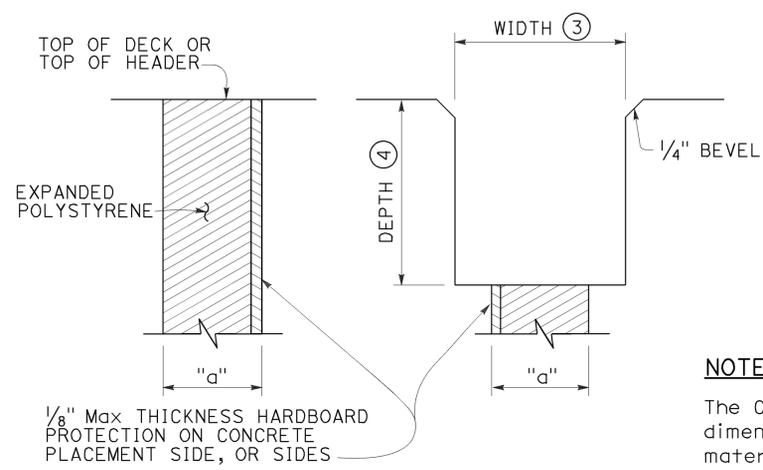
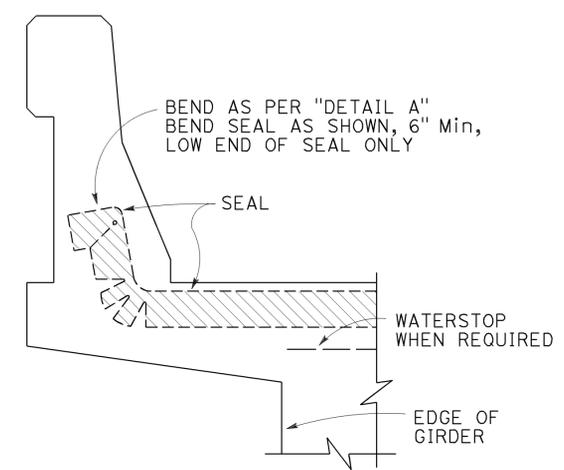
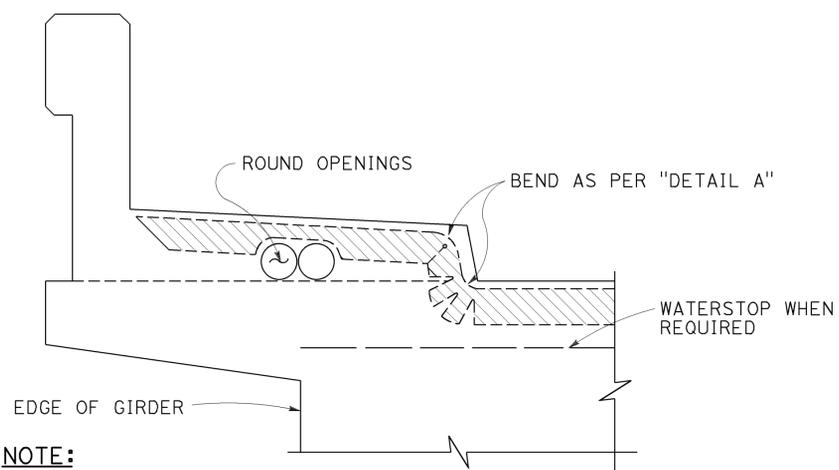
RSP T13 DATED OCTOBER 17, 2014 SUPERSEDES RSP T13 DATED JULY 18, 2014 AND RSP T13 DATED APRIL 19, 2013 AND STANDARD PLAN T13 DATED MAY 20, 2011 - PAGE 241 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP T13

2010 REVISED STANDARD PLAN RSP T13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	142	212
					
REGISTERED CIVIL ENGINEER October 30, 2015 PLANS APPROVAL DATE <small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

TO ACCOMPANY PLANS DATED 9-11-15



NOTE:
 Type "B" seal shown. Type "A" seals to conform to the general path of seal shown, cuts for bending not required. Bend type "A" seals 3" up into curb or barrier rail on only the low end of the seal.

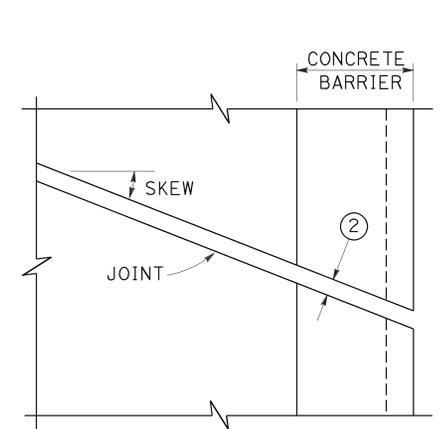
NOTE:
 The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

CONCRETE BARRIER AND SIDEWALK

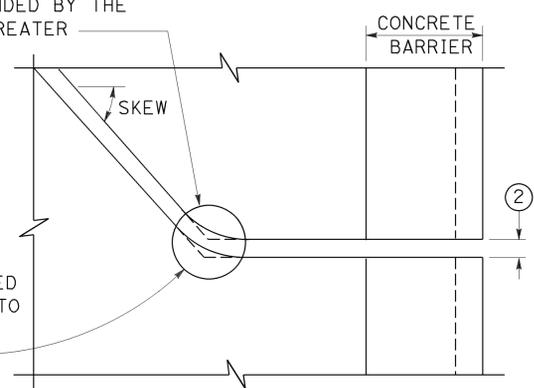
CONCRETE BARRIER

FORMING DETAIL SAWCUT DETAIL

JOINT SEALS DETAILS



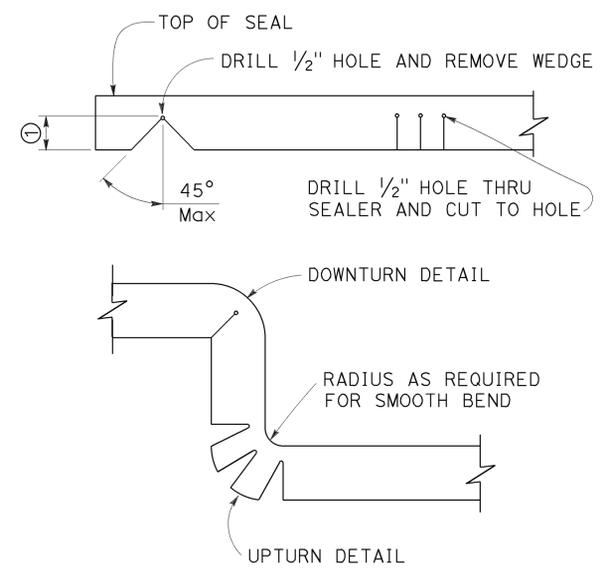
Min ϕ RADIUS TO BE 4 TIMES UNCOMPRESSED WIDTH OF SEAL OR AS RECOMMENDED BY THE MANUFACTURER, WHICHEVER IS GREATER



IN LIEU OF SAW CUTTING, THIS AREA MAY BE BLOCKED OUT AND RECONSTRUCTED TO MATCH SAW CUTTING ON BOTH SIDES.

PLAN OF JOINT (SKEW $\leq 20^\circ$)

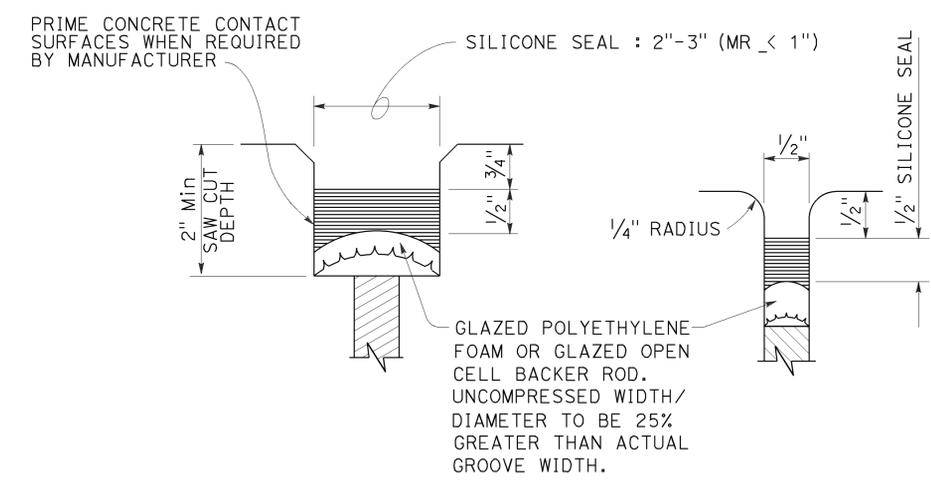
PLAN OF JOINT (SKEW $> 20^\circ$)



- NOTES:**
- Make smooth cuts from the bottom of seal to 1/2" clear of top leaving at least one complete cell between the top of the cut and top of the seal. When necessary cut back of seal to clear conduit and round openings.
 - Opening in barrier to match width of sawn deck joint.
 - Sawcut groove widths shall be as ordered by the Engineer.
 - Depth of sawcut: Type A - Depth to be 2" minimum.
 Type B - Depth to be equal to or greater than the depth of seal measured along the contact surface, when compressed to minimum width position (W₂) plus dimensions shown.
 - MR (movement rating) as shown on other plan sheets.
 - Other depths must be approved by the Engineer.
 - A sidewalk joint shall be covered by an expansion joint armor.

DIMENSIONS "a" OF JOINT REQUIRED

MOVEMENT RATING (MR) (5)	BRIDGE TYPE	"a" DIMENSION		
		DECK	CONCRETE	PLACED
		WINTER	FALL-SPRING	SUMMER
2"	ALL EXCEPT CIP/PS	1 1/2"	1 1/4"	3/4"
	CIP/PS	1 1/4"	1"	1/2"
1 1/2"	ALL EXCEPT CIP/PS	1 1/4"	1"	1/2"
	CIP/PS	1"	3/4"	1/2"
1"	ALL EXCEPT CIP/PS	1"	3/4"	1/2"
	CIP/PS	3/4"	1/2"	1/2"
1/2"	ALL EXCEPT CIP/PS	3/4"	3/4"	1/2"
	CIP/PS	1/2"	1/2"	1/2"

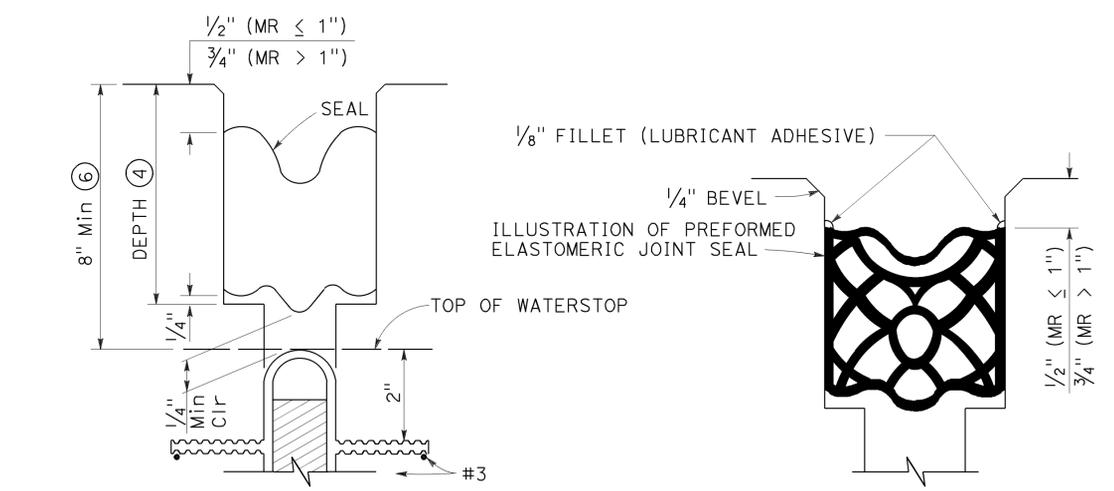


TYPE A SEAL

Movement rating : Silicone = 1" Max

TYPE AL SEAL

Longitudinal joints only



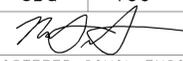
TYPE B JOINT SEAL IN MINIMUM WIDTH POSITION (W₂)

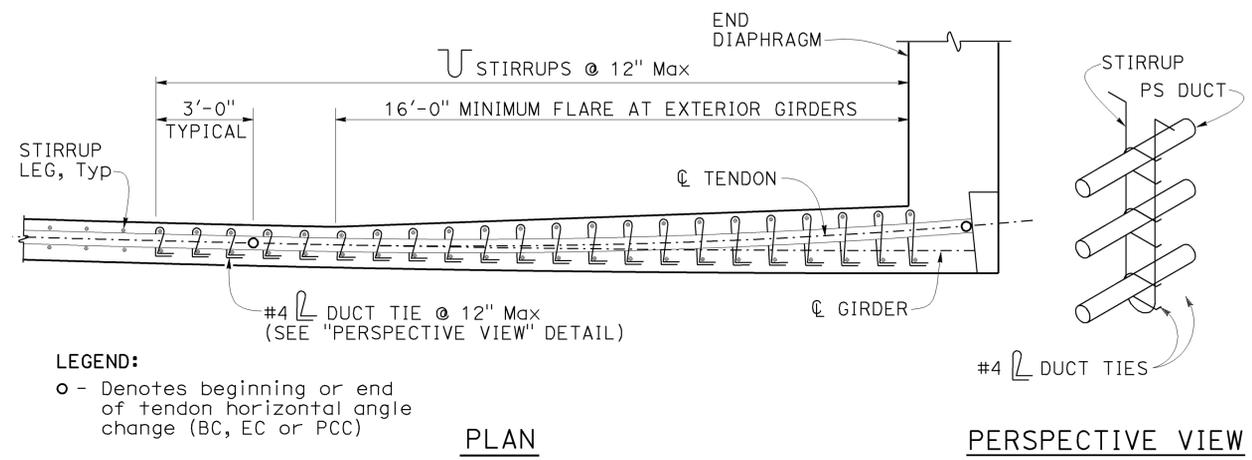
TYPE B SEAL

Movement Rating $\leq 2"$

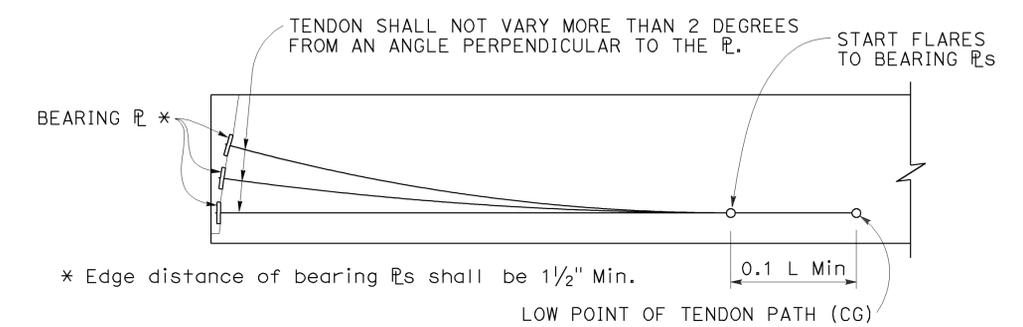
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
JOINT SEALS
(MAXIMUM MOVEMENT RATING = 2")

NO SCALE
 RSP B6-21 DATED OCTOBER 30, 2015 SUPERSEDES
 STANDARD PLAN B6-21 DATED MAY 20, 2011 -
 PAGE 283 OF THE STANDARD PLANS BOOK DATED 2010.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	143	212
 REGISTERED CIVIL ENGINEER No. C57968 Exp. 6-30-14 CIVIL STATE OF CALIFORNIA					
July 19, 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>					

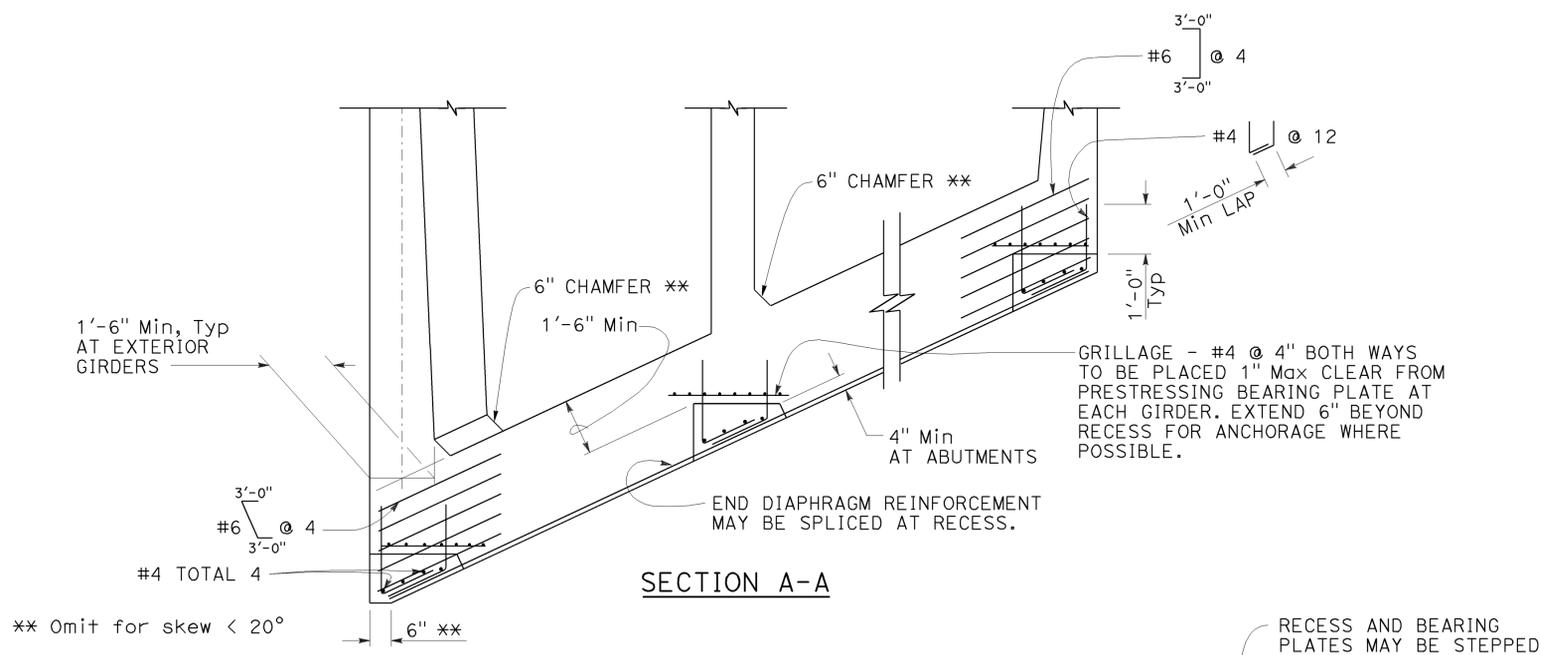


DUCT TIES AT TENDON HORIZONTAL ANGLE CHANGES
DETAIL 5-1

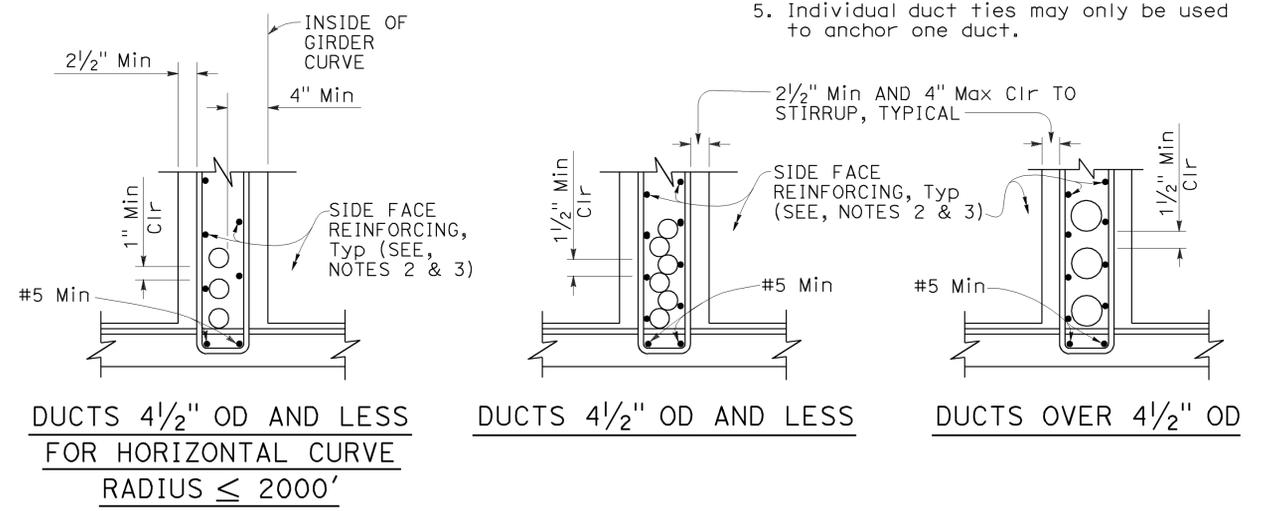


ELEVATION - BEARING PLATE AND PRESTRESSING PATH
DETAIL 5-2

- TO ACCOMPANY PLANS DATED 9-11-15
- NOTES FOR DETAIL 5-1**
1. Tendon horizontal angle change at end diaphragm shown. Duct tie placement similar for other locations where tendon horizontal angle changes occur. For curved girders place duct ties at tendon angle changes where tendon radius is smaller than girder radius.
 2. Adjacent duct ties may be staggered to facilitate placement if stirrup spacing is less than 12 inches.
 3. Place closed end of duct ties toward inside of tendon curve.
 4. Wrap duct ties around both stirrup legs.
 5. Individual duct ties may only be used to anchor one duct.

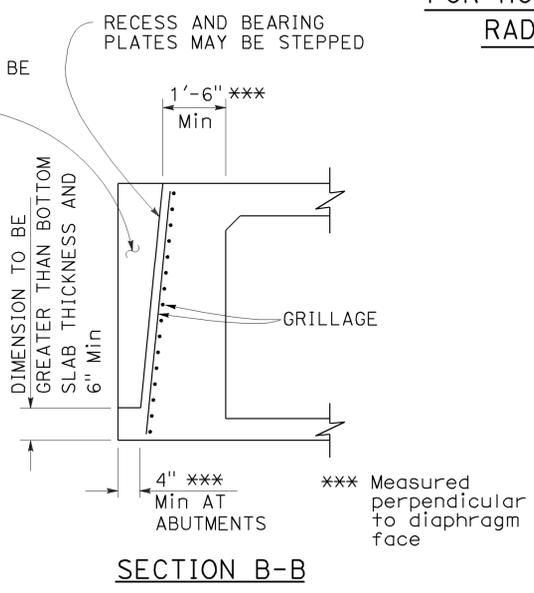


PRESTRESS ANCHORAGE DETAILS
AT END DIAPHRAGMS
DETAIL 5-3



CLEARANCE REQUIREMENTS FOR DUCTS
DETAIL 5-4

- NOTES FOR DETAIL 5-4:**
1. Stirrups may also be used.
 2. For additional details, see Standard Plan B7-1, and Project Plans.
 3. Bar reinforcing which interferes with prestressing ducts may be adjusted as approved by the Engineer.



SECTION B-B

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**CAST-IN-PLACE
 POST-TENSIONED GIRDER DETAILS**
 NO SCALE

RSP B8-5 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN B8-5
 DATED MAY 20, 2011 - PAGE 291 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP B8-5

2010 REVISED STANDARD PLAN RSP B8-5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	146	212

Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE
 9-11-15
 PLANS APPROVAL DATE

Peter W. Norboe
 No. C57519
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA

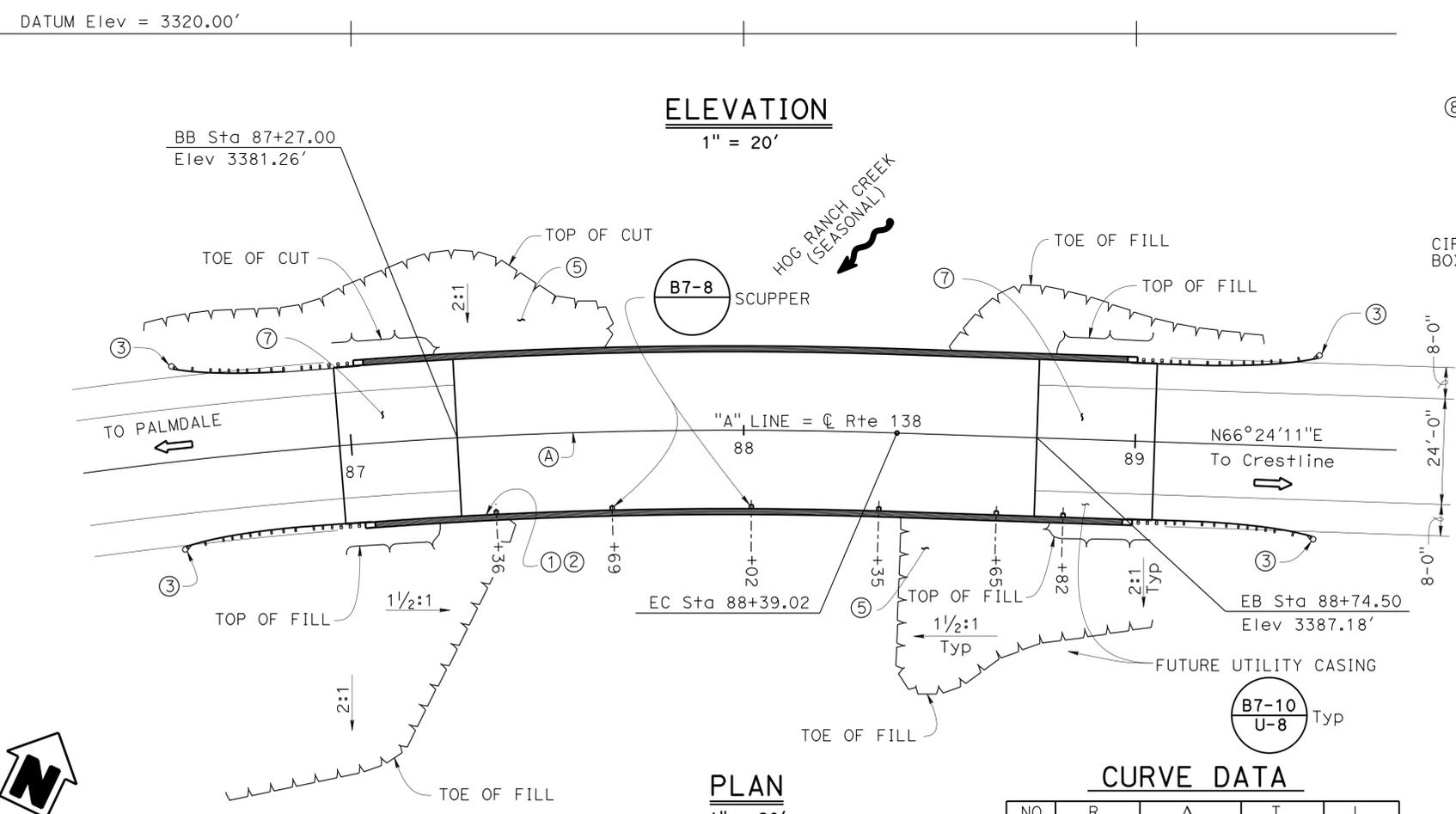
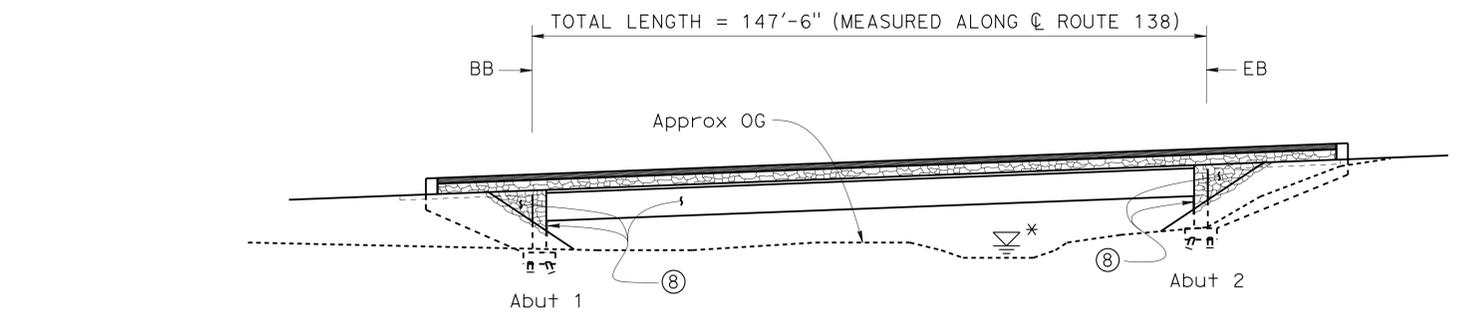
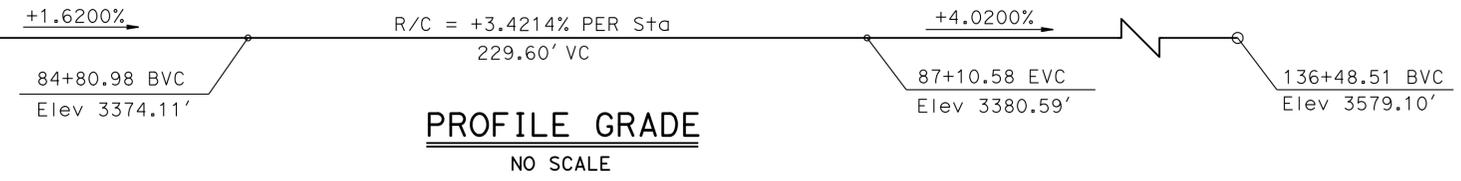
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NOTES:

- For Index to Plans, General Notes, and Standard Plans List, see "INDEX TO PLANS" sheet.
- For pile data table, see "INDEX TO PLANS" sheet.

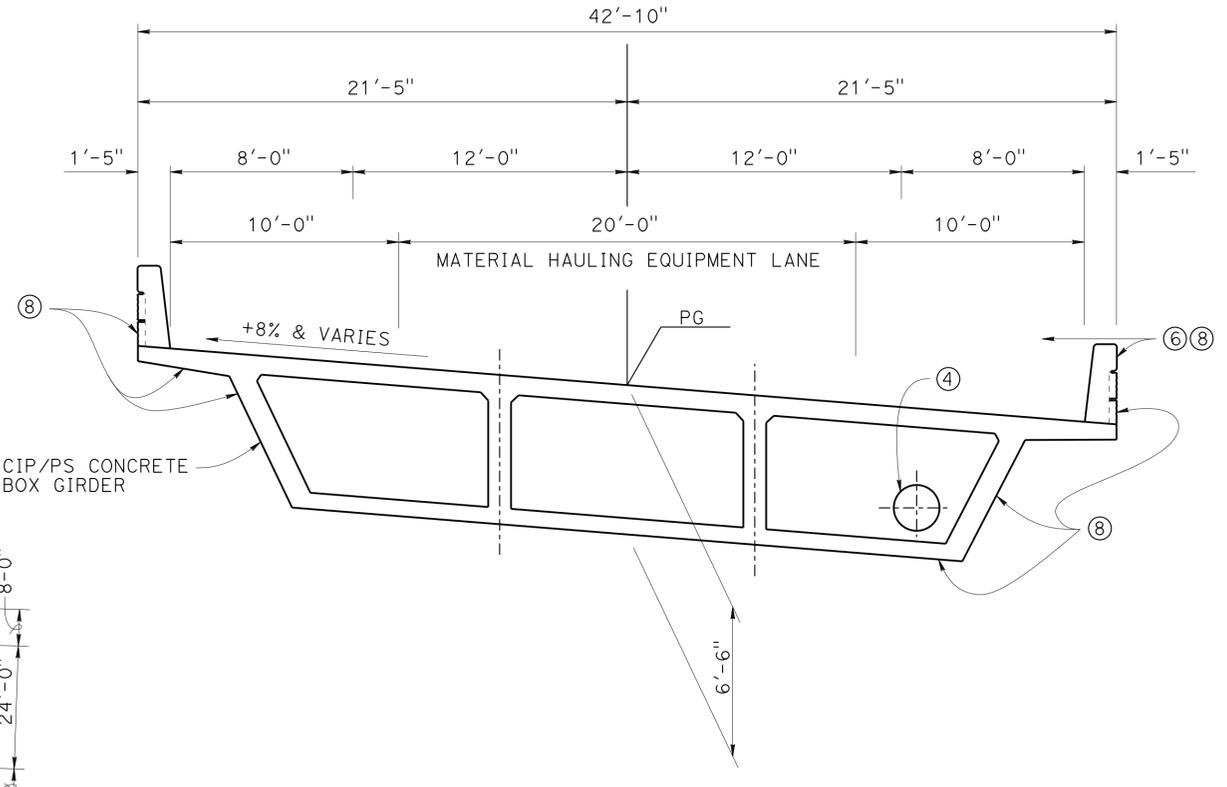
QUANTITIES

STRUCTURE EXCAVATION (BRIDGE)	301	CY
STRUCTURE BACKFILL (BRIDGE)	278	CY
FURNISH PILING (CLASS 140) (ALTERNATIVE W MODIFIED)	1,247	LF
DRIVE PILE (CLASS 140) (ALTERNATIVE W MODIFIED)	44	EA
PRESTRESSING CAST-IN-PLACE CONCRETE	LUMP	SUM
STRUCTURAL CONCRETE, BRIDGE FOOTING	56	CY
STRUCTURAL CONCRETE, BRIDGE	592	CY
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	98	CY
RANDOM BOULDER TEXTURE	656	SQFT
JOINT SEAL (MR 2")	80	LF
BAR REINFORCING STEEL (BRIDGE)	65,576	LB
BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	80,843	LB
PREPARE AND STAIN CONCRETE	3,257	SQFT
24" WELDED STEEL PIPE CASING (BRIDGE)	78	LF
CONCRETE BARRIER (TYPE 742 MODIFIED)	391	LF



CURVE DATA

NO.	R	Δ	T	L
(A)	1246.72'	28°40'44"	318.70'	624.03'



LEGEND:

- ① PAINT "BRIDGE NUMBER 54-1218"
- ② PAINT "HOG RANCH CREEK BRIDGE"
- ③ MGS, SEE "ROADWAY PLANS"
- ④ FUTURE UTILITY OPENING
- ⑤ RSP, SEE "ROADWAY PLANS"
- ⑥ CONCRETE BARRIER TYPE 742 (MODIFIED)
- ⑦ STRUCTURE APPROACH TYPE N(30S)
- ⑧ PREPARE AND STAIN CONCRETE SURFACE (ALL EXPOSED SURFACES EXCLUDING BRIDGE DECK AND APPROACH SLAB)
- † SCUPPER LOCATION

GORDON DANKE DESIGN ENGINEER	DESIGN	BY Pete Norboe	CHECKED L. Jimenez	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	BRIDGE NO.	54-1218	HOG RANCH CREEK BRIDGE
	DETAILS	BY David Elliott	CHECKED R. Candiotti	LAYOUT	BY Pete Norboe		CHECKED R. Candiotti		
	QUANTITIES	BY Pete Norboe	CHECKED R. Candiotti	SPECIFICATIONS	BY Theresa Nedwick	CHECKED Theresa Nedwick			GENERAL PLAN

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
 UNIT: 3594
 PROJECT NUMBER & PHASE: 0800020191-1
 CONTRACT NO.: 08-003004
 DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
1-13-14	1	17

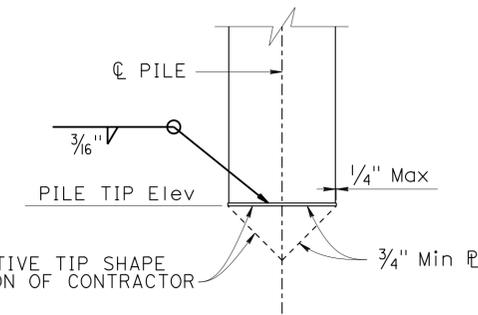
STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.09-01-10)
 FILE => 54-1218-a-gp-sheet.dgn

PILE DATA TABLE

Support Location	Pile Type (b)	Nominal Resistance (klps)		Design Tip Elevation (Ft)	Specified Tip Elevation (Ft)	Design Loading (klps)
		Compression	Tension			
Abutment 1	Modified Class 140 Alt W (PP 14 x 0.438)	280	0	3337 (a)	3337	280
Abutment 2	Modified Class 140 Alt W (PP 14 x 0.438)	280	0	3337 (a)	3337	280

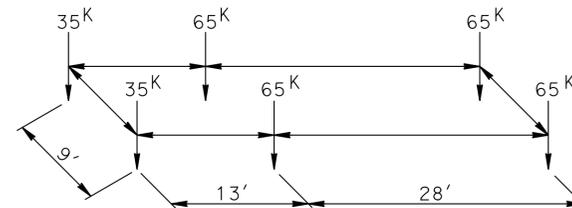
NOTE:

- a) Design tip elevations are controlled by: Compression
- b) "Modified" Class 140, Alternative "W" pipe pile is to be driven with either a flat or conical steel tip welded to the pile tip.

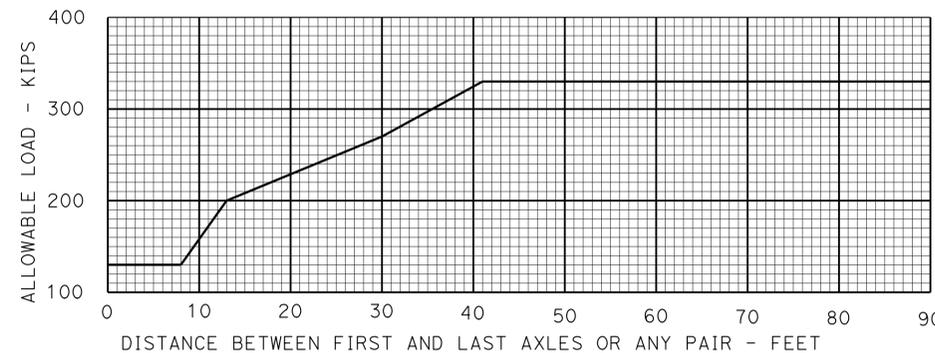


CLASS 140 ALTERNATIVE "W" MODIFIED TIP

No Scale
(See Note b)



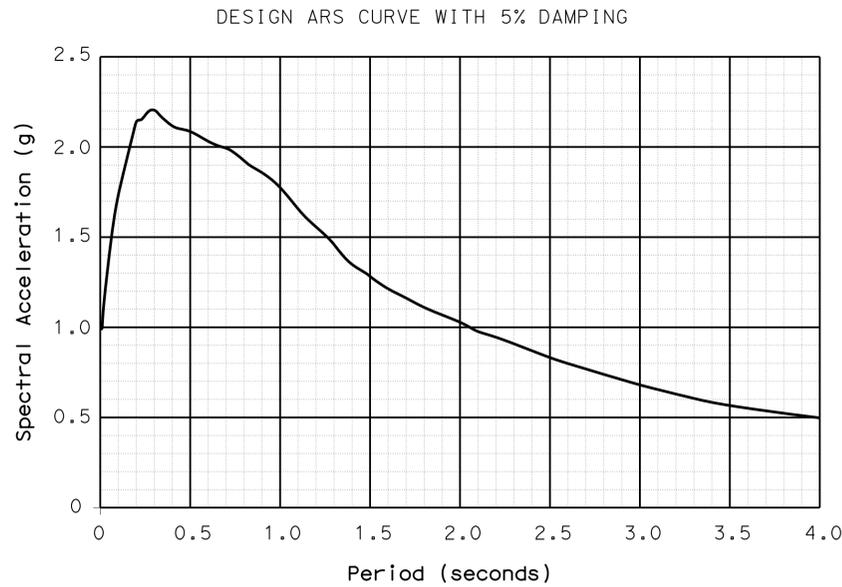
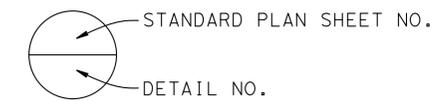
Axle pairs less than 8 feet will be considered as a single axle.
Maximum single axle load = 130 Kips
The gross axle loads, in pairs or in total, must be within the limits shown below.



MATERIALS HAULING EQUIPMENT LOADING

STANDARD PLANS 2010

SHEET NO.	TITLE
B0-1	Bridge Details
B0-3	Bridge Details
B0-5	Bridge Details
B0-13	Bridge Details
B2-5	Pile Details Class 90 and Class 140
B6-21	Joint Seals (Maximum Movement Rating = 2")
B7-1	Box Girder Details
B7-8	Deck Drainage Details
B7-10	Utility Opening Box Girder
RSP B8-5	Cast-In-Place Prestressed Girder Details
RSP B11-57	Concrete Barrier Type 742
B14-5	Water Supply Line (Details) (Pipe Sizes Less Than NPS 4)



ACCELERATION RESPONSE SPECTRA

No Scale

GENERAL NOTES

LOAD AND RESISTANCE FACTOR DESIGN

- DESIGN:**
AASHTO LRFD Bridge Design Specifications, 4th edition with the 2007 Interims and the November 2011 California Amendments
- SEISMIC DESIGN:**
Caltrans Seismic Design Criteria (SDC), Version 16 dated November 2010
- DEAD LOAD:**
Includes 35 psf for future wearing surface.
- LIVE LOADING:**
HL93, permit design load, and MHE truck load.
- SEISMIC LOADING:**
See Site Specific ARS on "INDEX TO PLANS" sheet.
 $V_{50} = 320\text{m/s}$; $\text{PGA} = 1.0g$
- CONCRETE:**
 $f_y = 60\text{ ksi}$
 $f'_c = 3.6\text{ ksi}$
 $n = 8$
See prestressing notes.
- STRUCTURAL STEEL:**
 $f_y = \text{ASTM A709 Grade 50}$

INDEX TO PLANS

1. GENERAL PLAN
2. INDEX TO PLANS
3. DECK CONTOURS
4. FOUNDATION PLAN
5. ABUTMENT LAYOUT
6. ABUTMENT DETAILS NO. 1
7. ABUTMENT DETAILS NO. 2
8. TYPICAL SECTION
9. GIRDER LAYOUT
10. GIRDER REINFORCEMENT
11. ARCHITECTURAL TREATMENT DETAILS
12. STRUCTURE APPROACH TYPE N (30S)
13. STRUCTURE APPROACH DRAINAGE DETAILS
14. LOG OF TEST BORINGS NO. 1
15. LOG OF TEST BORINGS NO. 2
16. LOG OF TEST BORINGS NO. 3
17. LOG OF TEST BORINGS NO. 4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	147	212

Peter W. Norboe 3-5-15
REGISTERED CIVIL ENGINEER DATE

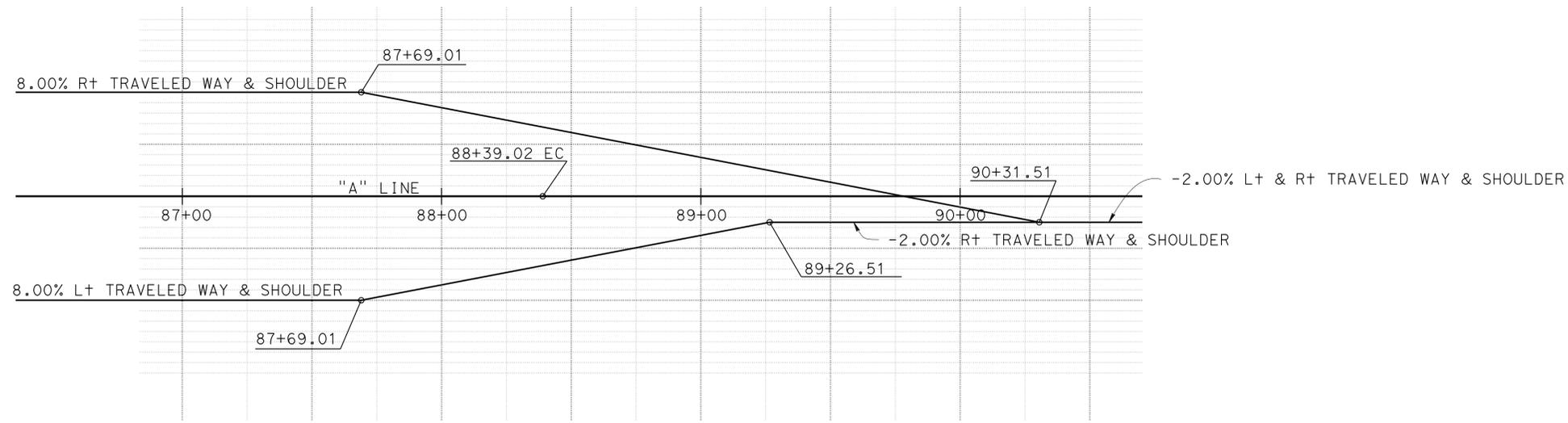
9-11-15
PLANS APPROVAL DATE

Peter W. Norboe
No. C57519
Exp. 12-31-2015
CIVIL
STATE OF CALIFORNIA

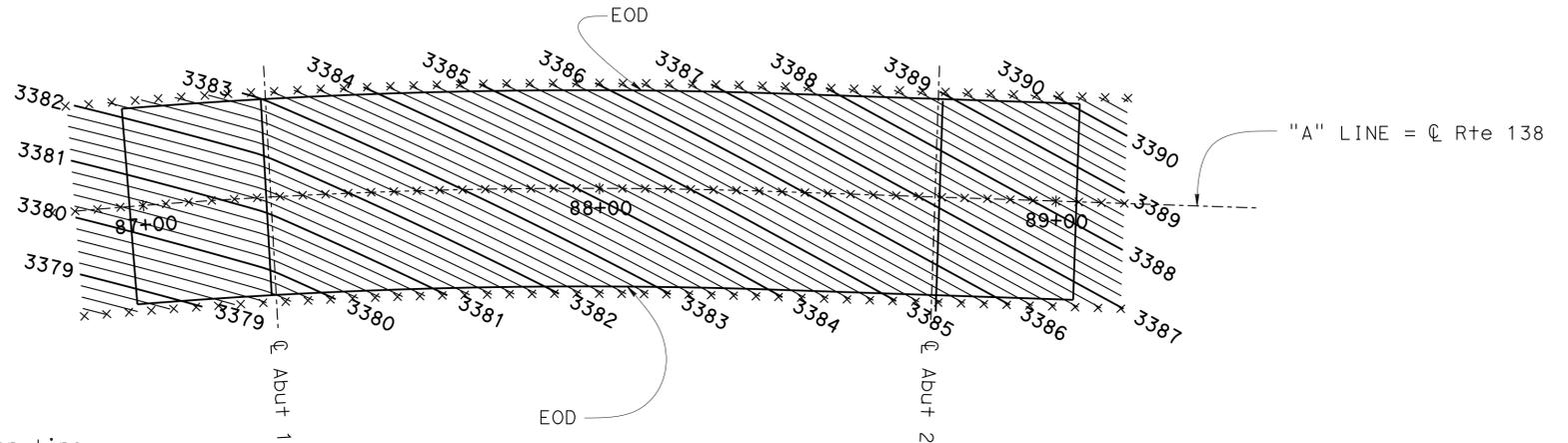
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	148	212

Peter W. Norboe 3-5-15
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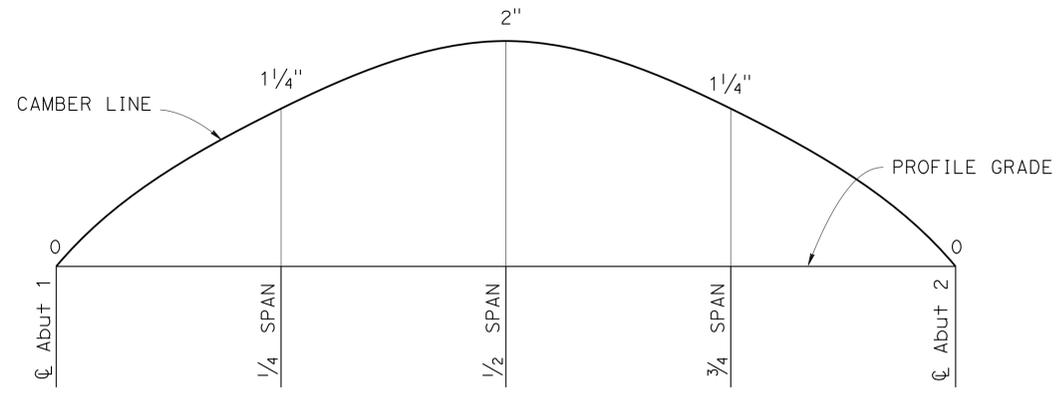


SUPERELEVATION DIAGRAM
NO SCALE



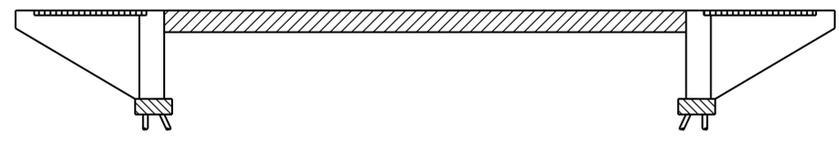
DECK CONTOUR
1" = 20'

- NOTES:
- 5.0 ft intervals along station line
 - Contours do not include camber
 - Contours interval = .2 ft



CAMBER DIAGRAM
NO SCALE

NOTE: Does not include allowance for falsework settlement camber values in inches.



- Structural Concrete, Bridge
- Structural Concrete, Bridge Footing
- Structural Concrete, Bridge (5000 psi @ 28 days)
- Structural Concrete, Approach Slab Type N(30S)

CONCRETE STRENGTH AND TYPE LIMITS
NO SCALE

DESIGN	BY P. Norboe	CHECKED L. Jimenez
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1218
POST MILE	R17.2

HOG RANCH CREEK BRIDGE
DECK CONTOURS

No.	R	Δ	T	L
①	1246.716	28°40'43"	318.696	624.029

NOTE: For purposes of converting the metric LOTB stationing to these Plans, use the following equivalent stationing: BB on LOTB's = 26+60.000 (m) converts to BB = 87+27.00 (ft).

HYDROLOGIC SUMMARY

DRAINAGE AREA : 0.56 SQUARE MILES

FREQUENCY (YEARS)	DESIGN FLOOD	BASE FLOOD	OVERTOPPING FLOOD
50	475	715	>>500
DISCHARGE (CUBIC FEET PER SECONDS)	475	715	-
WATER SURFACE ELEV. AT BRIDGE (FEET)	3360	3360	3380

FLOOD PLAIN DATA ARE BASED UPON INFORMATION AVAILABLE WHEN THE PLANS WERE PREPARED AND ARE SHOWN TO MEET FEDERAL REQUIREMENTS. THE ACCURACY OF SAID INFORMATION IS NOT WARRANTED BY THE STATE AND INTERESTED OR AFFECTED PARTIES SHOULD MAKE THEIR OWN INVESTIGATIONS.

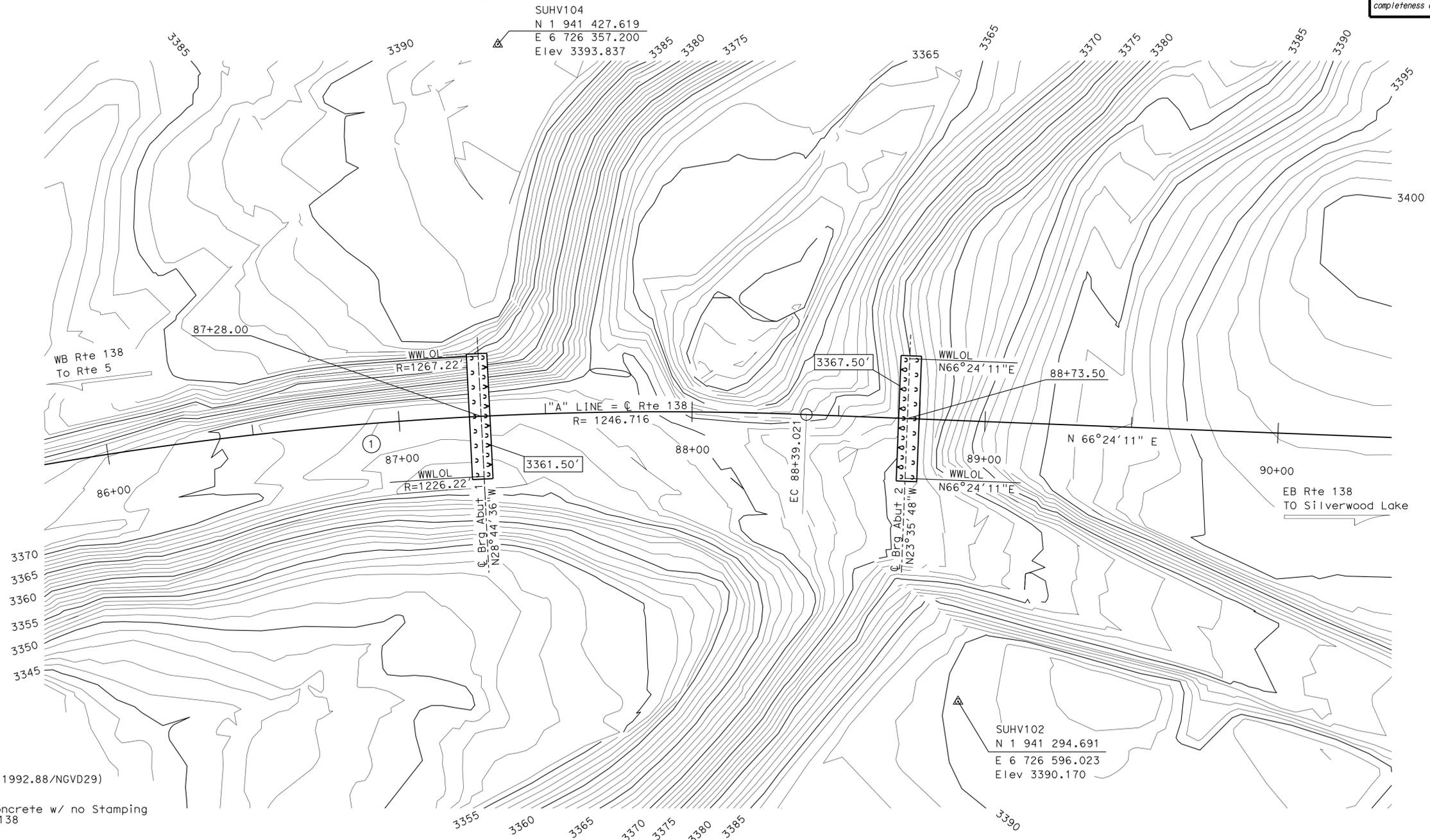
LEGEND:

-  Indicates bottom footing elevation
-  Denotes vertical pile
-  Denote battered pile
- Not all piles shown



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
8	SBd	138	R17.1/R19.2	149	212

Peter W. Norboe
 REGISTERED CIVIL ENGINEER 3-5-15 DATE
 9-11-15 PLANS APPROVAL DATE
 Peter W. Norboe
 No. 57519
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA
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SURVEY CONTROL (EPOCH TE 1992.88/NGVD29)
 SUHV104
 Fnd: CT Bathey Cap in concrete w/ no Stamping
 126.265 Lt. Proposed Rte 138
 Sta 87+38.909
 N 1 941 427.619
 E 6 726 357.200
 Elev 3393.837

SUHV102
 Fnd: 1" IP for Bridge Controlw/ CT Tag Stamped "RP102"
 95.573 Rt. Proposed Rte 138
 Sta 88+94.531
 N 1 941 294.691
 E 6 726 596.023
 Elev 3390.170

NOTE:
 Underground utilities as shown are approximate.
 See District Utility Plans for details.

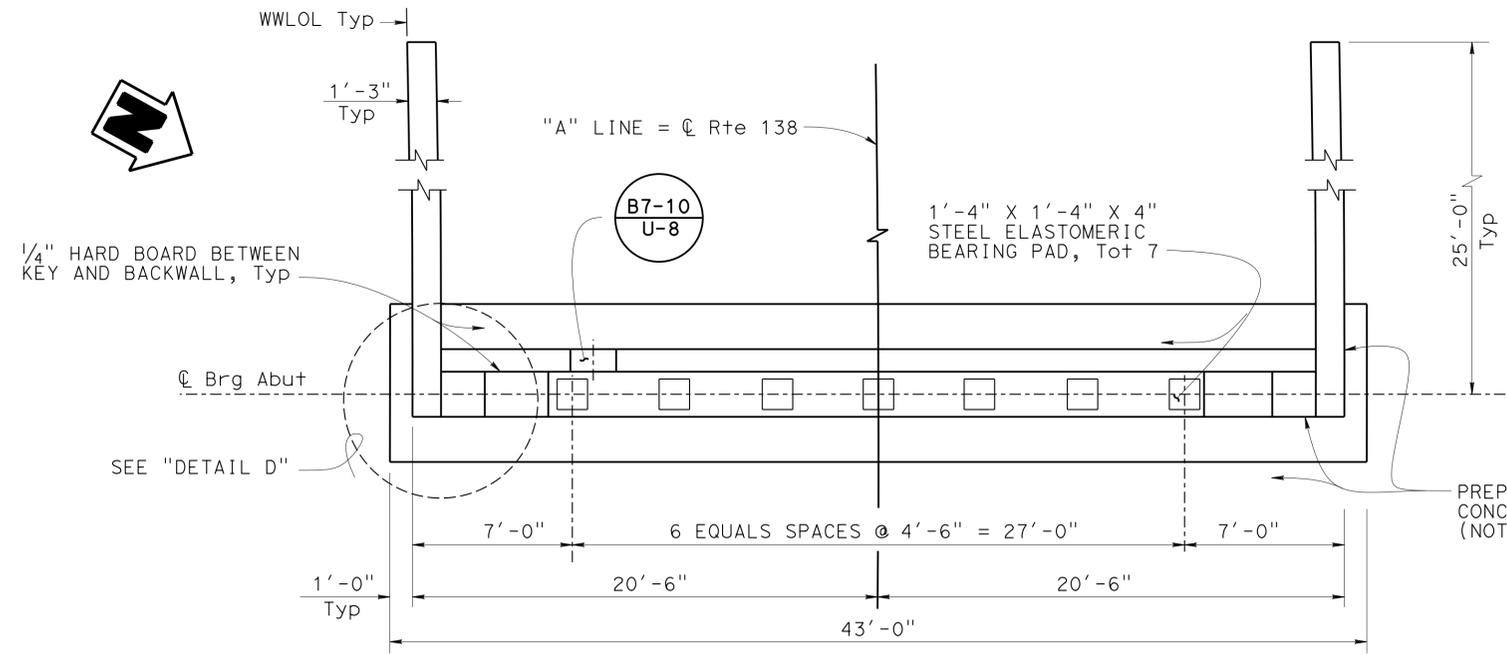
PRELIMINARY INVESTIGATION SECTION				DESIGN BY P. Norboe	CHECKED L. Jimenez	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO. 54-1218	HOG RANCH CREEK BRIDGE FOUNDATION PLAN
SCALE VERT. DATUM NGVD29	PHOTOGRAMMETRY AS OF: X	DRAWN BY D. Elliott	CHECKED R. Candiotti	POST MILE R17.2					
1"=20'	HORIZ. DATUM NAD83	SURVEYED BY DB	CHECKED R. Candiotti						
ALIGNMENT TIES Dist. Traverse Sheet	DRAFTED BY C. Pham	CHECKED BY E. Viagar	QUANTITIES BY P. Norboe	CHECKED R. Candiotti		UNIT: 3647 PROJECT NUMBER & PHASE: 0800020191-1 CONTRACT NO.: 08-003004	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES: 11-14-14, 2-18-14, 10-6-14, 11-14-14	SHEET 4 OF 17

USERNAME => s102458 DATE PLOTTED => 16-NOV-2015 TIME PLOTTED => 10:09

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SbD	138	R17.1/R19.2	150	212
			DATE		
			9-11-15		
			PLANS APPROVAL DATE		
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.					

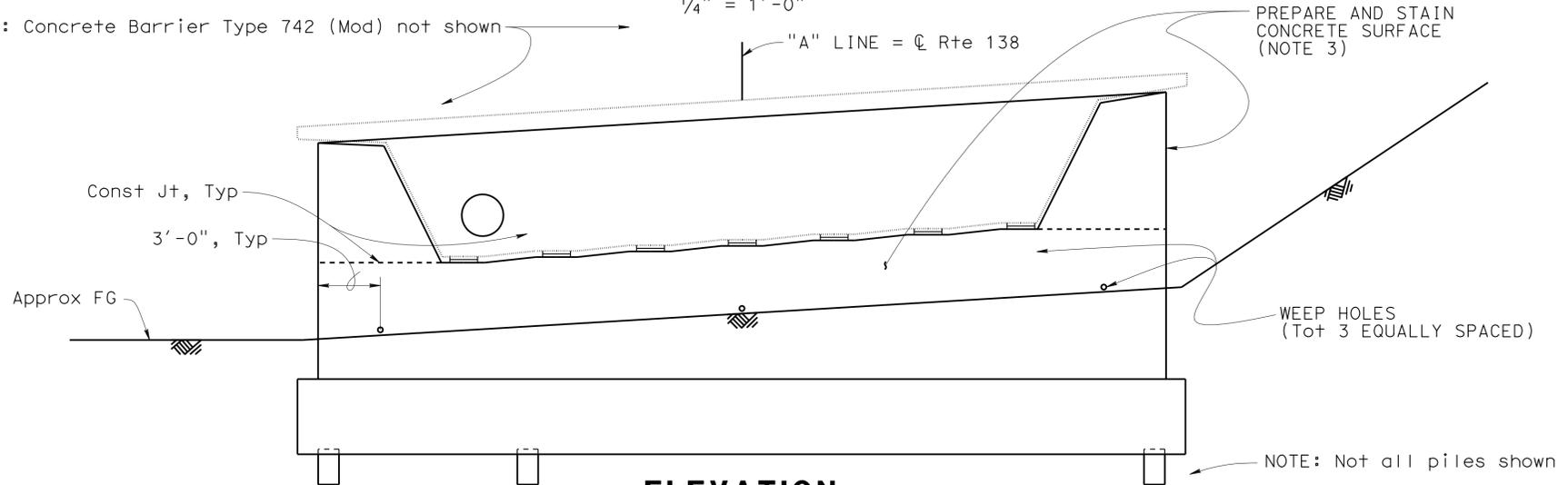
Peter W. Norboe
 REGISTERED CIVIL ENGINEER No. C57519
 DATE 3-5-15
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA

- NOTES:
1. Abutment 1 shown, Abutment 2 similar.
 2. For "DETAIL D", see "ABUTMENT DETAILS NO. 2" sheet.
 3. Concrete Surface Texture not shown.

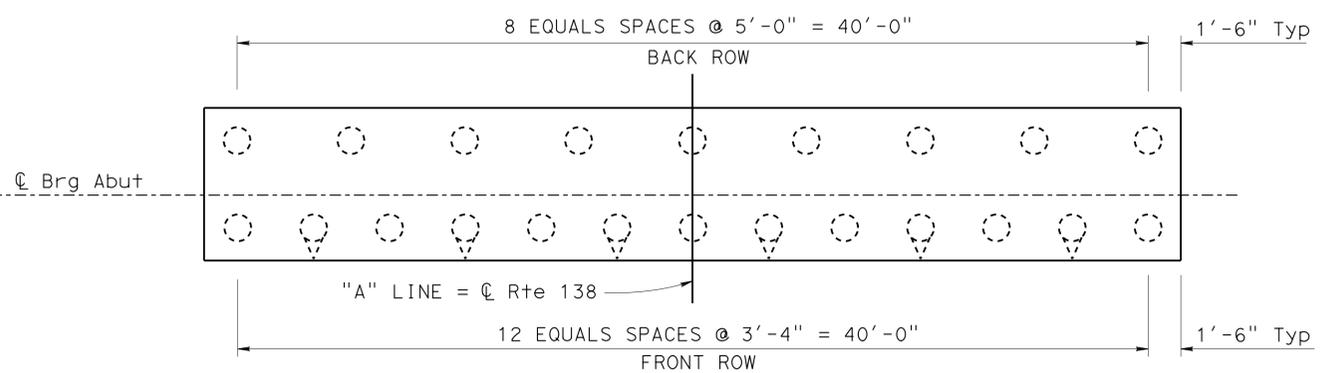


PLAN
 1/4" = 1'-0"

NOTE: Concrete Barrier Type 742 (Mod) not shown

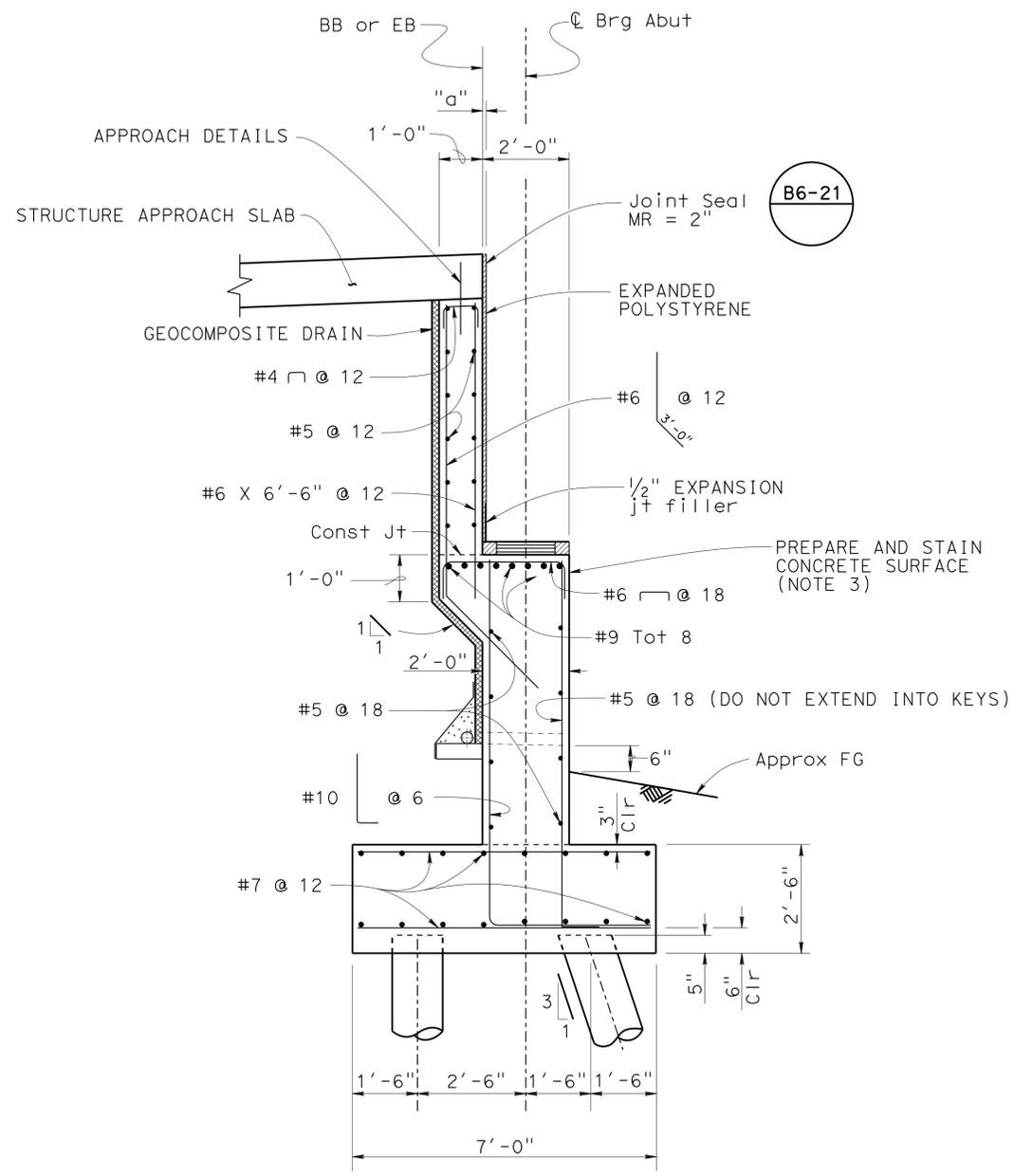


ELEVATION
 1/4" = 1'-0"



PILE LAYOUT
 1/4" = 1'-0"

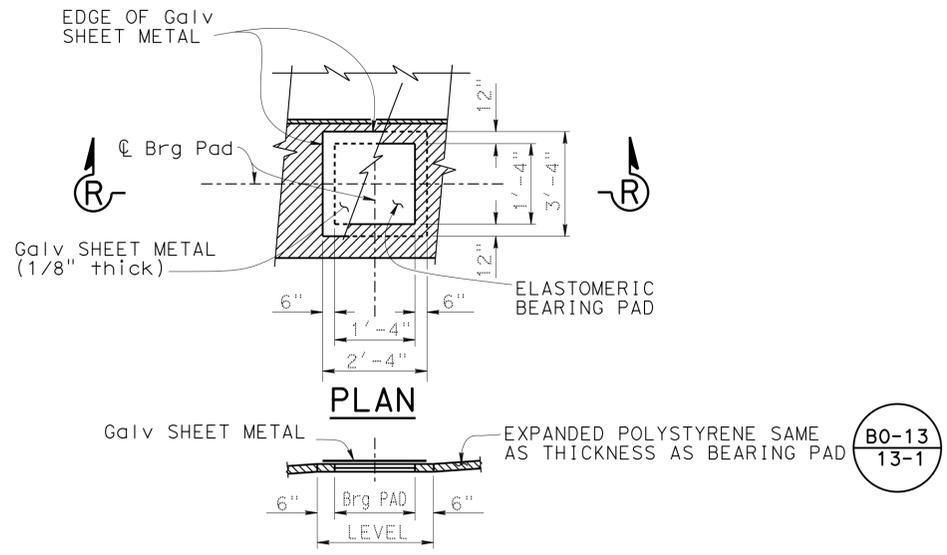
- LEGEND:
- Denotes - vertical pile
 - ⊖ Denotes - battered pile



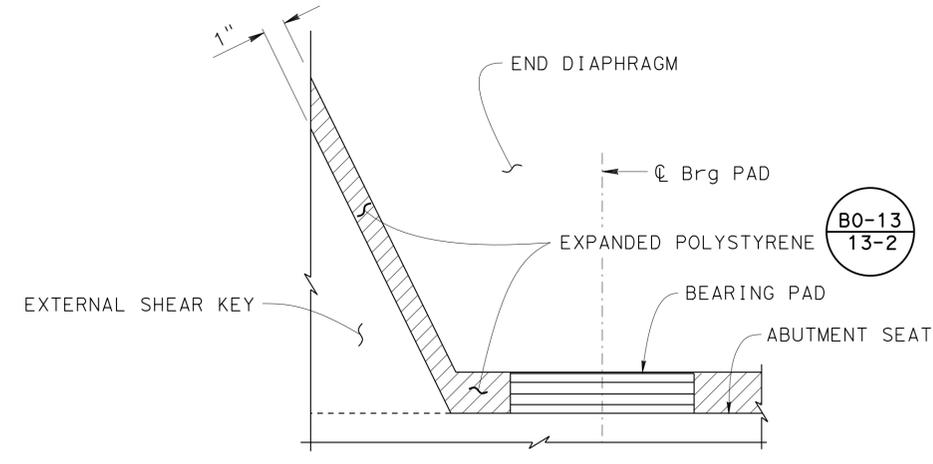
TYPICAL SECTION
 1/2" = 1'-0"

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)	DESIGN	BY P. Norboe	CHECKED L. Jimenez	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO.	HOG RANCH CREEK BRIDGE
	DETAILS	BY D. Elliott	CHECKED R. Candiotti			54-1218	
	QUANTITIES	BY P. Norboe	CHECKED R. Candiotti			R17.2	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	151	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER			3-5-15 DATE		
			9-11-15 PLANS APPROVAL DATE		
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.</small>					

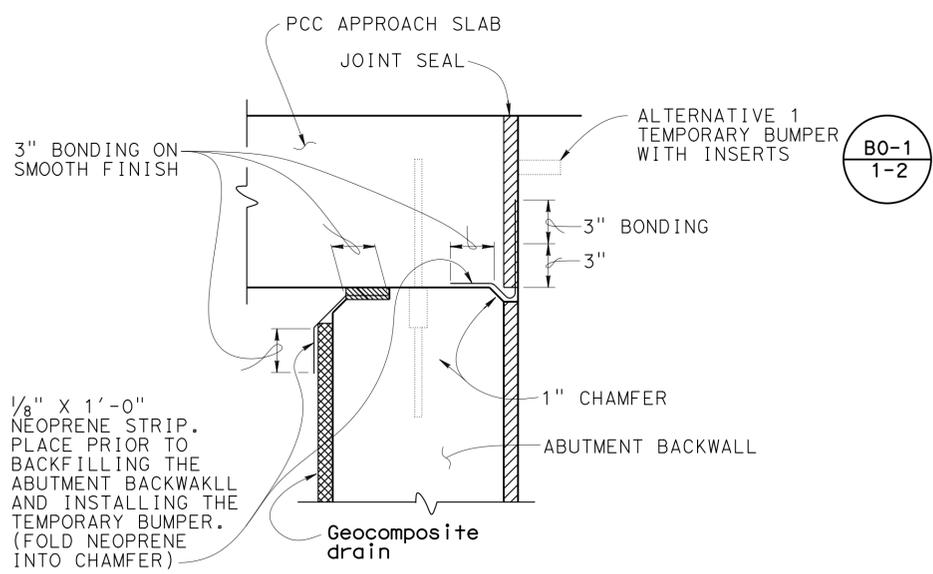


**SECTION R-R
BEARING PAD DETAIL**
No Scale
DETAILS TYPICAL AT ALL BEARING PADS

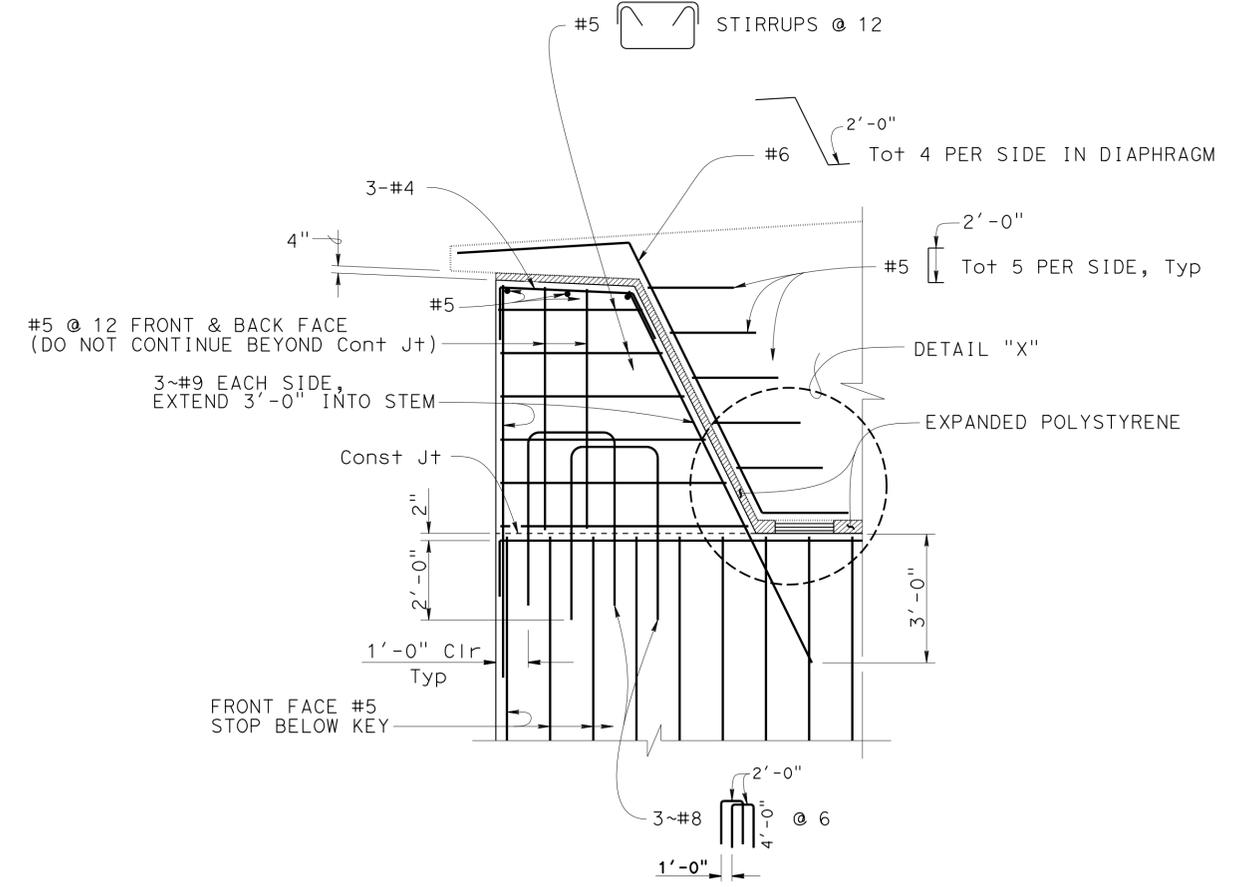


DETAIL "X"
No Scale
NOTE: EXPANDED POLYSTYRENE SAME THICKNESS AS BEARING PAD.

NOTE: COAT TOP OF BEARING PAD WITH SILICONE GREASE PRIOR TO PLACING SHEET METAL.



JOINT PROTECTION DETAIL
No Scale



PART ELEVATION SHEAR KEY
NO SCALE

DESIGN	BY P. Norboe	CHECKED L. Jimenez
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1218
POST MILE	R17.2

**HOG RANCH CREEK BRIDGE
ABUTMENT DETAIL NO. 1**

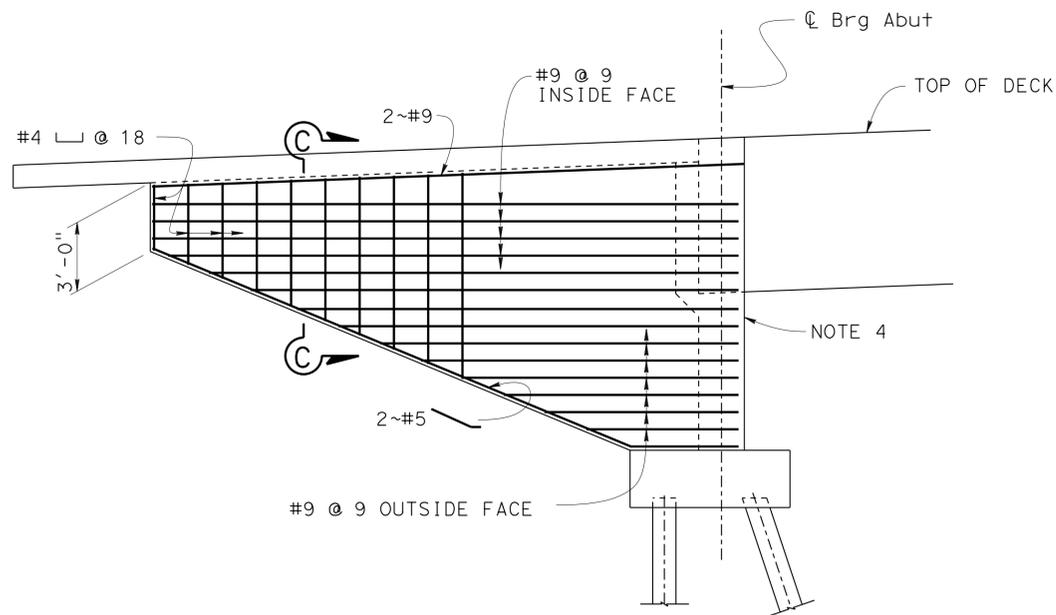
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	152	212

Peter W. Norboe
REGISTERED CIVIL ENGINEER
No. C57519
Exp. 12-31-2015
CIVIL
STATE OF CALIFORNIA

3-5-15
DATE

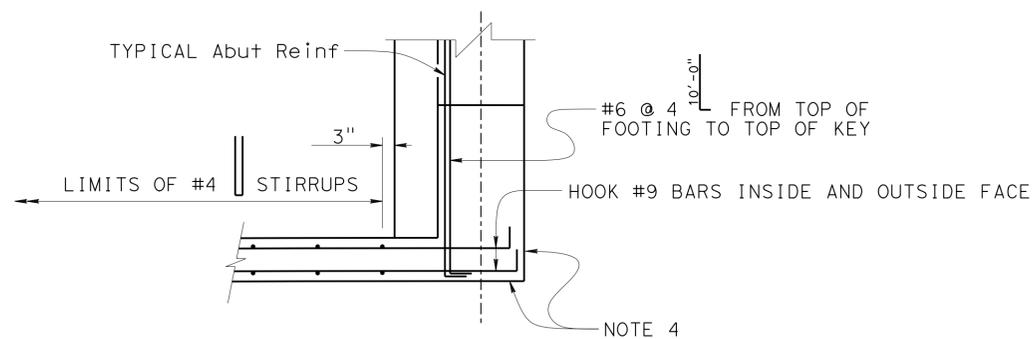
9-11-15
PLANS APPROVAL DATE

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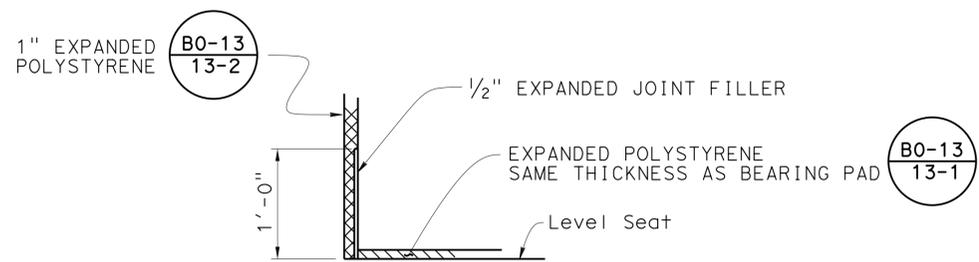
WINGWALL ELEVATION

1/4" = 1'-0"



DETAIL D

NO SCALE

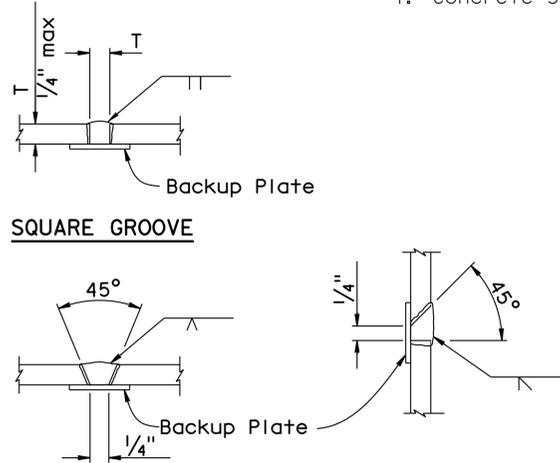


BACK WALL BASE DETAILS

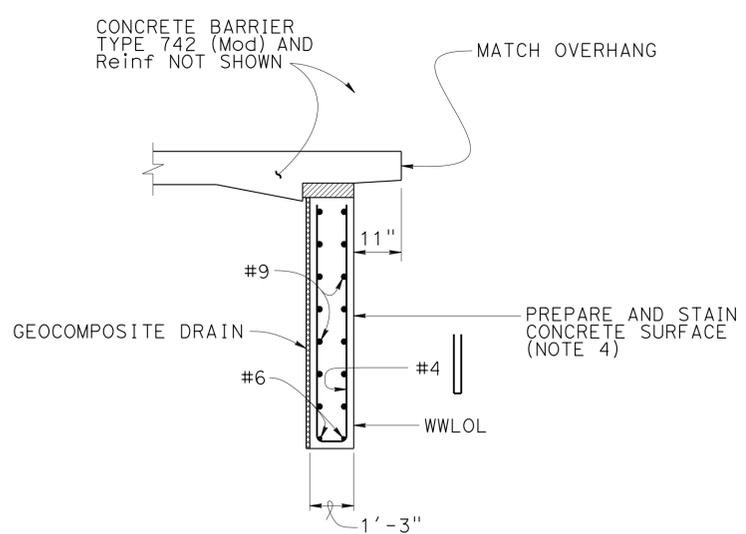
NO SCALE

NOTES:

1. Single Vee-Groove And Square Groove Permitted for all positions.
2. Single Bevel-Groove permitted for horizontal joints only.
3. For location of "DETAIL D", see "ABUTMENT LAYOUT" sheet.
4. Concrete Surface Texture not shown.



PILE WELDING DETAIL-BUTT JOINTS



SECTION C-C

NO SCALE

DESIGN	BY P. Norboe	CHECKED L. Jimenez
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1218
POST MILE	R17.2

**HOG RANCH CREEK BRIDGE
ABUTMENT DETAIL NO. 2**



REVISION DATES	SHEET	OF
1-3-14	7	17

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	153	212

<i>Peter W. Norboe</i>		3-5-15
REGISTERED CIVIL ENGINEER	DATE	
9-11-15		
PLANS APPROVAL DATE		

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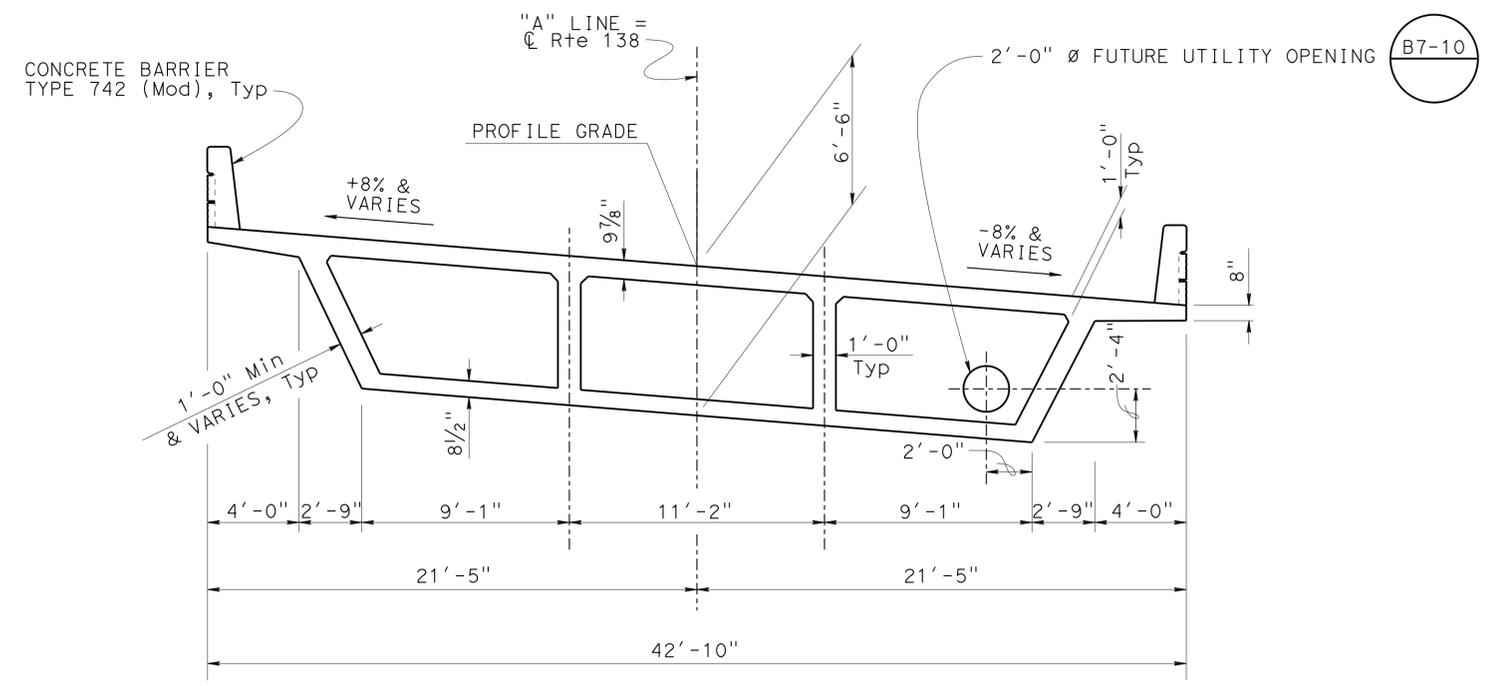
LEGEND:

* Maximum spacing at deck level, fan bars at exterior girders to provide 2:1 slope

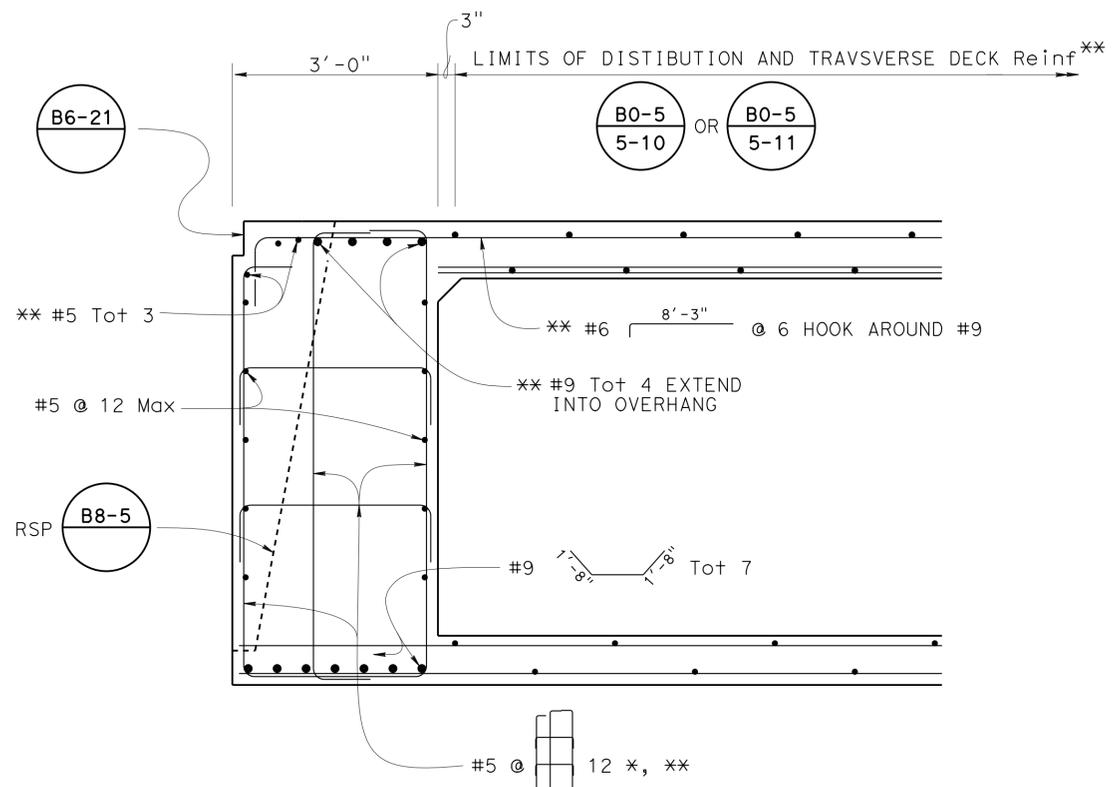
** Epoxy Coated

NOTE:

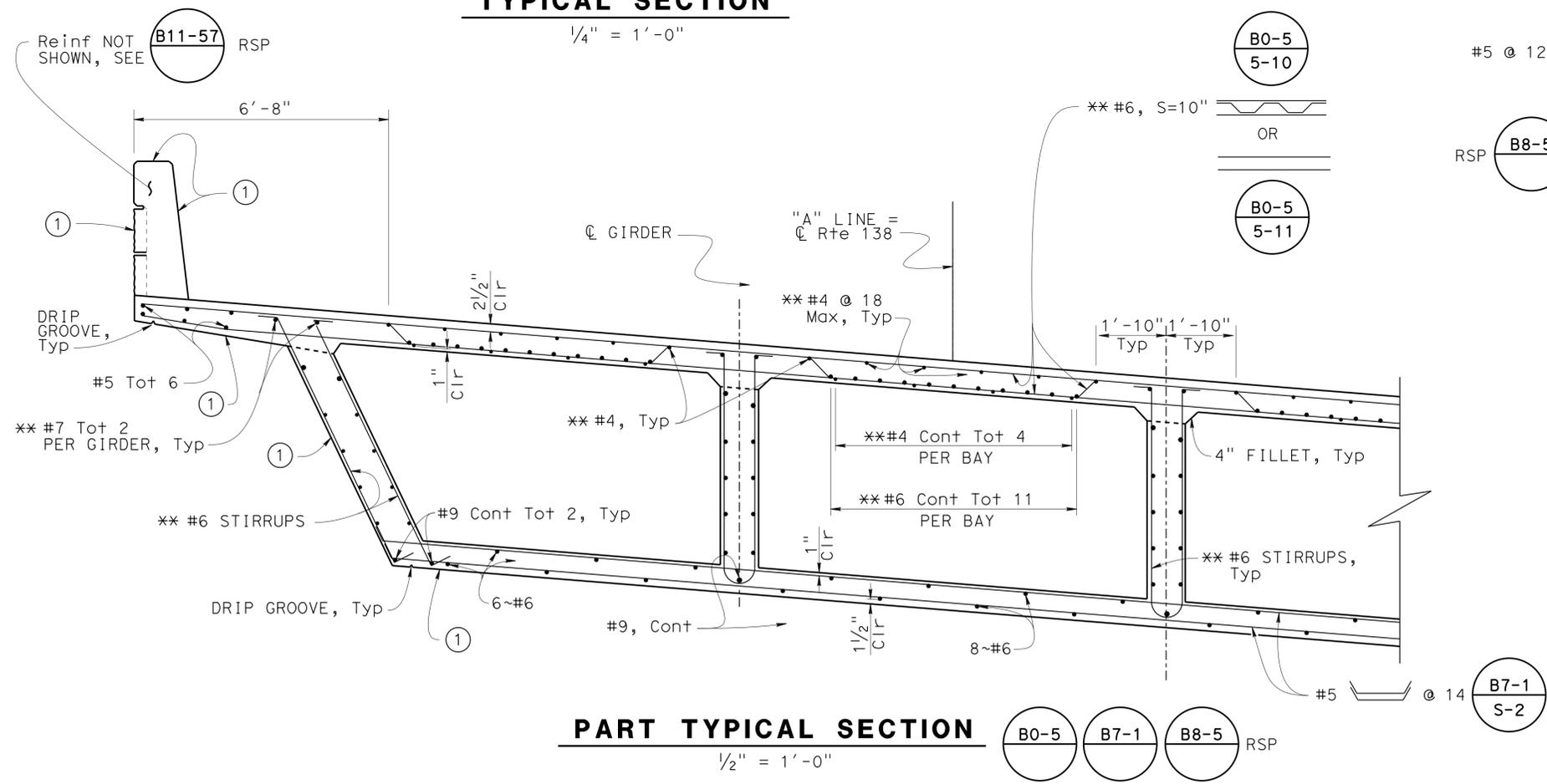
- ① Prepare and stain all exposed concrete surface, excluding bridge deck



TYPICAL SECTION
1/4" = 1'-0"



END DIAPHRAGM
3/4" = 1'-0"



PART TYPICAL SECTION
1/2" = 1'-0"

DESIGN	BY P. Norboe	CHECKED L. Jimenez
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

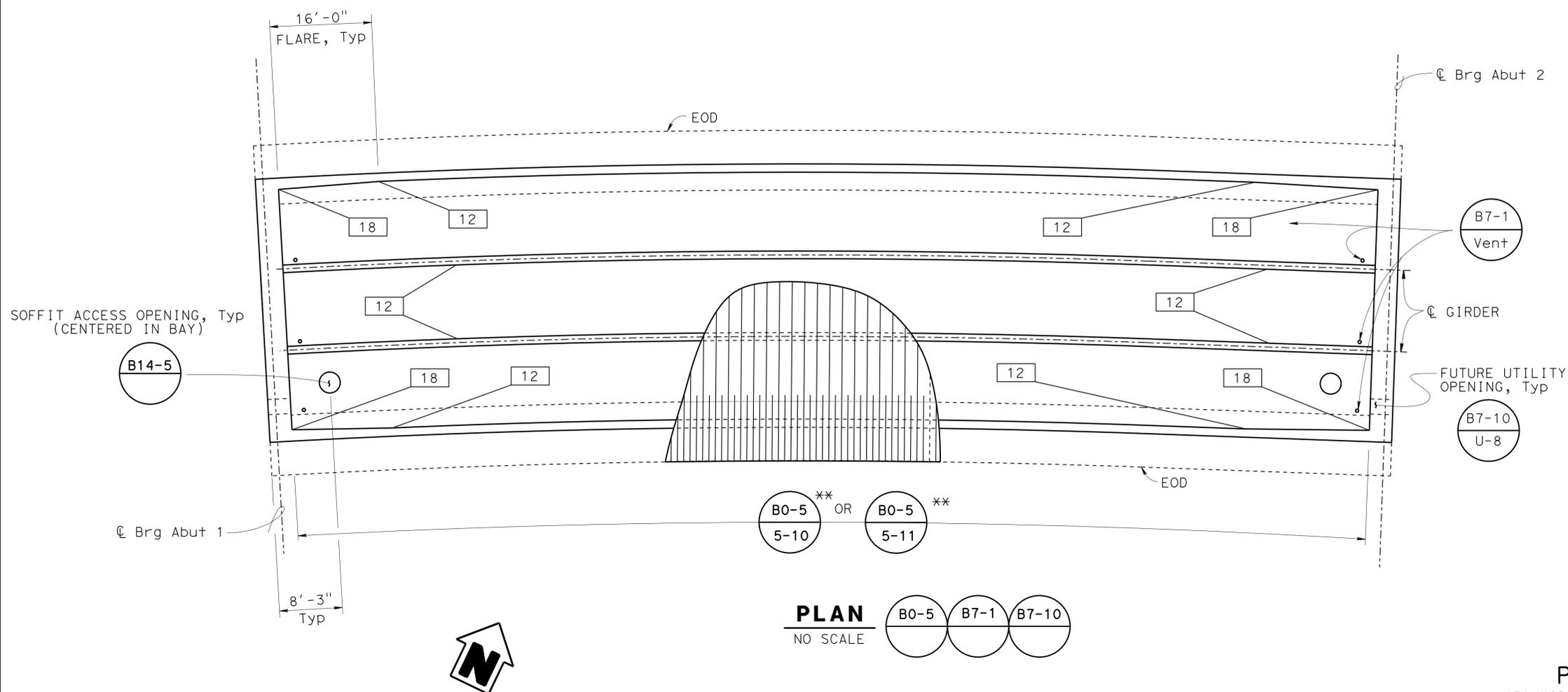
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1218
POST MILE	R17.2

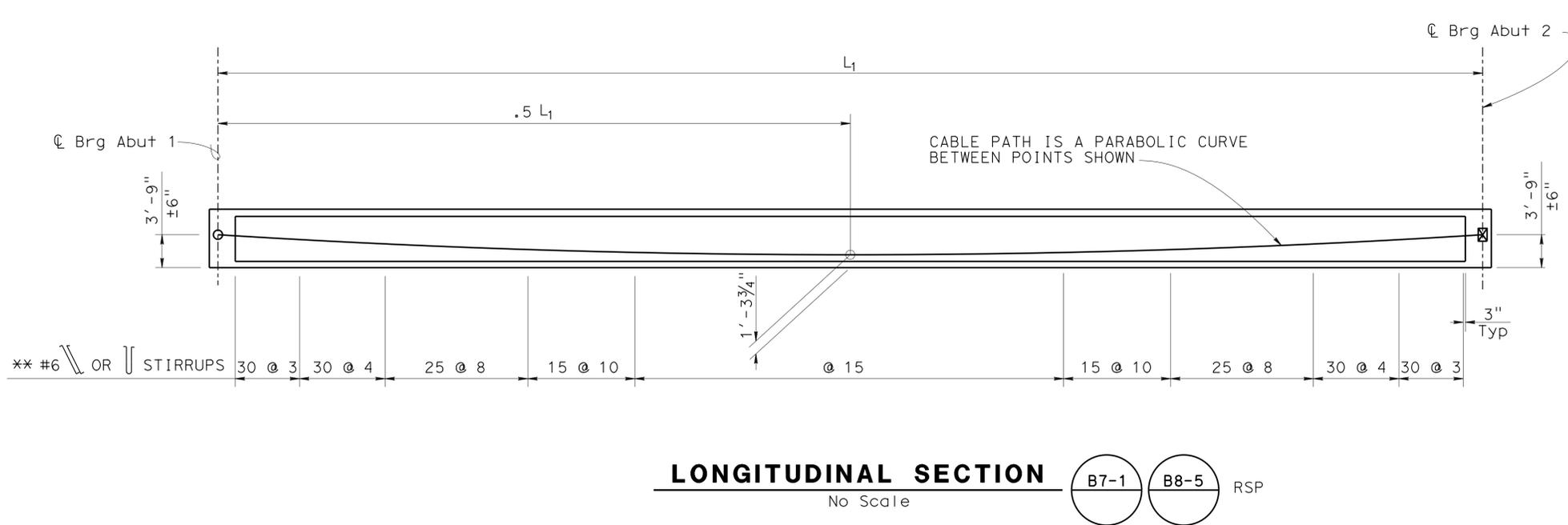
HOG RANCH CREEK BRIDGE
TYPICAL SECTION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	154	212

Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE
 9-11-15
 PLANS APPROVAL DATE
 Peter W. Norboe
 No. C57519
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA
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- LEGEND:
- Indicates girder stem width in inches
 - Denotes theoretical point of no movement for one end stressing
 - ** Epoxy Coated



PRESTRESSING NOTES

270 KSI Low Relaxation Strand:

$P_{Jack} = 13,800$ kips

Anchor Set = 3/8"

Friction curvature coefficient, $\mu = 15 \times 10^{-2}$ (1/rad)

Friction wobble coefficient, $K = 20 \times 10^{-5}$ (1/ft)

Assumed long term losses = 20 (ksi)

Total Number of Girders = 4

The final force ratio (larger divided by smaller) between any two girders must not exceed the ratio of 10 to 9

Concrete: $f'_c = 5,000$ psi @ 28 days
 $f'_{ci} = 3,600$ psi @ time of stressing

Contractor must submit elongation calculations based on initial stress at

$\lambda = 0.953$ times jacking stress.

Stressing may be performed from either end.

DESIGN	BY P. Norboe	CHECKED L. Jimenez	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO.	HOG RANCH CREEK BRIDGE GIRDER LAYOUT			
DETAILS	BY D. Elliott	CHECKED R. Candiotti			54-1218				
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti			POST MILE R17.2				
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: 3594	PROJECT NUMBER & PHASE: 0800020191-1	CONTRACT NO.: 08-003004	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 9 OF 17

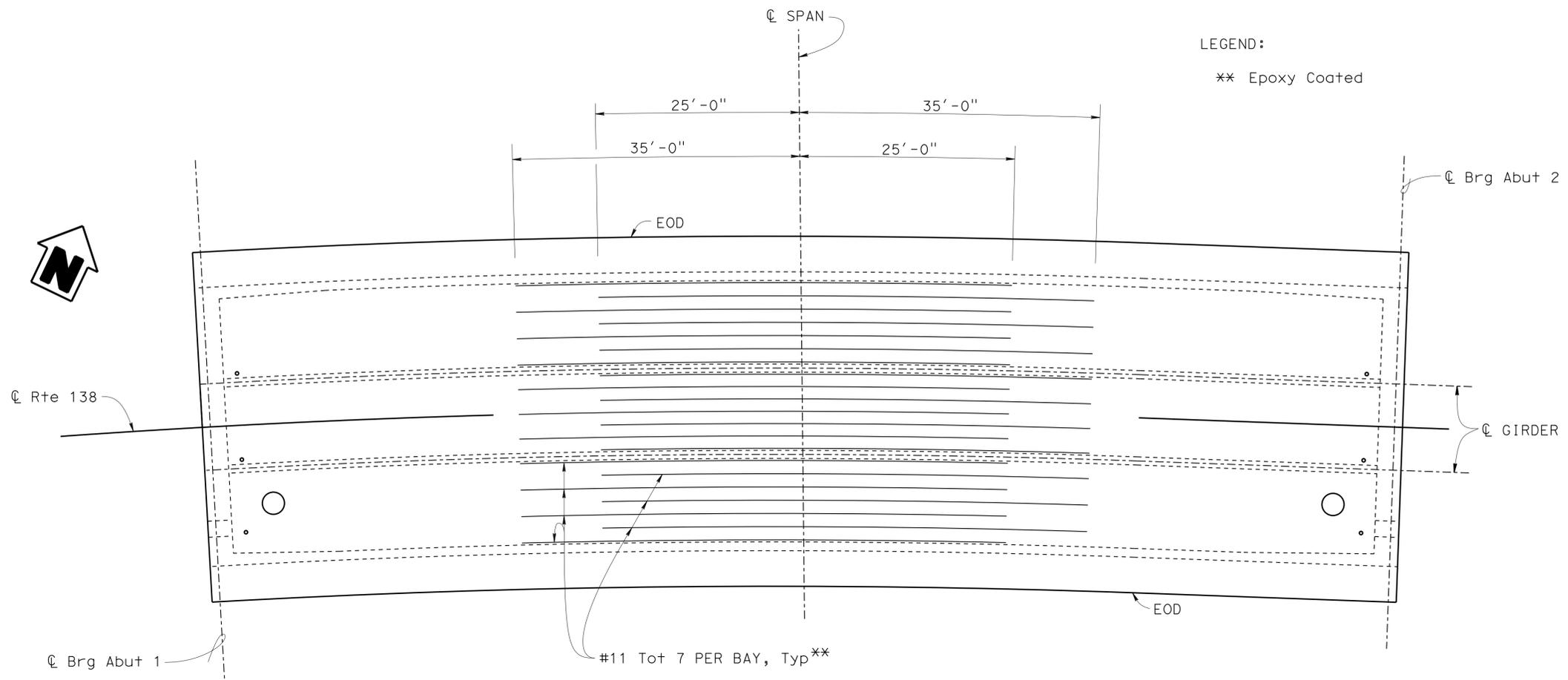
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	155	212

Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE

9-11-15
 PLANS APPROVAL DATE

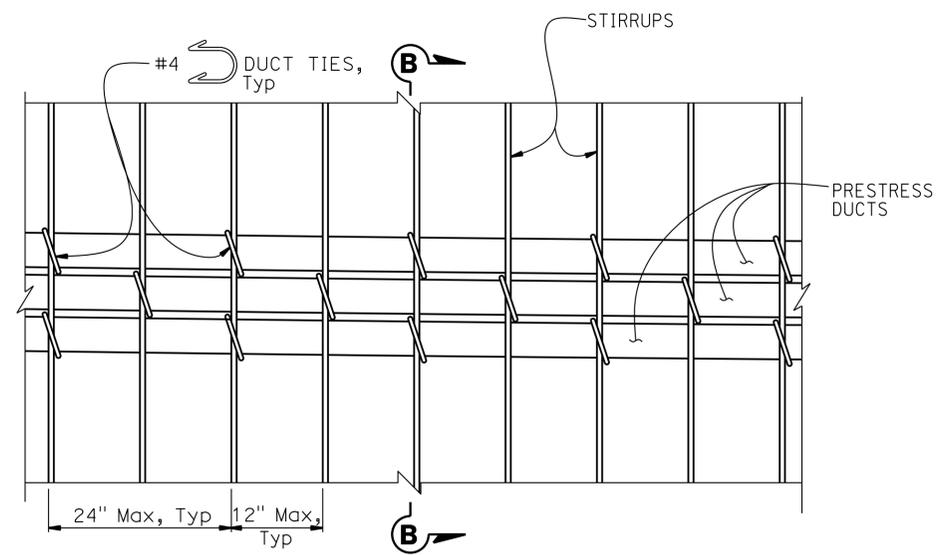
Peter W. Norboe
 No. C57519
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA

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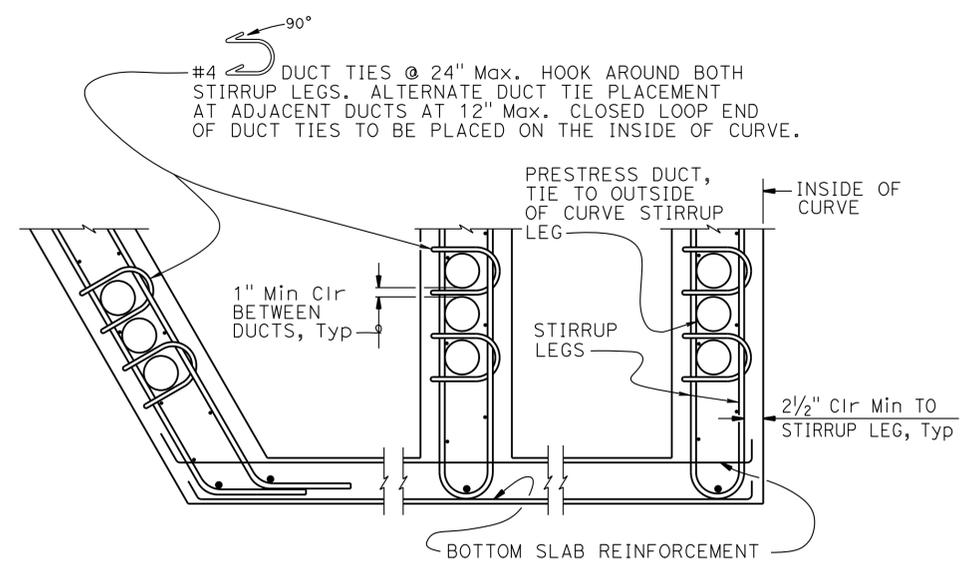


LEGEND:
 ** Epoxy Coated

BOTTOM REINFORCEMENT
 No Scale



Note: Horizontal Girder Reinf not shown
GIRDER ELEVATION



SECTION B-B

DETAIL A
 No Scale

DESIGN	BY P. Norboe	CHECKED L. Jimenez
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

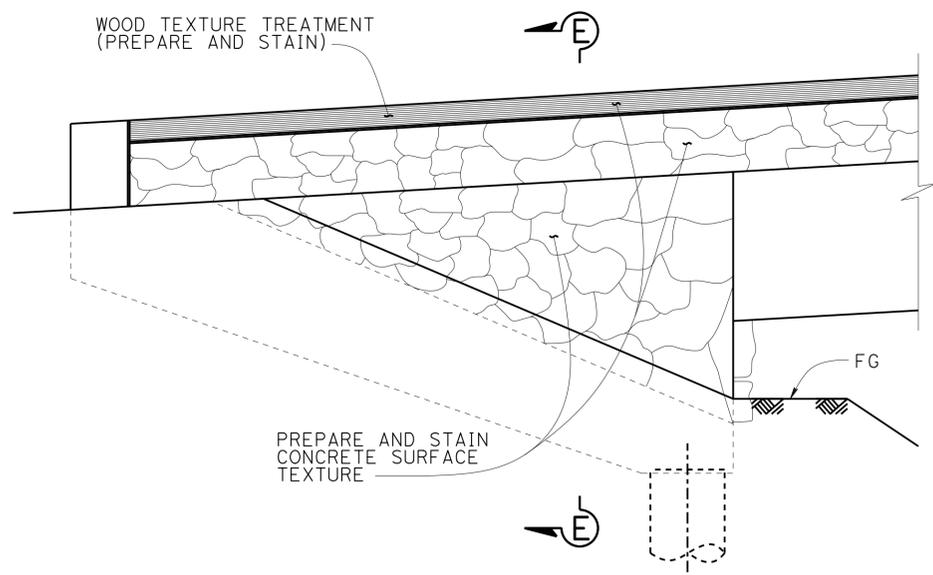
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
 STRUCTURE DESIGN
DESIGN BRANCH 9

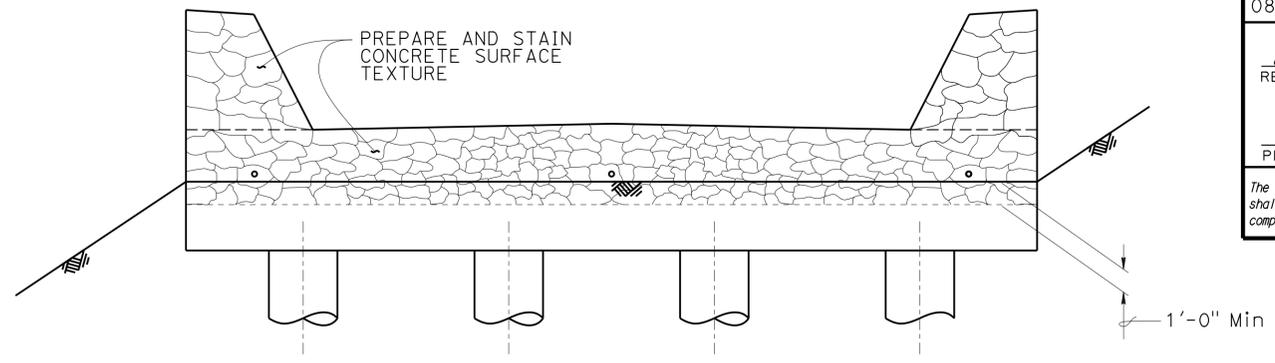
BRIDGE NO.	54-1218
POST MILE	R17.2

HOG RANCH CREEK BRIDGE
GIRDER REINFORCEMENT

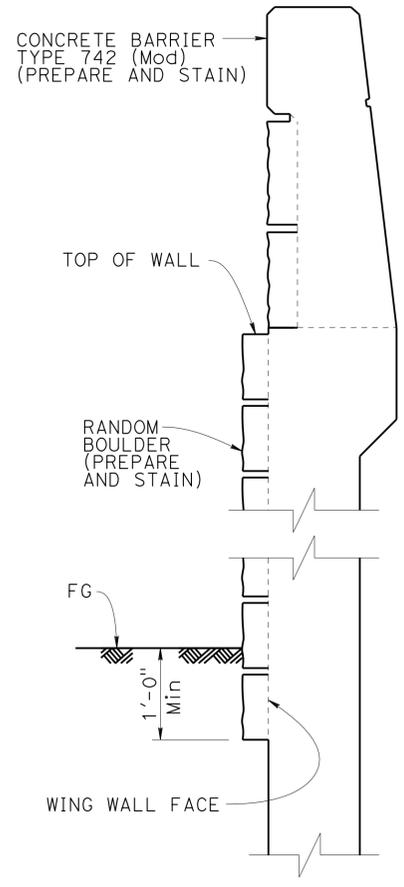
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	156	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER DATE 3-5-15				9-11-15 PLANS APPROVAL DATE	
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.					
REGISTERED PROFESSIONAL ENGINEER Peter W. Norboe No. C57519 Exp. 12-31-2015 CIVIL STATE OF CALIFORNIA					



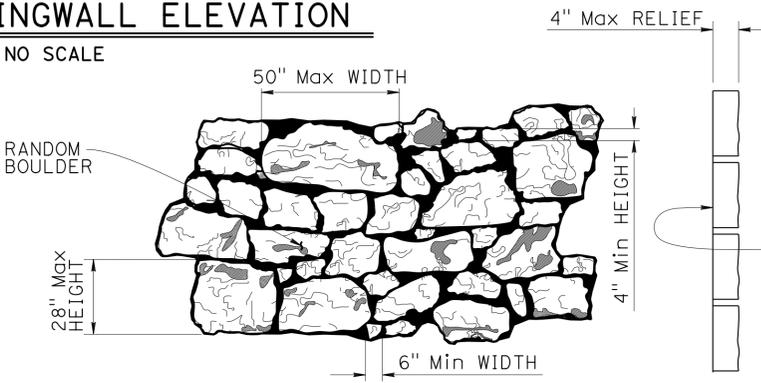
TYPICAL WINGWALL ELEVATION
NO SCALE



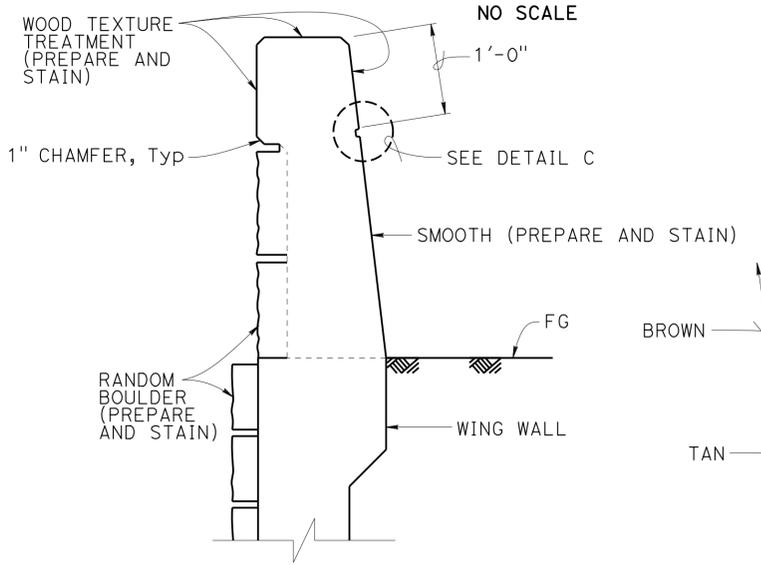
TYPICAL ABUTMENT ELEVATION
NO SCALE



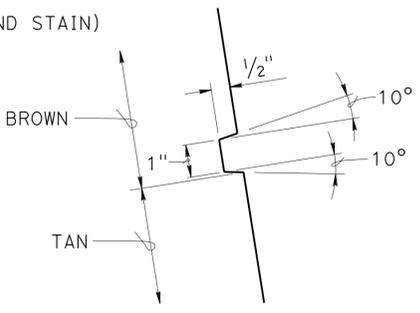
SECTION E-E
1" = 1'-0"



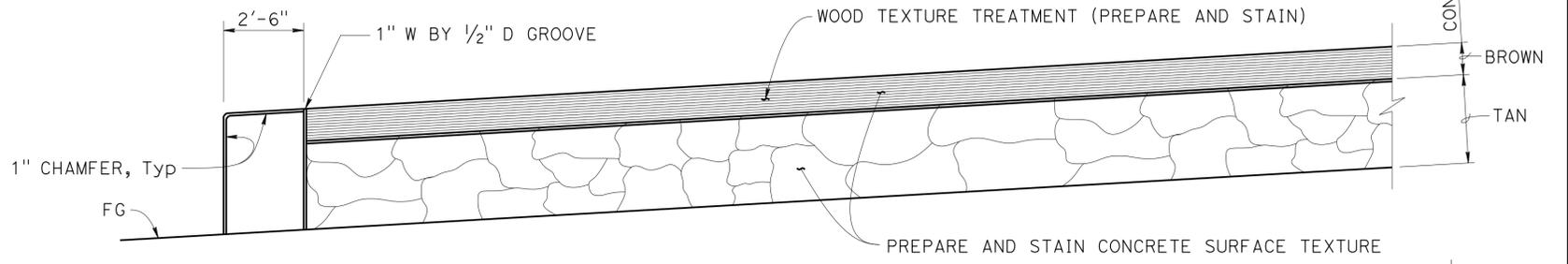
CONCRETE SURFACE TEXTURE
NO SCALE



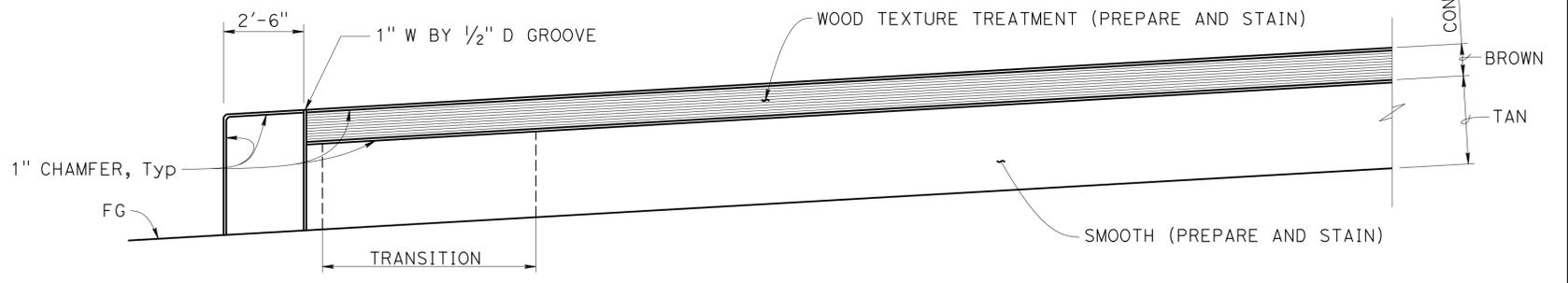
SECTION OF TYPE 742 (MODIFIED)
1" = 1'-0"



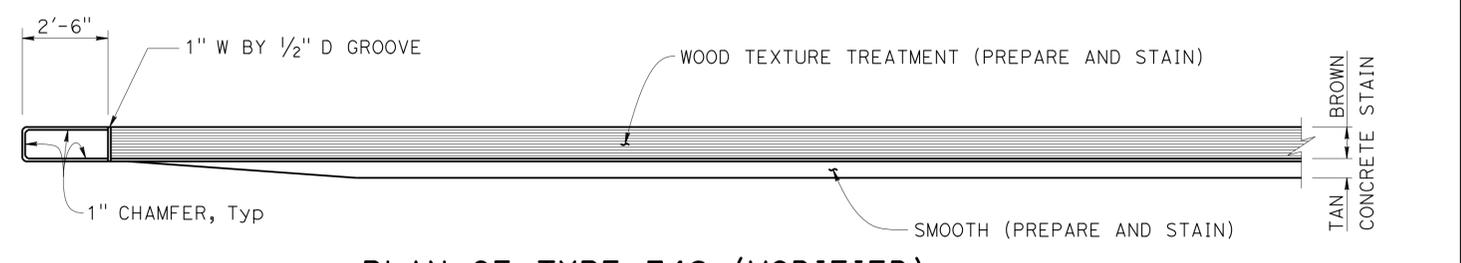
DETAIL C
NO SCALE



REAR ELEVATION OF TYPE 742 (MODIFIED)
NO SCALE



FRONT ELEVATION OF TYPE 742 (MODIFIED)
NO SCALE



PLAN OF TYPE 742 (MODIFIED)
NO SCALE

NOTE:
1. All exposed concrete surface on bridge must be Prepare and Stain, excluding bridge deck and approach slabs.

DESIGN	BY P. Norboe	CHECKED L. Jimenez
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1218
POST MILE	R17.2

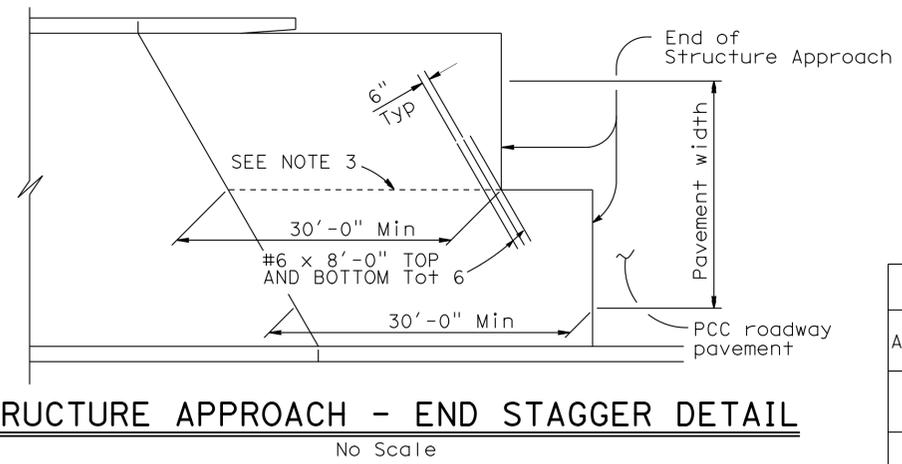
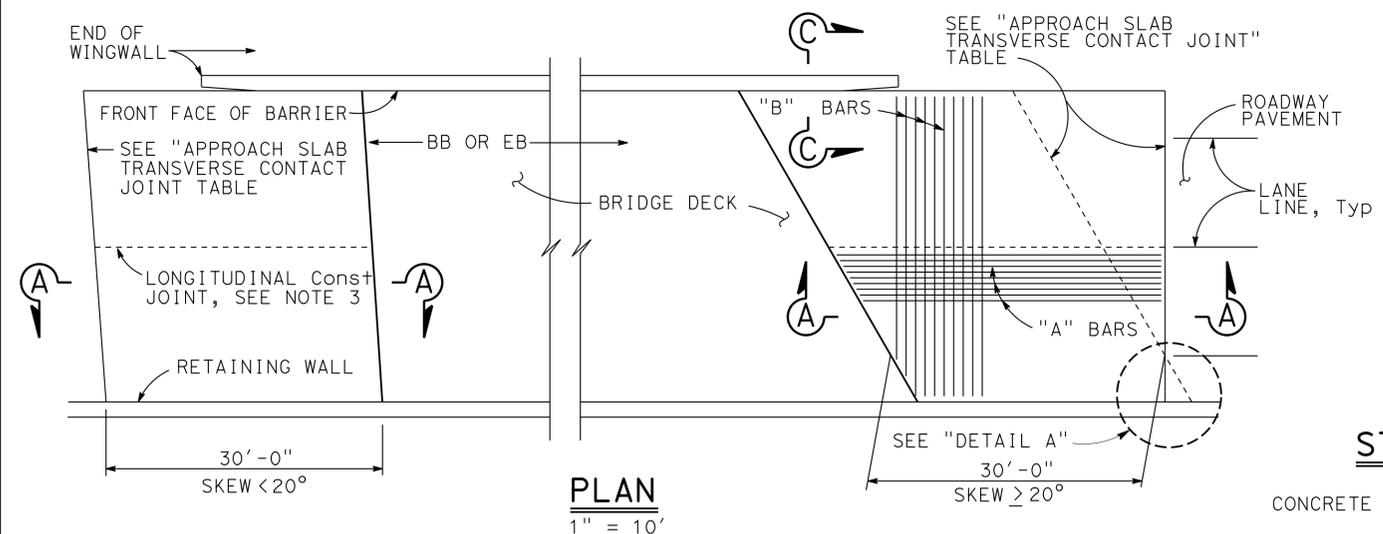
HOG RANCH CREEK BRIDGE
ARCHITECTURAL TREATMENT DETAILS

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	157	212

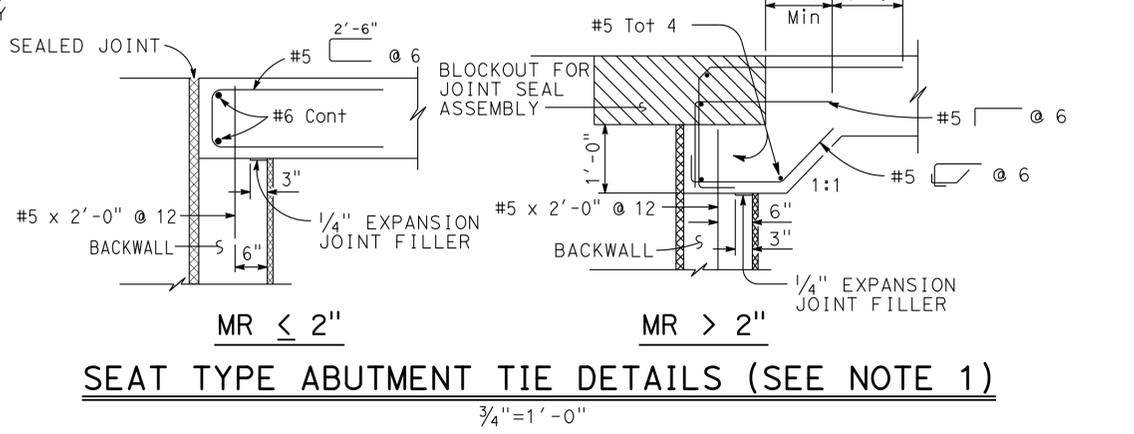
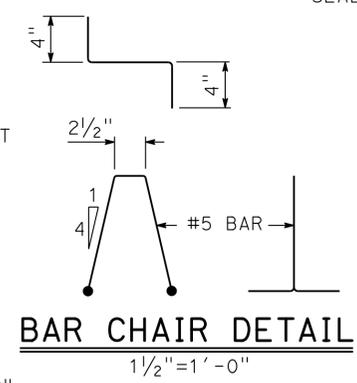
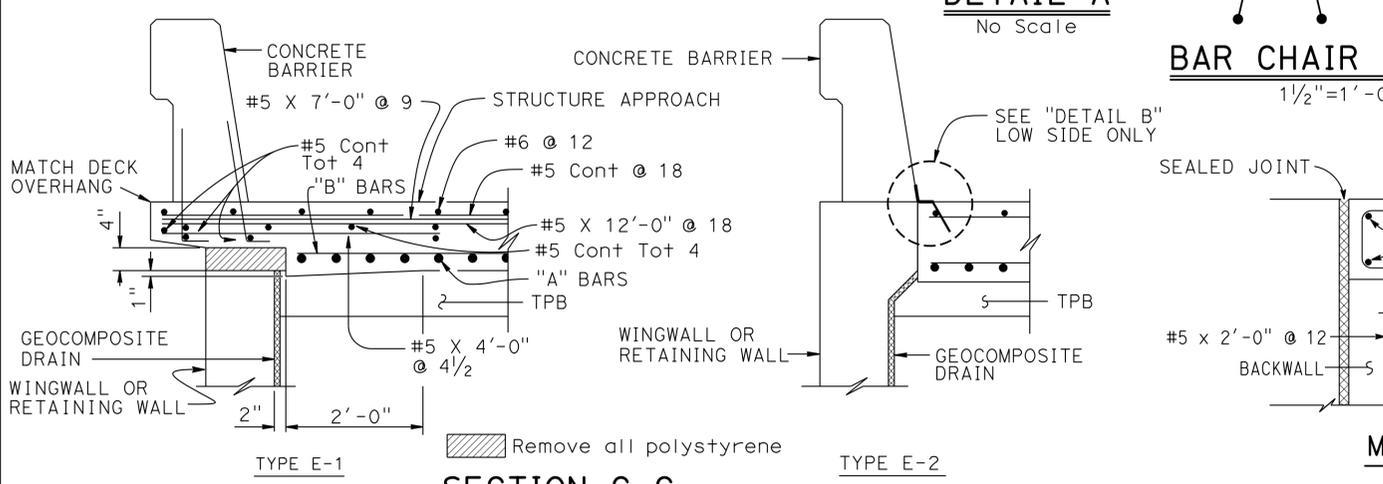
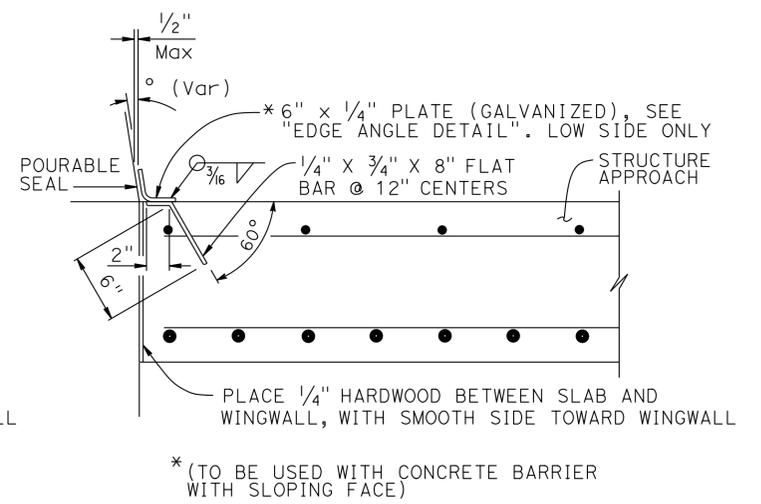
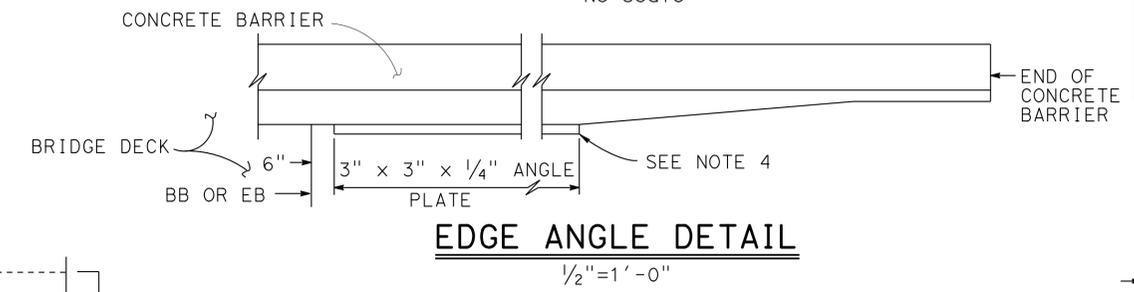
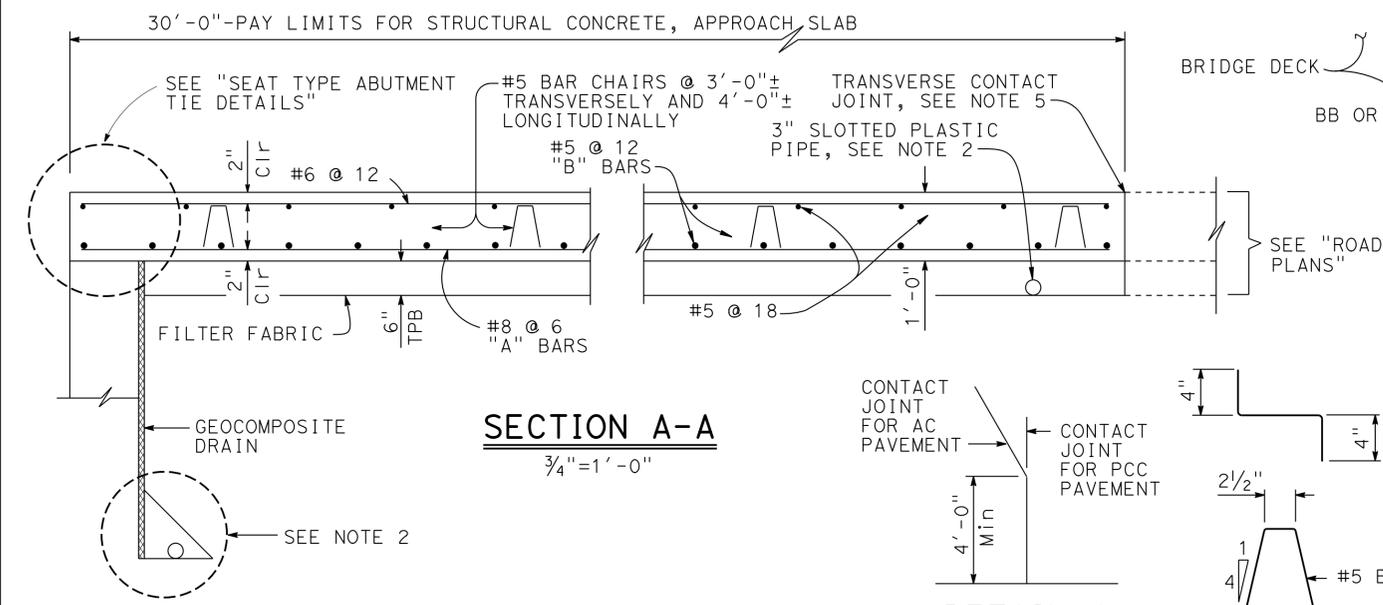
Peter W. Norboe
REGISTERED CIVIL ENGINEER DATE 3-5-15
PLANS APPROVAL DATE 9-11-15

Peter W. Norboe
No. C57519
Exp. 12-31-2015
CIVIL
STATE OF CALIFORNIA

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APPROACH SLAB TRANSVERSE CONTACT JOINT		
APPROACH SKEW	WITH AC ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
< 20°	PARALLEL TO FACE OF PN	PARALLEL TO FACE OF PN
20° - 45°	PARALLEL TO FACE OF PN USE "DETAIL A"	STAGGER LINES 24' TO 36' APART
> 45°	PARALLEL TO FACE OF PN USE "DETAIL A"	STAGGER AT EACH LANE LINE



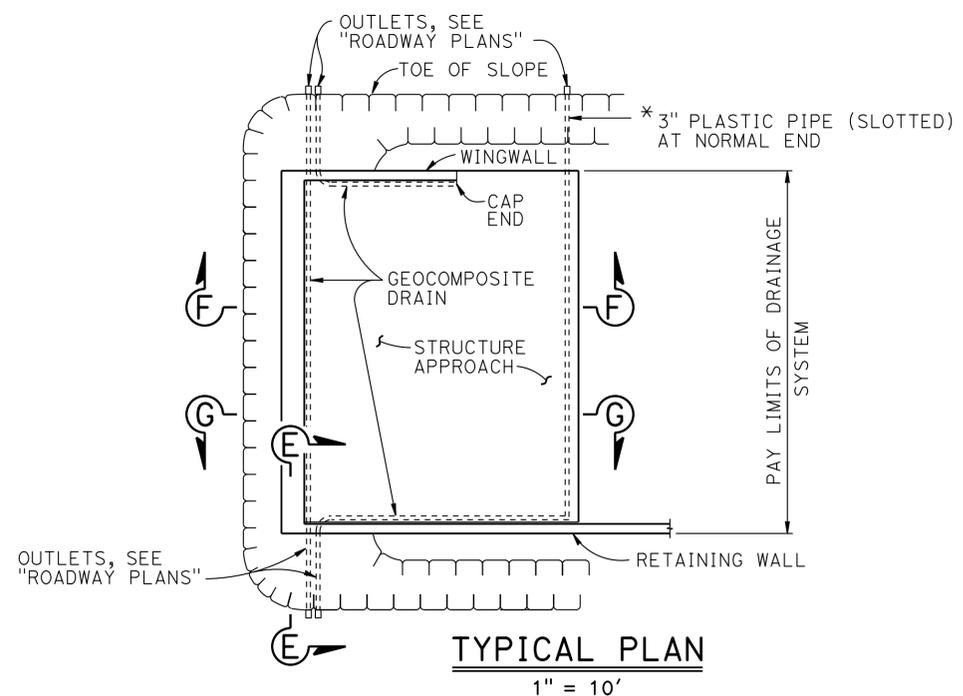
- NOTES:**
- For details not shown, see Structure Plans. For MR ≤ 2", adjust bar reinforcement to clear a sawcut for sealed joint, when required
 - For drainage details, see "STRUCTURE APPROACH DRAINAGE DETAILS" sheet
 - Longitudinal construction joints, when permitted by the Engineer, must be located on lane lines
 - End angle or plate at beginning of barrier transition, end of wingwall or end of structure approach as applicable
 - For transverse contact joint with new PCC paving, refer to Standard Plan P10
 - At the Contractor's option, approach slab transverse reinforcement may be placed parallel to paving notch. Spacing of transverse reinforcement is measured along \perp roadway
 - All reinforcement must be epoxy coated.

STANDARD DRAWING
FILE NO. **xs3-120**
APPROVAL DATE July 2011

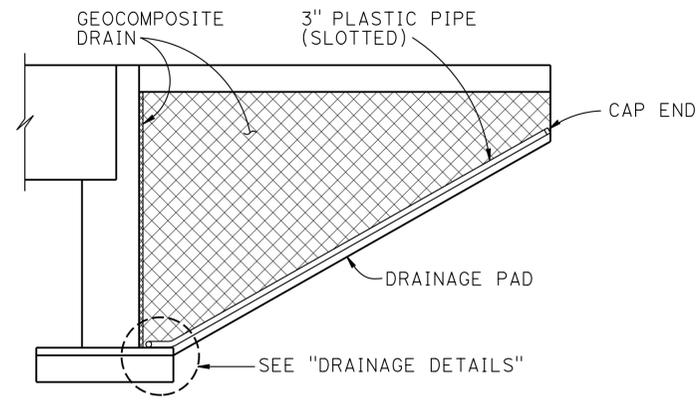
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES

BRIDGE NO. 54-1218
POST MILE R17.2
HOG RANCH CREEK BRIDGE
STRUCTURE APPROACH TYPE N(30S)

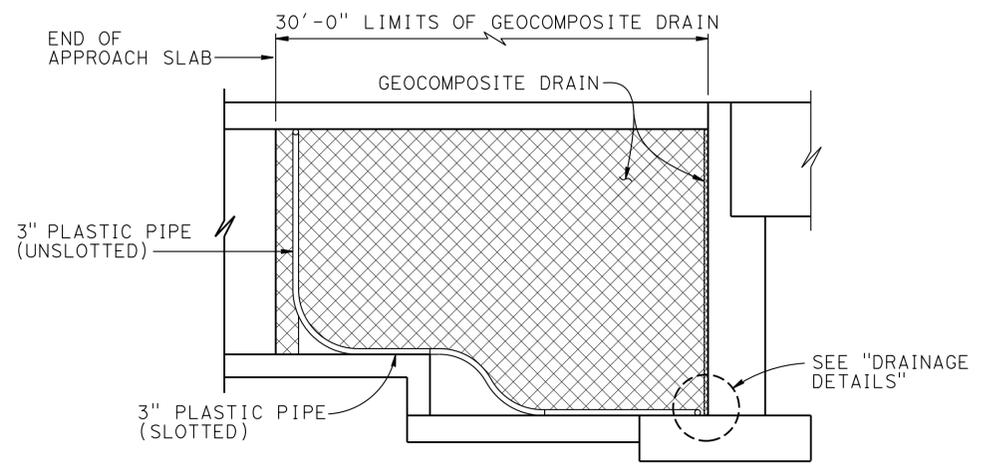
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	158	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER				DATE	3-5-15
PLANS APPROVAL DATE 9-11-15				REGISTERED PROFESSIONAL ENGINEER Peter W. Norboe No. C57519 Exp. 12-31-2015 CIVIL STATE OF CALIFORNIA	
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.</small>					



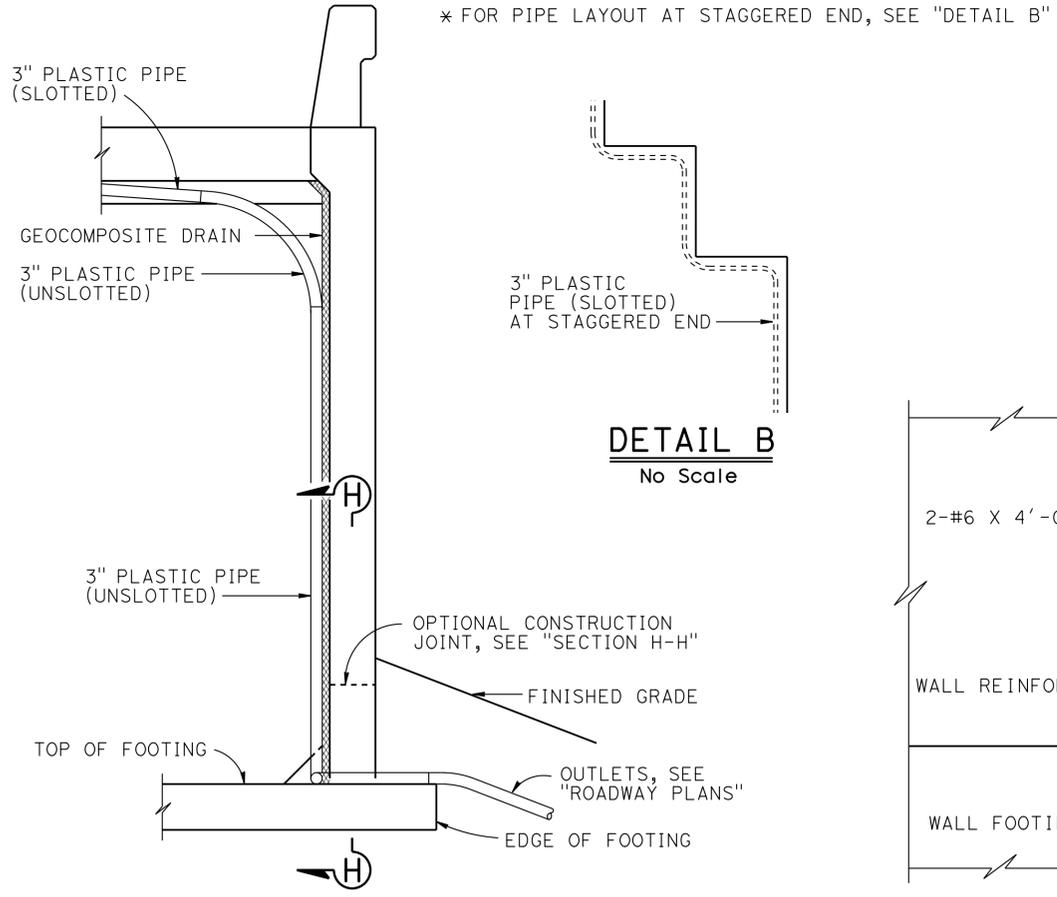
TYPICAL PLAN
1" = 10'



CANTILEVER WINGWALL
SECTION F-F
1/4" = 1'-0"



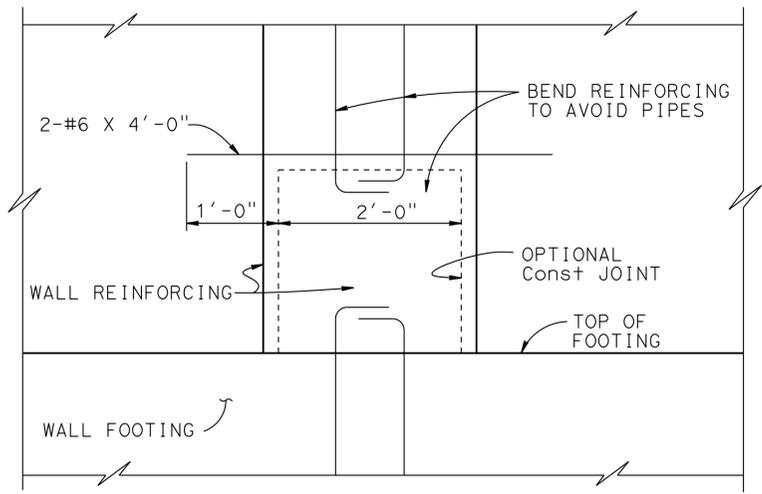
RETAINING WALL WINGWALL DRAINAGE DETAILS
SECTION G-G
1/4" = 1'-0"



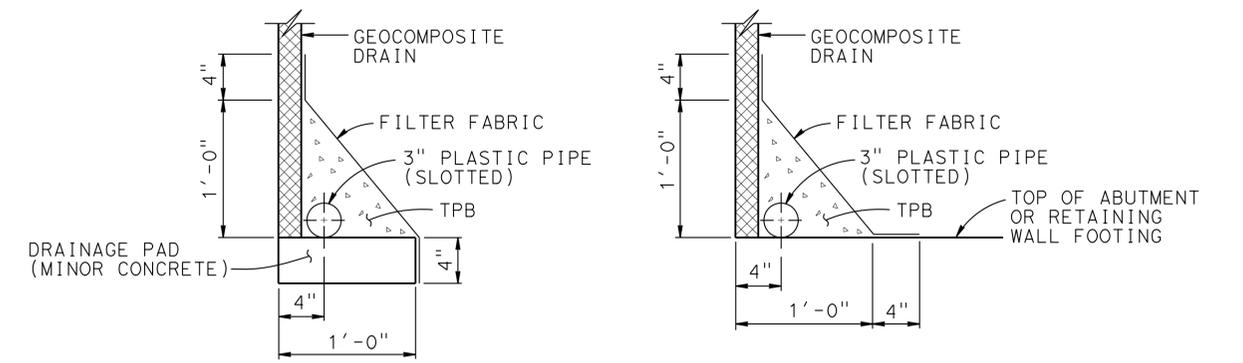
DETAIL B
No Scale

SECTION E-E
1/2" = 1'-0"

NOTE: Bends and junctions in 3" plastic pipe are 30" radius Min



SECTION H-H
1" = 1'-0"



WITHOUT FOOTING

WITH FOOTING

DRAINAGE DETAILS
1 1/2" = 1'-0"

STANDARD DRAWING	
FILE NO. xs3-110	APPROVAL DATE July 2011

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES
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BRIDGE NO. 54-1218	HOG RANCH CREEK BRIDGE	
POST MILE R17.2	STRUCTURE APPROACH DRAINAGE DETAILS	

CONSISTENCY CLASSIFICATION FOR SOILS
According to the Standard Penetration Test

SPT N-value (blows/30cm)	Consistency
0-4	Very Loose
5-10	Loose
11-30	Medium Dense
31-50	Dense
>50	Very Dense

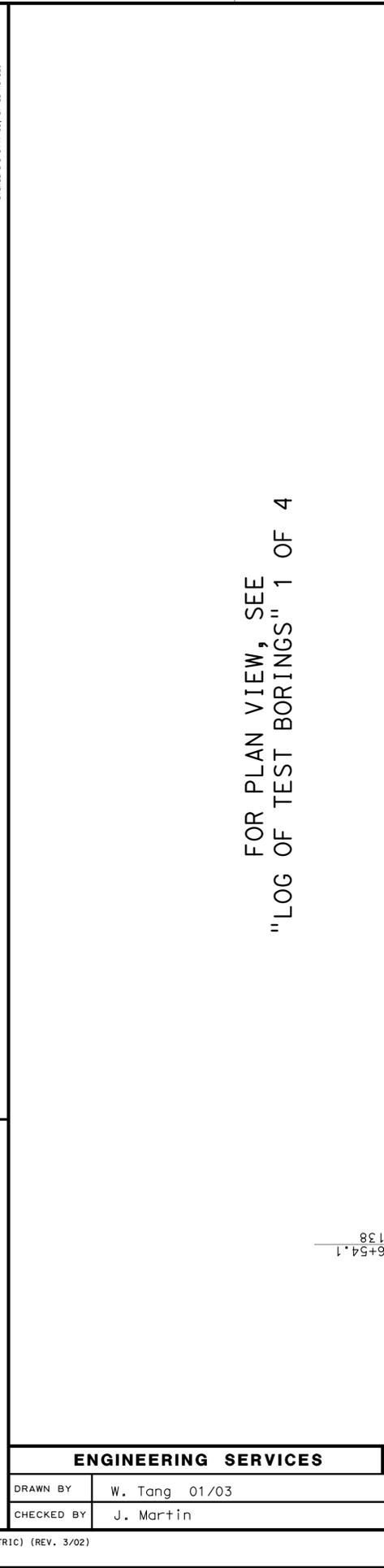
LEGEND OF EARTH MATERIALS

GRAVEL	CLAYEY SILT
SAND	PEAT and/or ORGANIC MATTER
SILT	COBBLES and/or BOULDERS
CLAY	CONGLOMERATE
SANDY CLAY or CLAYEY SAND	SEDIMENTARY ROCK
SILT SAND or SILTY SAND	IGNEOUS ROCK
SILTY CLAY	METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- 87 mm CONE PENETRATION SAMPLE BORING (DRY)
- ROTARY SAMPLE BORING (WET)
- AUGER BORING (DRY)
- TEST PIT
- DIAMOND CORE BORING
- JET BORING
- ELECTRONIC CONE PENETROMETER

FOR PLAN VIEW, SEE "LOG OF TEST BORINGS" 1 OF 4



Boring No.	Station	Offset from Imp. Rte	Soil Description	Remarks
1033	87+08.1	36.7' Left	SILTY SAND with GRAVEL (SM), dense, brown, moist, fine to medium grained subangular SAND, fine grained subangular GRAVEL. (ALLUVIUM)	1033 m
1030	87+08.1	36.7' Left	Poorly graded SAND with GRAVEL (SP) and COBBLES (10%), dense, pale brown and brown, moist, medium to coarse grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 100 mm in size), hard, moderately weathered, subrounded.	1030 m
1027	87+08.1	36.7' Left	Poorly graded SAND with GRAVEL (SP) and COBBLES (20%), medium dense, yellowish brown, moist, oxide staining, medium to coarse grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 100 mm in size), hard, moderately to intensely weathered, subrounded.	1027 m
1024	87+08.1	36.7' Left	SILTY GRAVEL with SAND (GM) and COBBLES (20%) with alternating layers (approx. 0.1 to 0.3 m thick) of SILTY SAND with GRAVEL (SM) and COBBLES, very dense, light olive brown, moist, fine to coarse grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 125 mm in size), hard, moderately weathered, rounded to subrounded.	1024 m
1021	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine grained subangular GRAVEL. (CROWDER FORMATION)	1021 m
1018	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine grained subangular GRAVEL. (CROWDER FORMATION)	1018 m
1015	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine grained subangular GRAVEL. (CROWDER FORMATION)	1015 m
1012	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine grained subangular GRAVEL. (CROWDER FORMATION)	1012 m
1009	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine grained subangular GRAVEL. (CROWDER FORMATION)	1009 m
1006	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine grained subangular GRAVEL. (CROWDER FORMATION)	1006 m
1003	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 75mm in size), hard, moderately weathered, subrounded. (CROWDER FORMATION)	1003 m
1000	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 75mm in size), hard, moderately weathered, subrounded. (CROWDER FORMATION)	1000 m
997	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 75mm in size), hard, moderately weathered, subrounded. (CROWDER FORMATION)	997 m
994	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 75mm in size), hard, moderately weathered, subrounded. (CROWDER FORMATION)	994 m
991	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 75mm in size), hard, moderately weathered, subrounded. (CROWDER FORMATION)	991 m
988	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 75mm in size), hard, moderately weathered, subrounded. (CROWDER FORMATION)	988 m
985	87+08.1	36.7' Left	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with scattered GRAVEL, very dense, moist, fine to medium grained subangular SAND, fine to coarse grained subangular and subrounded GRAVEL, COBBLES (up to 75mm in size), hard, moderately weathered, subrounded. (CROWDER FORMATION)	985 m

DIVISION OF ENGINEERING SERVICES - MATERIALS AND GEOTECHNICAL SERVICES

DIST	COUNTY	ROUTE	POST MILE-TOTAL PROJECT	Sheet No.	Total Sheets
08	SBd	138	R17.1/R19.2	160	212

REGISTERED CIVIL ENGINEER: *[Signature]* DATE: 10-30-13

HOG RANCH CREEK BRIDGE

LOG OF TEST BORINGS 2 OF 4

UNIT: 3643 CONTRACT No. 08-0Q3000 BRIDGE No. 54-1218
 PROJ. No. & PHASE: 0800020191

Caltrans Metric

REGISTERED GEOLOGIST: Muhammad Gabr Ali Luqman No. 7297 Exp. 5-31-04

REGISTERED PROFESSIONAL ENGINEER: David T-M Liao No. C59838 Exp. 12-31-13 CIVIL STATE OF CALIFORNIA

PLANS APPROVAL DATE: 8-20-08

Revisions made to this Log of Test Borings from the original 2002 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from Imp. Rte
02-1	87+08.1	36.7' Left

Notes:
 1. See the General Plan or Foundation Plan for new English alignment.
 2. Boring stationing and offset are directly converted to English units in the table above.

WEATHERING DESCRIPTORS		Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.					
Descriptors		Diagnostic features				General characteristics (strength, excavation, etc.) [§]	
Alphanumeric descriptor	Descriptive term	Chemical weathering-Discoloration and/or oxidation		Mechanical weathering-Grain boundary conditions (disaggregation) primarily for granitics and some coarse-grained sediments	Texture and solutioning		
		Body of rock	Fracture surfaces [†]		Texture	Solutioning	
W1	Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change.	No solutioning.	Hammer rings when crystalline rocks are struck. Almost always rock excavation except for naturally weak or weakly cemented rocks such as siltstones or shales.
W2	Slightly weathered to fresh ^o						
W3	Slightly weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull.	Minor to complete discoloration or oxidation of most surfaces.	No visible separation, intact (tight).	Preserved.	Minor leaching of some soluble minerals may be noted.	Hammer rings when crystalline rocks are struck. Body of rock not weakened. With few exceptions, such as siltstones or shales, classified as rock excavation.
W4	Moderately to slightly weathered ^o						
W5	Moderately weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty," feldspar crystals are "cloudy."	All fracture surfaces are discolored or oxidized.	Partial separation of boundaries visible.	Generally preserved.	Soluble minerals may be mostly leached.	Hammer does not ring when rock is struck. Body of rock is slightly weakened. Depending on fracturing, usually is rock excavation except in naturally weak rocks such as siltstones or shales.
W6	Intensely to moderately weathered ^o						
W7	Intensely weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in-situ disaggregation, see grain boundary conditions.	All fracture surfaces are discolored or oxidized, surfaces friable.	Partial separation, rock is friable; in semiarid conditions granitics are disaggregated.	Texture altered by chemical disintegration (hydration, argillation).	Leaching of soluble minerals may be complete.	Dull sound when struck with hammer, usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures, or veinlets. Rock is significantly weakened. Usually common excavation.
W8	Very intensely weathered						
W9	Decomposed	Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay.		Complete separation of grain boundaries (disaggregated).	Resembles a soil, partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete.		Can be granulated by hand. Always common excavation. Resistant minerals such as quartz may be present as "stringers" or "dikes."

Note: This chart and its horizontal categories are more readily applied to rocks with feldspars and mafic minerals. Weathering in various sedimentary rocks, particularly limestones and poorly indurated sediments, will not always fit the categories established. This chart and weathering categories may have to be modified for particular site conditions or alteration such as hydrothermal effects; however, the basic framework and similar descriptors are to be used.

^oCombination descriptors are permissible where equal distribution of both weathering characteristics are present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, dual descriptors should not be used where significant, identifiable zones can be delineated. When given as a range only two adjacent terms may be combined. "Decomposed to slightly weathered," or "moderately weathered to fresh" are not acceptable.

[†]Does not include directional weathering along shears or faults and their associated features. For example, a shear zone that carried weathering to great depths into a fresh rock mass would not require the rock mass to be classified as weathered.

[§]These are generalizations and should not be used as diagnostic features for weathering or excavation classification. These characteristics vary to a large extent based on naturally weak materials or cementation and type of excavation.

FRACTURE DENSITY	Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.
FRACTURE DENSITY - Based on the spacing of all natural fractures in an exposure or core recovery lengths in boreholes; excludes mechanical breaks, shears, and shear zones; however, shear-disturbed zones (fracturing outside the shear) are included. Descriptors for fracture density apply to all rock exposures such as tunnel walls, dozer trenches, outcrops, or foundation cut slopes and inverts, as well as boreholes. Descriptive criteria presented below are based on borehole cores where lengths are measured along the core axis, for other exposures the criteria is distance measured between fractures (size of blocks).	
UNFRACTURED (FD0): No fractures.	
VERY SLIGHTLY FRACTURED (FD1): Core recovered mostly in lengths greater than 1 m.	
SLIGHTLY TO VERY SLIGHTLY FRACTURED (FD2)*	
SLIGHTLY FRACTURED (FD3): Core recovered mostly in lengths from 300 to 1000 mm, with few scattered lengths less than 300 mm or greater than 1000 mm.	
MODERATELY TO SLIGHTLY FRACTURED (FD4)*	
MODERATELY FRACTURED (FD5): Core recovered mostly in 100 to 300 mm lengths with most lengths about 200 mm.	
INTENSELY TO MODERATELY FRACTURED (FD6)*	
INTENSELY FRACTURED (FD7): Lengths average from 30 to 100 mm with scattered fragmented intervals. Core recovered mostly in lengths less than 100 mm.	
VERY INTENSELY TO INTENSELY FRACTURED (FD8)*	
VERY INTENSELY FRACTURED (FD9): Core recovered mostly as chips and fragments with a few scattered short core lengths.	
* Combinations of fracture densities (e.g. very intensely to intensely fractured, or moderately to slightly fractured) are used where equal distribution of both fracture density characteristics are present over a significant interval or exposure, or where characteristics are "in between" the descriptor definitions.	

ROCK HARDNESS DESCRIPTORS		
Alphanumeric Descriptor	Descriptor	Criteria
H1	Extremely hard	Core, fragment, or exposure cannot be scratched with knife or sharp pick; can only be chipped with repeated heavy hammer blows.
H2	Very hard	Cannot be scratched with knife or sharp pick. Core or fragment breaks with repeated heavy hammer blows.
H3	Hard	Can be scratched with knife or sharp pick with difficulty (heavy pressure). Heavy hammer blow required to break specimen.
H4	Moderately hard	Can be scratched with knife or sharp pick with light or moderate pressure. Core or fragment breaks with moderate hammer blow.
H5	Moderately soft	Can be grooved 2 mm deep by knife or sharp pick with moderate or heavy pressure. Core or fragment breaks with light hammer blow or heavy manual pressure.
H6	Soft	Can be grooved or gouged easily by knife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
H7	Very soft	Can be readily indented, grooved or gouged with fingernail, or carved with a knife. Breaks with light manual pressure.
Any bedrock unit softer than H7, very soft, is to be described using ASTM D-2488 consistency descriptors.		
Note: Although "sharp pick" is included in these definitions, descriptions of ability to be scratched, grooved or gouged by a knife is the preferred criteria.		
Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.		

BEDDING, FOLIATION, OR FLOW TEXTURE DESCRIPTORS	
Descriptors	Thickness / Spacing
Massive	Greater than 3 m
Very thickly (bedded, foliated, or banded)	1 to 3 m
Thickly	300 mm to 1 m
Moderately	100 to 300 mm
Thinly	30 to 100 mm
Very thinly	10 to 30 mm
Laminated (intensely foliated or banded)	Less than 10 mm
Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.	

DIVISION OF ENGINEERING SERVICES - MATERIALS AND GEOTECHNICAL SERVICES					
DIST	COUNTY	ROUTE	POST MILE-TOTAL PROJECT	Sheet No.	Total Sheets
08	SBd	138	R17.1/R19.2	162	212
				10-30-13	DATE
REGISTERED CIVIL ENGINEER					
HOG RANCH CREEK BRIDGE					
LOG OF TEST BORINGS 4 OF 4					
UNIT: 3643		CONTRACT No. 08-0Q3000		BRIDGE No. 54-1218	
PROJ. No. & PHASE: 0800020191					
		Sheet		of	

DIST	COUNTY	ROUTE	KILOMETER TOTAL PROJECT	POST PROJECT	SHEET No	TOTAL SHEETS
08	SBd	138				

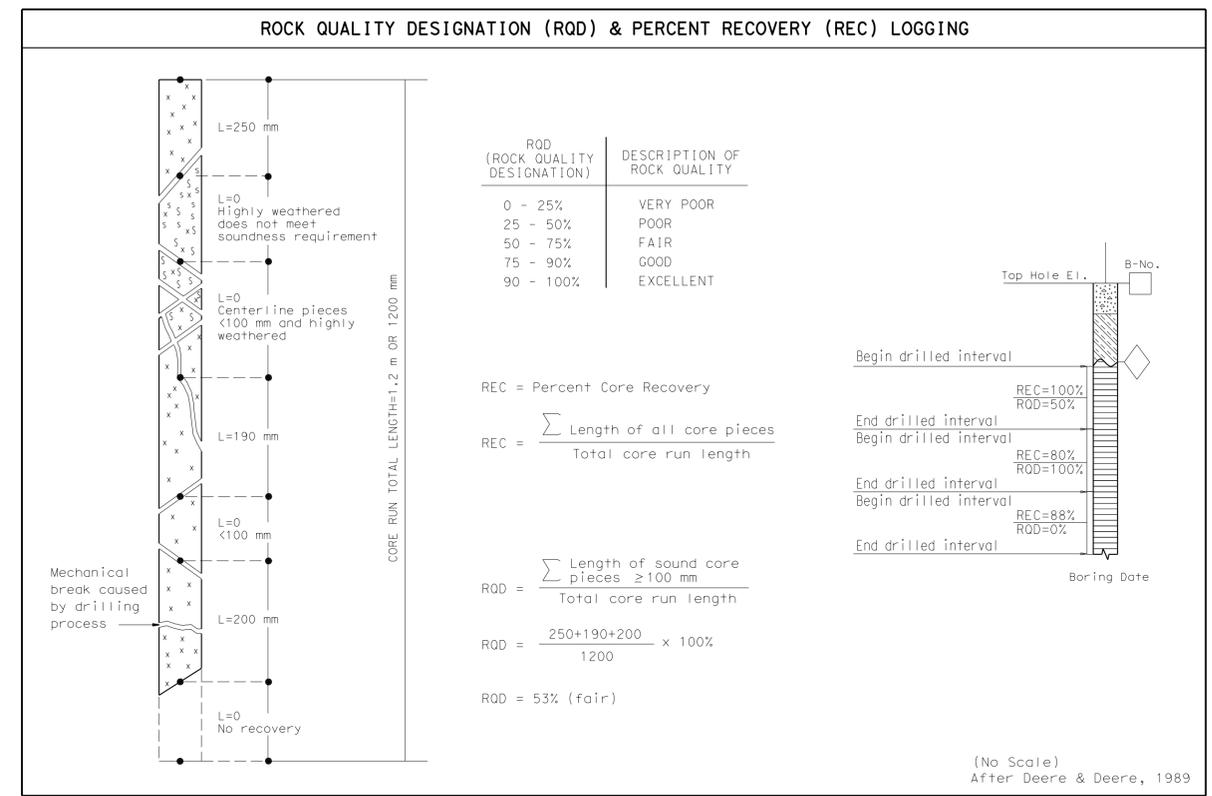
REGISTERED GEOLOGIST

8-20-03

REGISTERED GEOLOGIST

PLANS APPROVAL DATE

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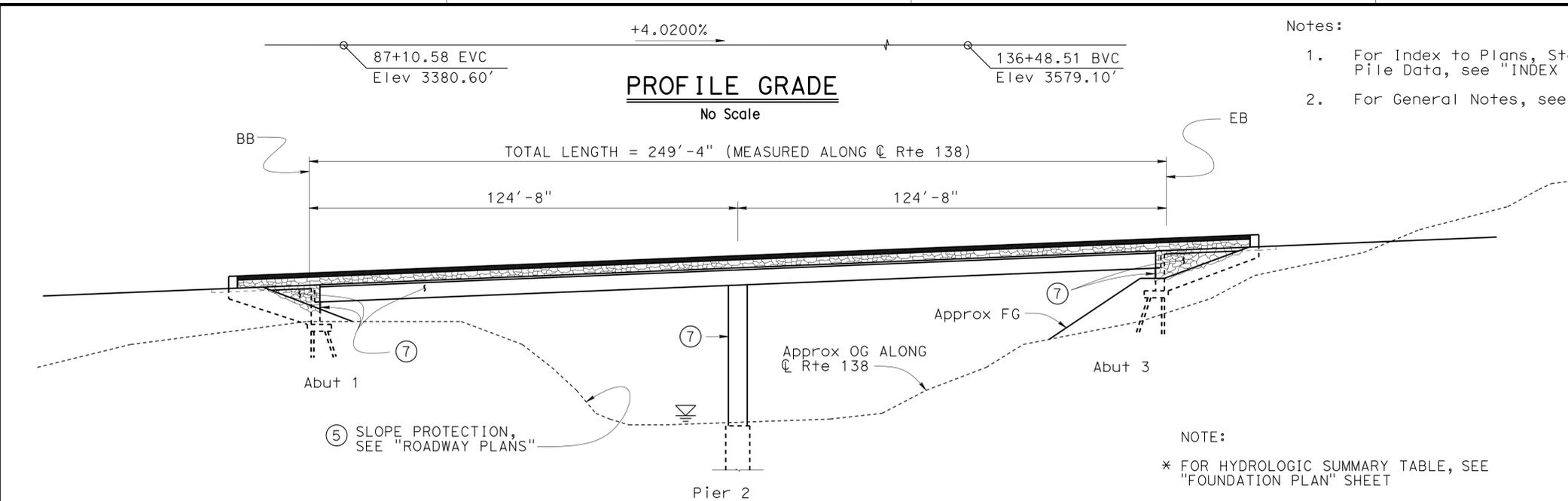


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBD	138	R17.1/R19.2	163	212

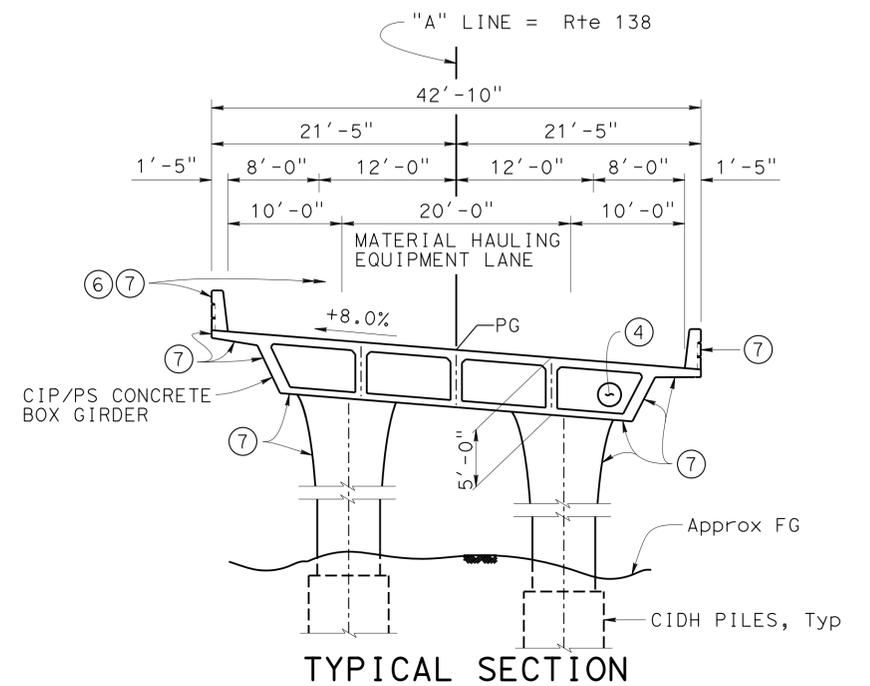
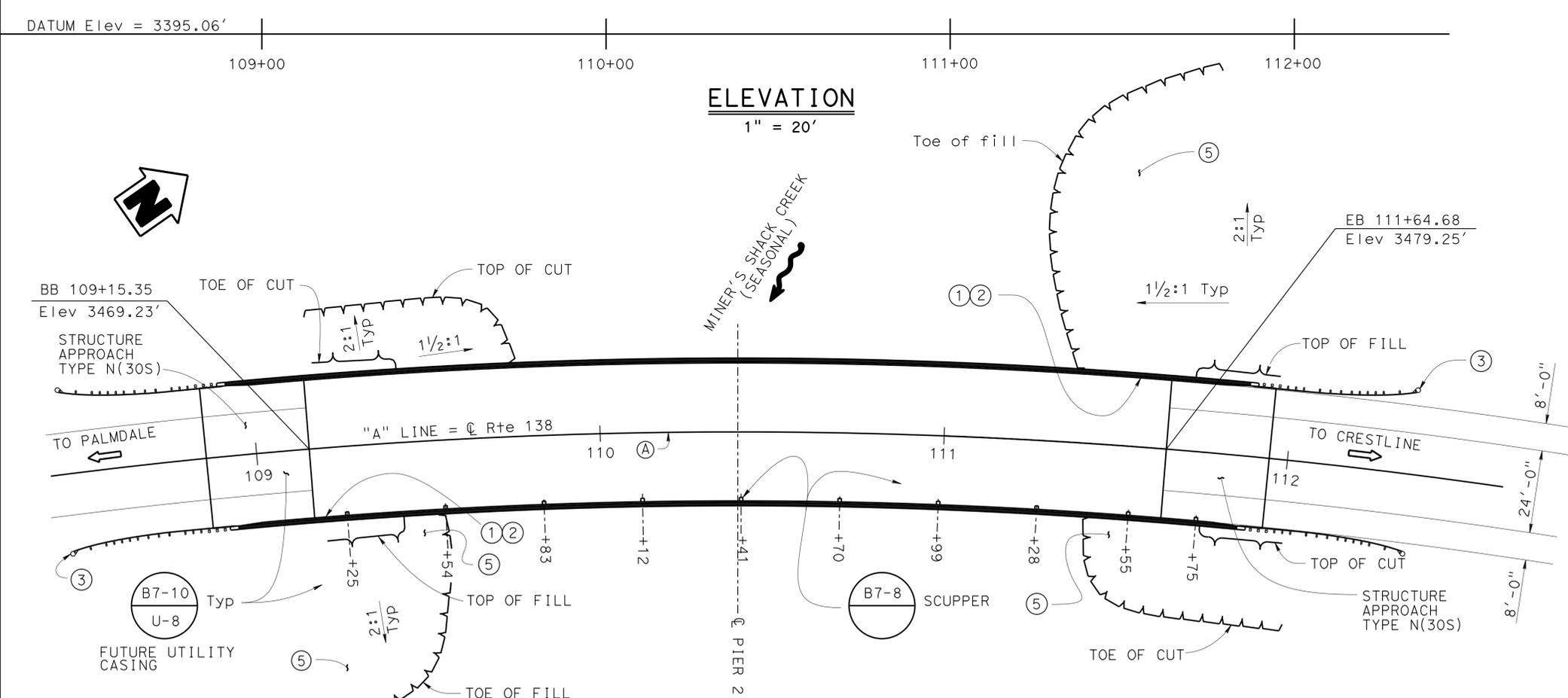
Peter W. Norboe
 REGISTERED CIVIL ENGINEER
 No. 57519
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA

3-5-15 DATE
 9-11-15 PLANS APPROVAL DATE

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- Notes:
- For Index to Plans, Standard Plans List, and Pile Data, see "INDEX TO PLANS" sheet.
 - For General Notes, see "DECK CONTOURS" sheet.



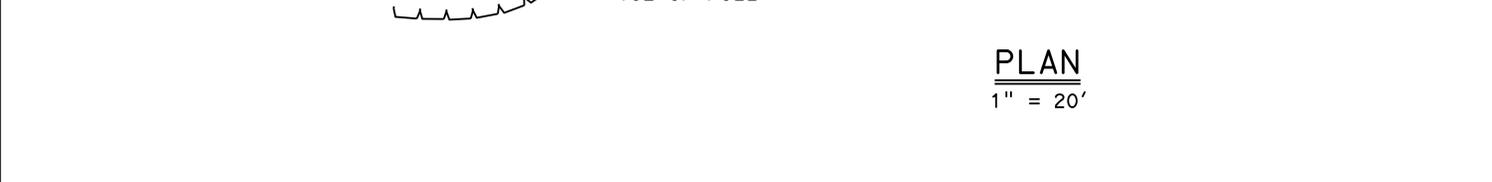
QUANTITIES

STRUCTURE EXCAVATION (BRIDGE)	337	CY
STRUCTURE BACKFILL (BRIDGE)	257	CY
84" CAST-IN-DRILLED-HOLE CONCRETE PILING	138	LF
FURNISH PILING (CLASS 140) (ALTERNATIVE W MODIFIED)	570	LF
DRIVE PILE (CLASS 140) (ALTERNATIVE W MODIFIED)	28	EA
PRESTRESSING CAST-IN-PLACE CONCRETE	LUMP	SUM
STRUCTURAL CONCRETE, BRIDGE FOOTING	46	CY
STRUCTURAL CONCRETE, BRIDGE	950	CY
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	98	CY
RANDOM BOULDER TEXTURE	616	SQFT
JOINT SEAL (MR 2)	80	LF
BAR REINFORCING STEEL (BRIDGE)	179,092	LB
BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	159,155	LB
PREPARE AND STAIN CONCRETE	4,956	SQFT
24" WELDED STEEL PIPE CASING (BRIDGE)	78	LF
CONCRETE BARRIER (TYPE 742 MODIFIED)	595	LF

- LEGEND:
- Paint "BRIDGE NUMBER 54-1219"
 - Paint "MINER'S SHACK CREEK BRIDGE"
 - MGS, see "ROADWAY PLANS"
 - Future Utility Opening
 - RSP, see "ROADWAY PLANS"
 - Concrete Barrier Type 742 (Modified)
 - Prepare and Stain Concrete Surface (ALL EXPOSED SURFACES EXCLUDING BRIDGE DECK AND APPROACH SLABS)

CURVE DATA

NO.	R	Δ	T	L
(A)	1558.40'	95°43'34"	1722.48'	2603.67'



Gordon Danke DESIGN ENGINEER	DESIGN	BY Pete Norboe	CHECKED Rosa Candiotti	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	BRIDGE NO.	54-1219	MINER'S SHACK CREEK BRIDGE GENERAL PLAN
	DETAILS	BY David Elliott	CHECKED Rosa Candiotti	LAYOUT	BY Pete Norboe		DESIGN BRANCH	9	
	QUANTITIES	BY Pete Norboe	CHECKED Rosa Candiotti	SPECIFICATIONS	BY Theresa Nedwick		PLANS AND SPECS COMPARED	Theresa Nedwick	

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
 UNIT: 3594
 PROJECT NUMBER & PHASE: 0800020191-1
 CONTRACT NO.: 08-003004
 DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
1-18-14	1	21

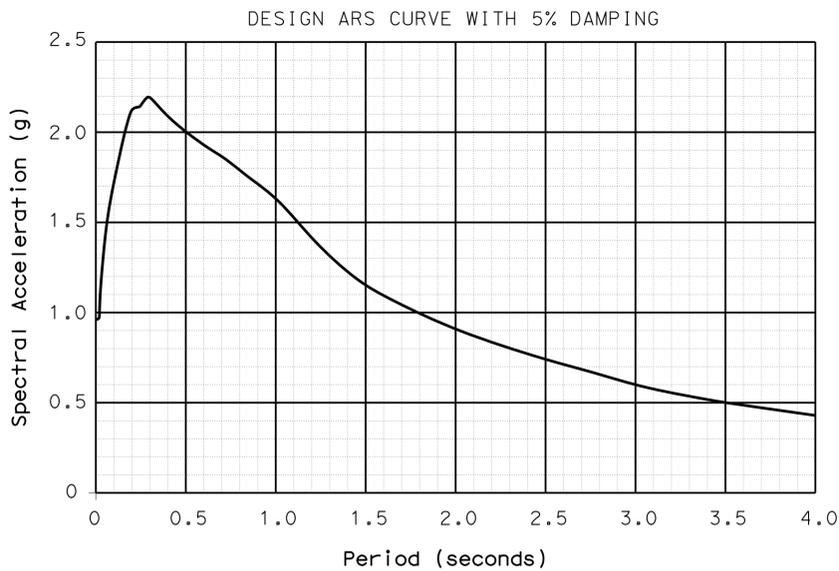
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	164	212

Peter W. Norboe 3-5-15
REGISTERED CIVIL ENGINEER DATE

9-11-15
PLANS APPROVAL DATE

Peter W. Norboe
No. 57519
Exp. 12-31-2015
CIVIL
STATE OF CALIFORNIA

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ACCELERATION RESPONSE SPECTRA
No Scale

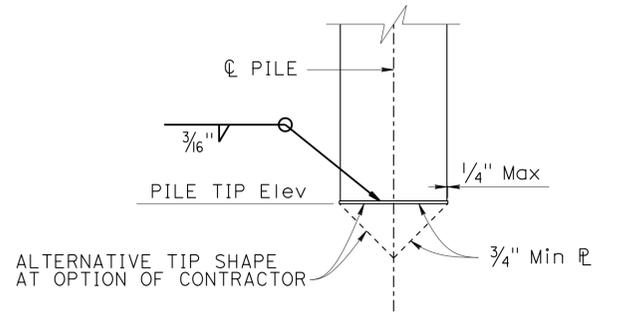
PILE DATA TABLE

Support Location	Pile Type (b)	Nominal Resistance (kips)		Design Tip Elevation (Ft)	Specified Tip Elevation (Ft)	Design Loading (kips)
		Compression	Tension			
Abutment 1	Modified Class 140 Alt W (PP 14 x 0.438)	280	0	3432.8 (a)	3432.8	280
Pier 2	84" CIDH	4330	1430	3353.0 (a) 3382.0 (b)	3353.0	N/A
Abutment 3	Modified Class 140 Alt W (PP 14 x 0.438)	280	0	3442.5 (a)	3442.5	280

- NOTE:
- Design tip elevations are controlled by: (a) Compression (b) Tension
 - "Modified" Class 140, Alternative "W" pipe pile is to be driven with either a flat or conical steel tip welded to the pile tip.

INDEX TO PLANS

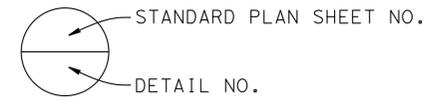
- GENERAL PLAN
- INDEX TO PLANS
- DECK CONTOUR
- FOUNDATION PLAN
- ABUTMENT LAYOUT
- ABUTMENT DETAILS NO. 1
- ABUTMENT DETAILS NO. 2
- PIER DETAILS
- COLUMN DETAILS NO. 1
- COLUMN DETAILS NO. 2
- COLUMN DETAILS NO. 3
- TYPICAL SECTION
- GIRDER LAYOUT
- GIRDER REINFORCEMENT
- ARCHITECTURAL TREATMENT DETAILS
- STRUCTURE APPROACH TYPE N(30S)
- STRUCTURE APPROACH DRAINAGE DETAILS
- LOG OF TEST BORINGS NO. 1
- LOG OF TEST BORINGS NO. 2
- LOG OF TEST BORINGS NO. 3
- LOG OF TEST BORINGS NO. 4



CLASS 140 ALTERNATIVE "W" MODIFIED TIP (NOTE 2)
No Scale

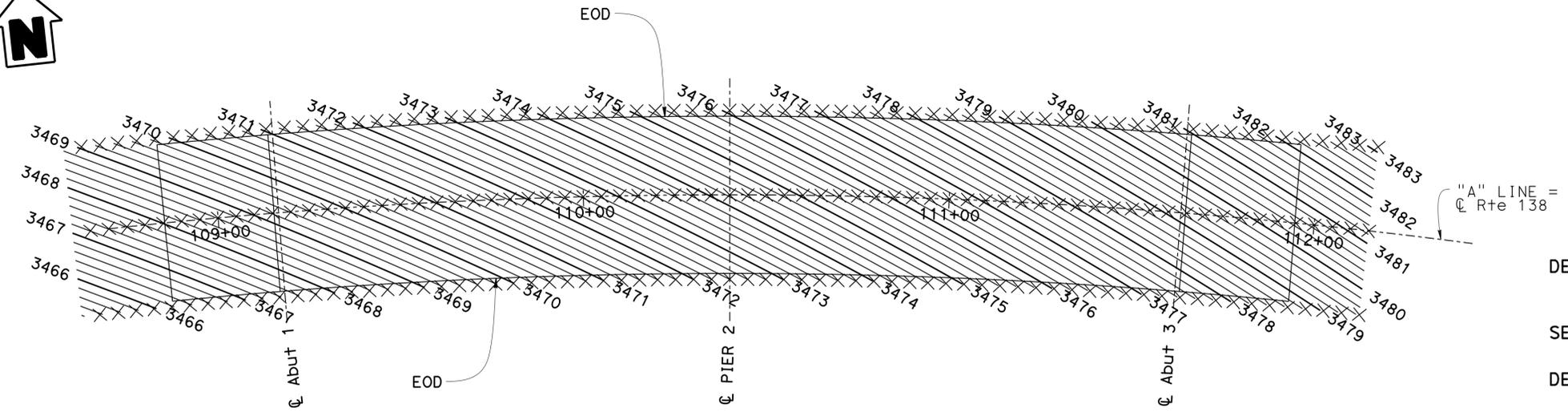
STANDARD PLANS 2010

SHEET NO.	TITLE
B0-1	Bridge Details
B0-3	Bridge Details
B0-5	Bridge Details
B0-13	Bridge Details
B2-5	Pile Details Class 90 and Class 140
B6-21	Joint Seals (Maximum Movement Rating = 2")
B7-1	Box Girder Details
B7-8	Deck Drainage Details
B7-10	Utility Opening Box Girder
RSP B8-5	Cast-In-Place Prestressed Girder Details
RSP B11-57	Concrete Barrier Type 742
B14-5	Water Supply Line (Details) (Pipe Sizes Less Than NPS 4)



DESIGN BY P. Norboe CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO. 54-1219	MINER'S SHACK CREEK BRIDGE	
DETAILS BY D. Elliott CHECKED R. Candiotti		PROJECT NUMBER & PHASE: 0800020191-1	POST MILE R17.6		INDEX TO PLANS
QUANTITIES BY P. Norboe CHECKED R. Candiotti		UNIT: 3594	CONTRACT NO.: 08-003004		
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	DISREGARD PRINTS BEARING EARLIER REVISION DATES	SHEET 2 OF 21

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	165	212
			DATE		
			3-5-15		
			REGISTERED CIVIL ENGINEER		
			9-11-15		
			PLANS APPROVAL DATE		
			Peter W. Norboe No. 57519 Exp. 12-31-2015 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.					

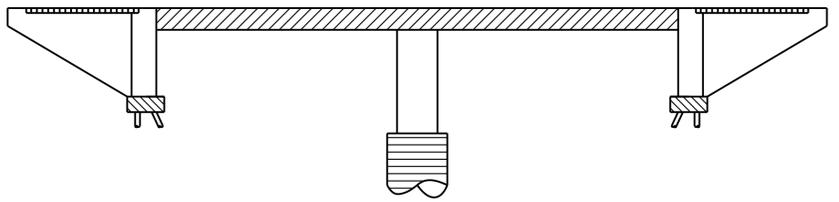


GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

- DESIGN:**
AASHTO LRFD Bridge Design Specifications, 4th edition with the 2007 Interims and the November 2011 California Amendments
- SEISMIC DESIGN:**
Caltrans Seismic Design Criteria (SDC), Version 16 dated November 2010
- DEAD LOAD:**
Includes 35 psf for future wearing surface.
- LIVE LOADING:**
HL93, permit design load, and MHE truck load.
- SEISMIC LOADING:**
See Site Specific ARS on "INDEX TO PLANS" sheet.
 $V_{s30} = 350$ m/s; $PGA = 0.97g$
- CONCRETE:**
 $f_y = 60$ ksi
 $f'_c = 3.6$ ksi
 $n = 8$
See prestressing notes.
- STRUCTURAL STEEL:**
 $f_y =$ ASTM A709 Grade 50

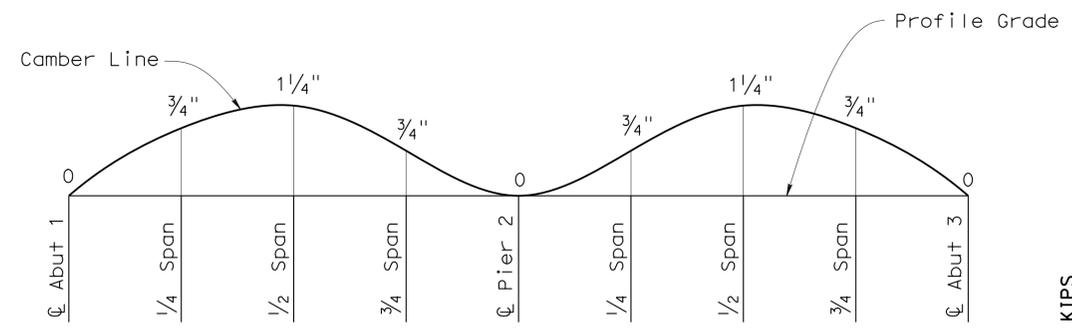
- Notes:
- 5.0 ft intervals along station line
 - Contours do not include camber
 - Contours interval = .2 ft

DECK CONTOUR
1" = 20'



- Structural Concrete, Bridge
- CIDH Pile (5000 psi @ 28 days)
- Structural Concrete, Bridge Footing
- Structural Concrete, Bridge (5000 psi @ 28 days)
- Structural Concrete, Approach Slab Type N(30S)

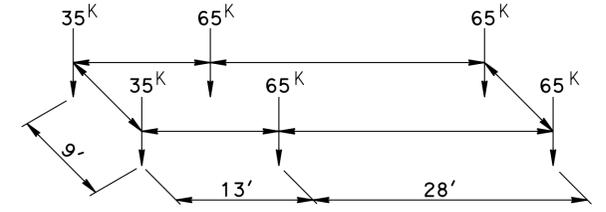
CONCRETE STRENGTH AND TYPE LIMITS
No Scale



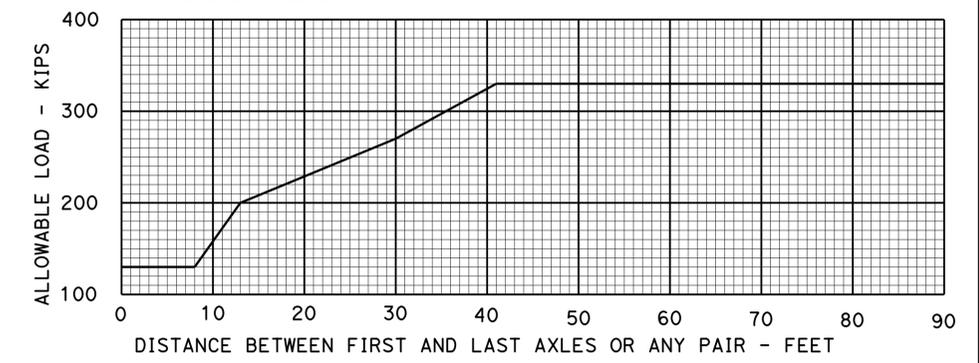
CAMBER DIAGRAM
No Scale

- Note:
1. For ARS Curve, see "Index To Plans" sheet.

Does not include allowance for falsework settlement



Axle pairs less than 8 feet will be considered as a single axle.
Maximum single axle load = 130 Kips
The gross axle loads, in pairs or in total, must be within the limits shown below.



MATERIALS HAULING EQUIPMENT LOADING

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1219
POST MILE	R17.6

MINER'S SHACK CREEK BRIDGE
DECK CONTOUR

USERNAME => s102458 DATE PLOTTED => 16-NOV-2015 TIME PLOTTED => 10:10

CURVE DATA				
No.	R	Δ	T	L
(1)	1558.40'	95°43'34"	1722.48'	2603.67'

NOTE: For purposes of converting the metric LOTB stationing to these Plans, use the following equivalent stationing: BB on LOTB's = 33+27.000 (m) converts to BB = 109+15.35 (ft).

HYDROLOGIC SUMMARY

DRAINAGE AREA : 0.45 SQUARE MILES

	DESIGN FLOOD	BASE FLOOD	OVERTOPPING FLOOD
FREQUENCY (YEARS)	50	100	>>500
DISCHARGE (CUBIC FEET PER SECONDS)	410	610	-
WATER SURFACE ELEV. AT BRIDGE (FEET)	3430	3435	3470

FLOOD PLAIN DATA ARE BASED UPON INFORMATION AVAILABLE WHEN THE PLANS WERE PREPARED AND ARE SHOWN TO MEET FEDERAL REQUIREMENTS. THE ACCURACY OF SAID INFORMATION IS NOT WARRANTED BY THE STATE AND INTERESTED OR AFFECTED PARTIES SHOULD MAKE THEIR OWN INVESTIGATIONS.

LEGEND:

-  INDICATES BOTTOM FOOTING ELEVATION
-  DENOTES 84" Ø CIDH PILE
-  DENOTES VERTICAL PILE
-  DENOTES BATTERED PILE



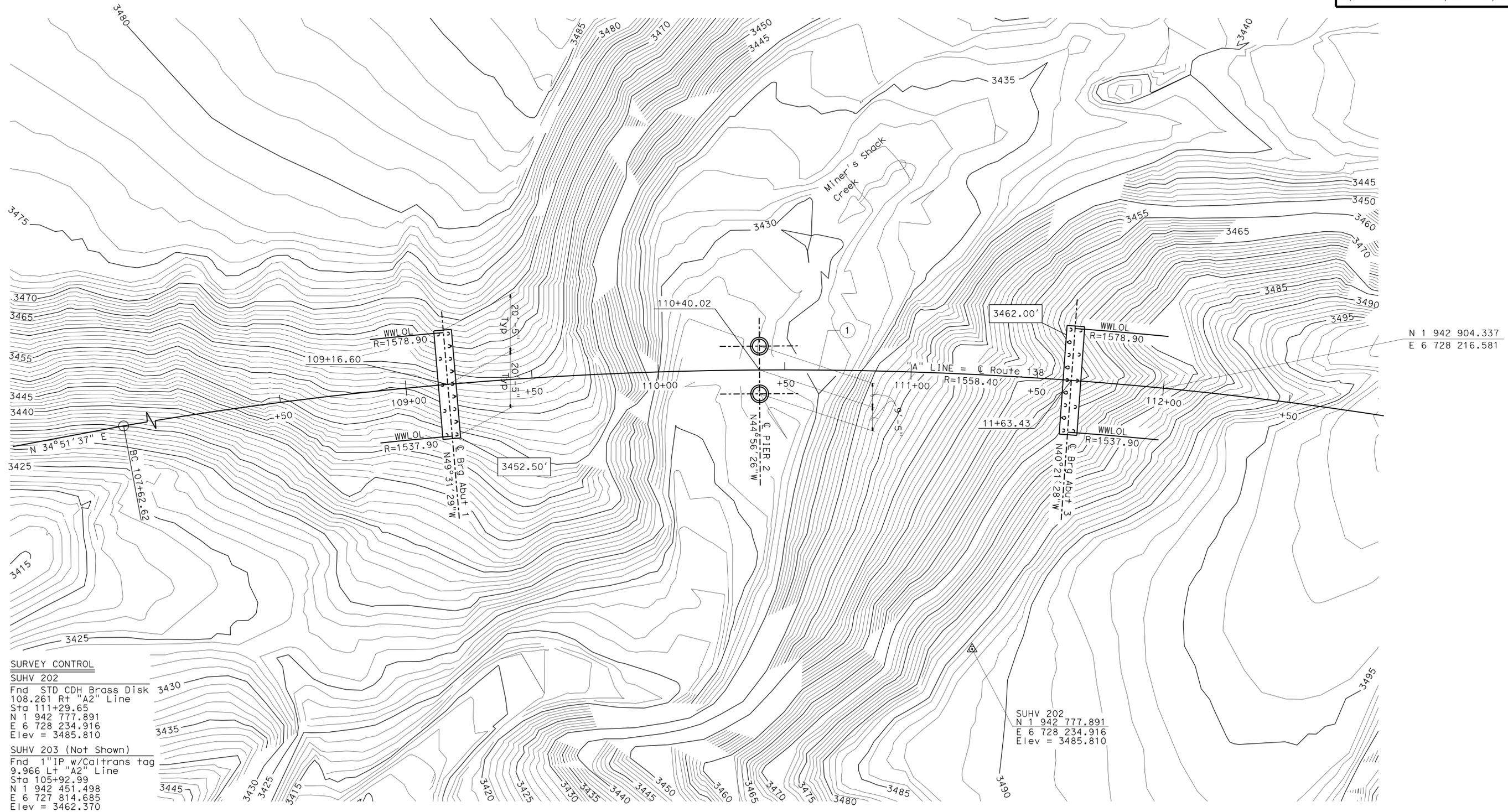
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	166	212

Peter W. Norboe
 REGISTERED CIVIL ENGINEER DATE 3-5-15

9-11-15
 PLANS APPROVAL DATE

Peter W. Norboe
 No. 57519
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 CIVIL
 STATE OF CALIFORNIA

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SURVEY CONTROL
 SUHV 202
 Fnd STD CDH Brass Disk 3430
 108.261 Rt "A2" Line
 Sta 111+29.65
 N 1 942 777.891
 E 6 728 234.916
 Elev = 3485.810

SUHV 203 (Not Shown)
 Fnd 1" IP w/Caltrans tag
 9.966 Lt "A2" Line
 Sta 105+92.99
 N 1 942 451.498
 E 6 727 814.685
 Elev = 3462.370

PRELIMINARY INVESTIGATION SECTION				DESIGN	BY P. NORBOE	CHECKED R. CANDIOTTI	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO.	MINER'S SHACK CREEK BRIDGE			
SCALE	VERT. DATUM NAD 83	PHOTOGRAMMETRY AS OF: X	DETAILS	BY D. ELLIOTT	CHECKED R. CANDIOTTI	54-1219			FOUNDATION PLAN		POST MILE		
ALIGNMENT TIES	Dist. Traverse Sheet	DRAFTED BY M. Sadaghiani 10-13	QUANTITIES	BY P. NORBOE	CHECKED R. CANDIOTTI	R17.6							
STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 09-01-10)								UNIT: 3647	PROJECT NUMBER & PHASE: 0800020191-1	CONTRACT NO.: 08-003004	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 4 OF 21

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

FILE => 54-1219-e-fp.dgn

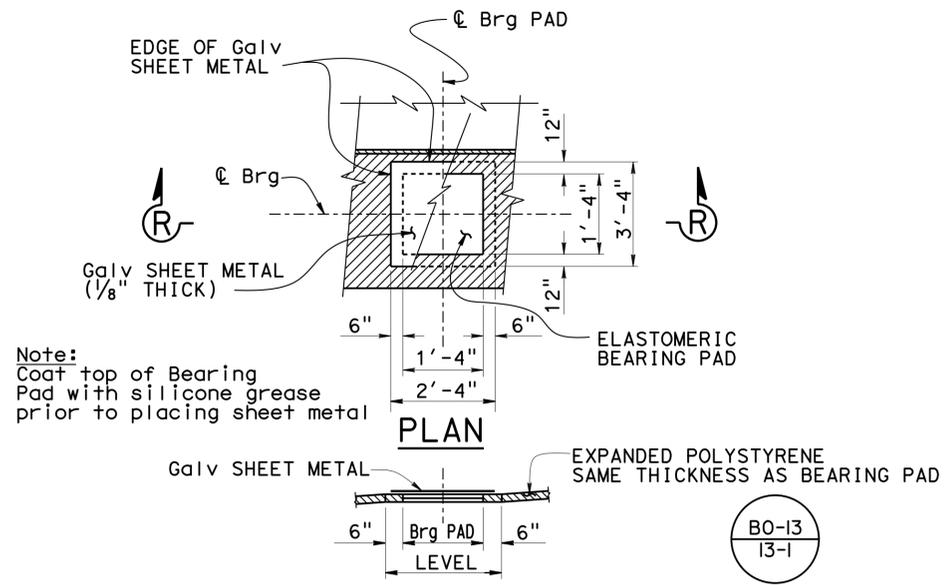
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	168	212

Peter W. Norboe 3-5-15
REGISTERED CIVIL ENGINEER DATE

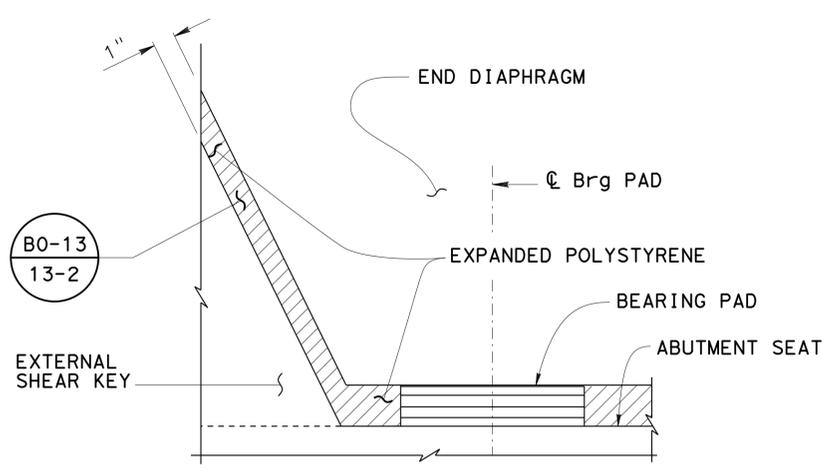
9-11-15
PLANS APPROVAL DATE

Peter W. Norboe
No. 57519
Exp. 12-31-2015
CIVIL
STATE OF CALIFORNIA

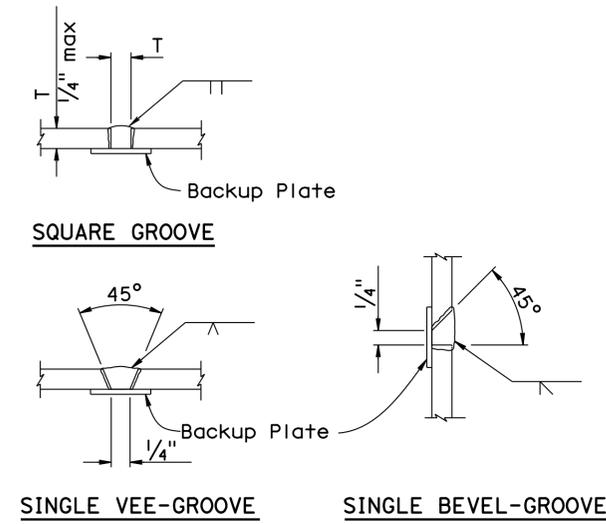
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**SECTION R-R
BEARING PAD DETAIL**
No Scale
DETAILS TYPICAL AT ALL BEARING PADS

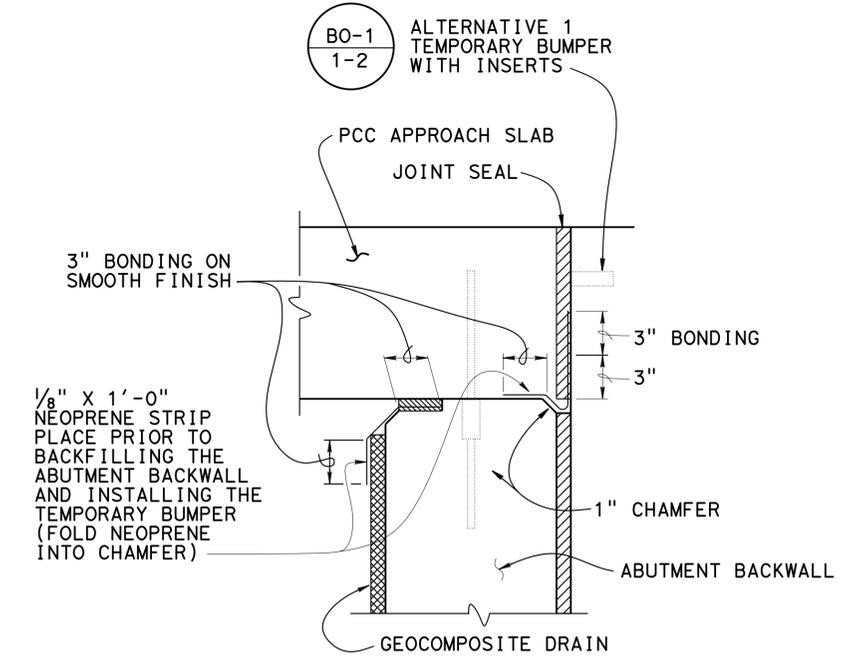


Note: Expanded Polystyrene same thickness as brg pad

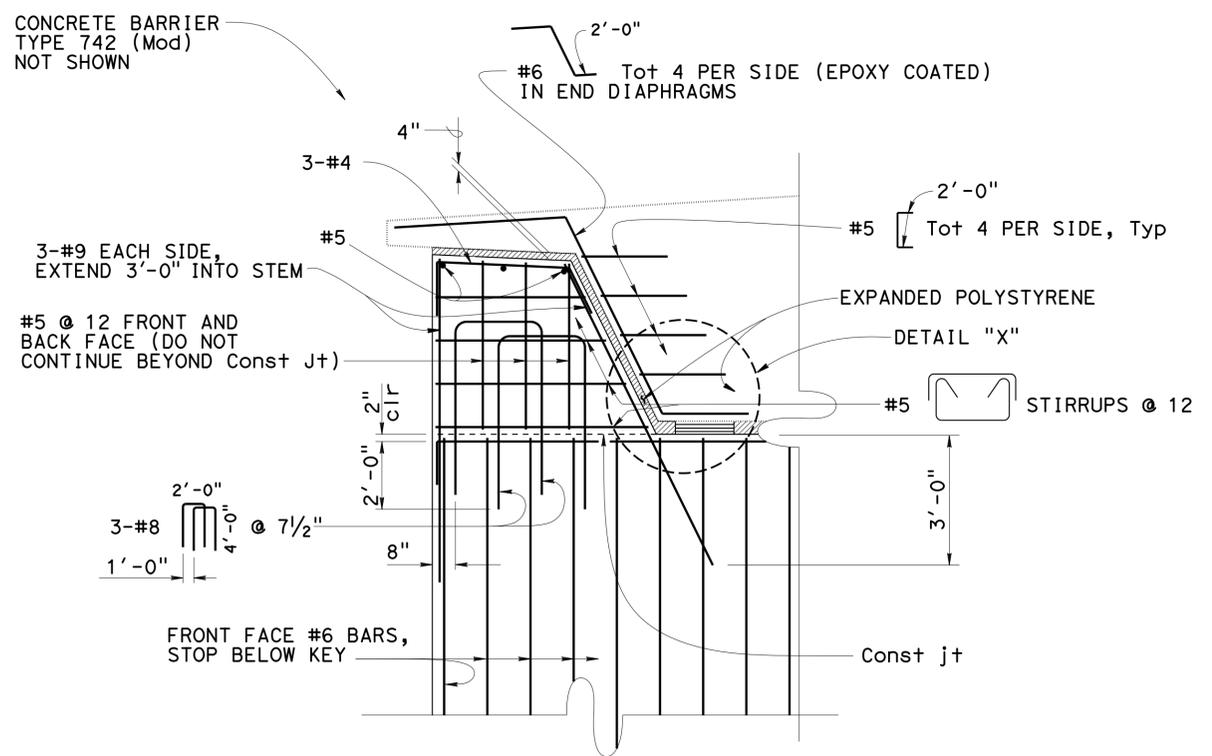


PILE WELDING DETAIL-BUTT JOINTS

- Notes:
1. Single Vee-Groove And Square Groove Permitted for all positions.
 2. Single Bevel-Groove permitted for horizontal joints only



JOINT PROTECTION DETAIL
No Scale



PART ELEVATION SHEAR KEY
NO SCALE

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

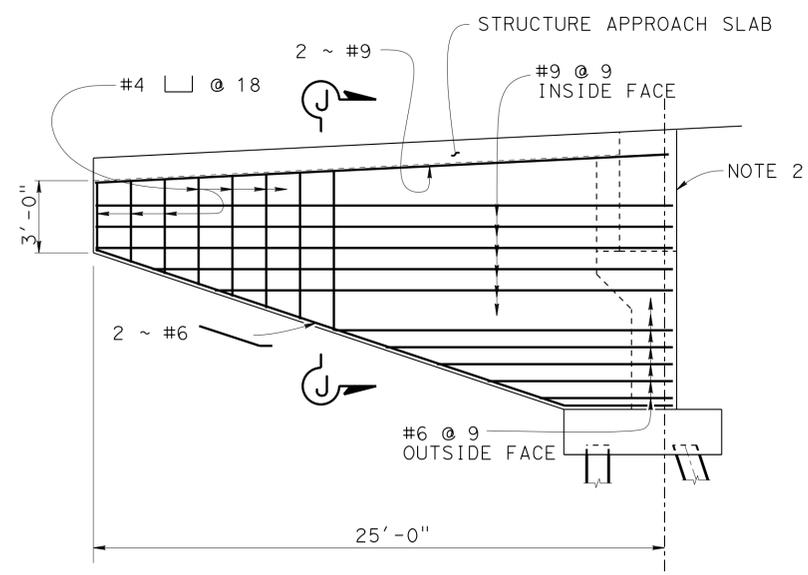
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1219
POST MILE	R17.6

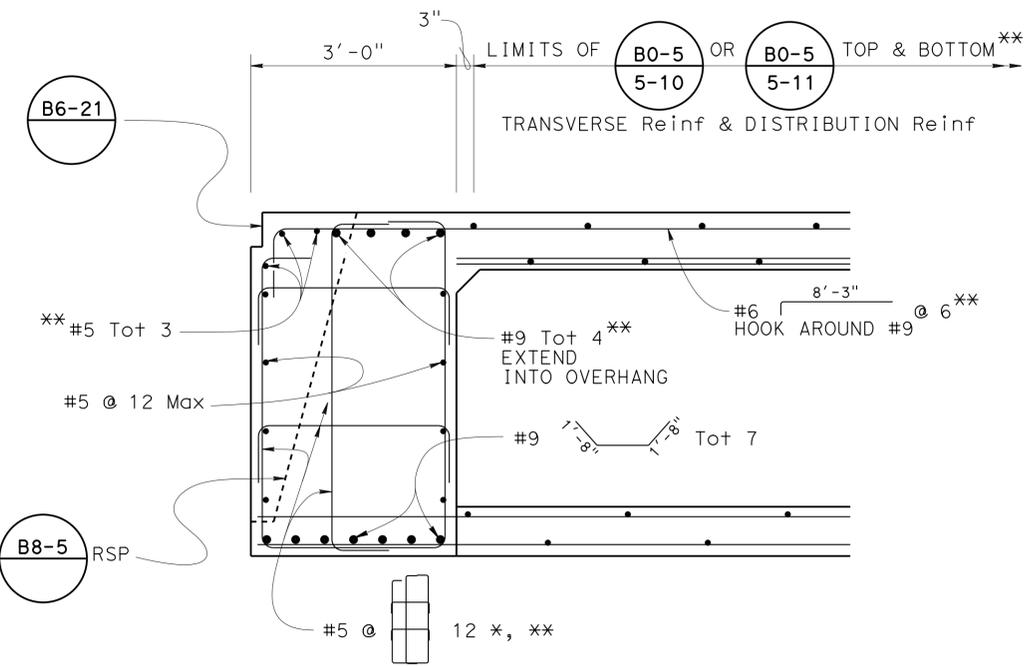
**MINER'S SHACK CREEK BRIDGE
ABUTMENT DETAIL NO. 1**

DATE PLOTTED => 16-NOV-2015
TIME PLOTTED => 10:10
USERNAME => s102458

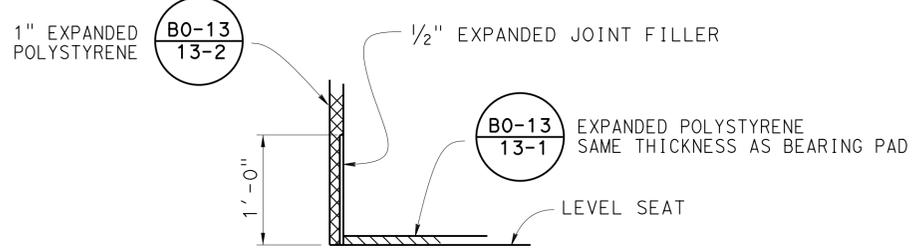
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	169	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER			3-5-15 DATE		
9-11-15 PLANS APPROVAL DATE					
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.</small>					



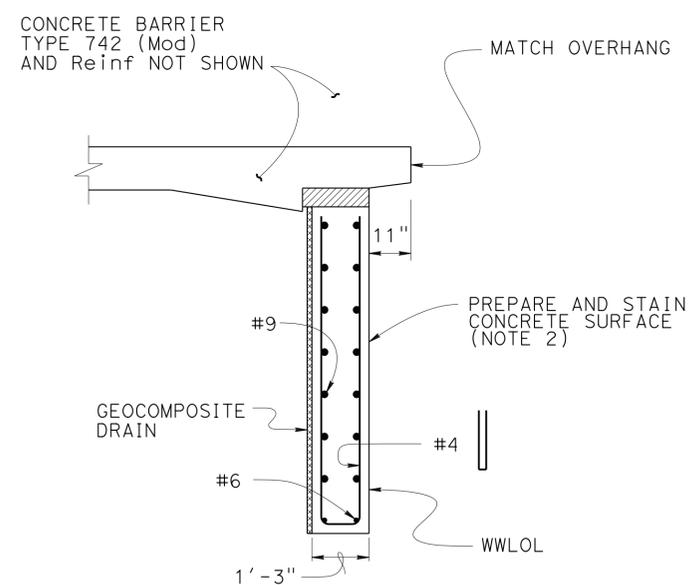
WINGWALL ELEVATION
 $\frac{1}{4}'' = 1'-0''$



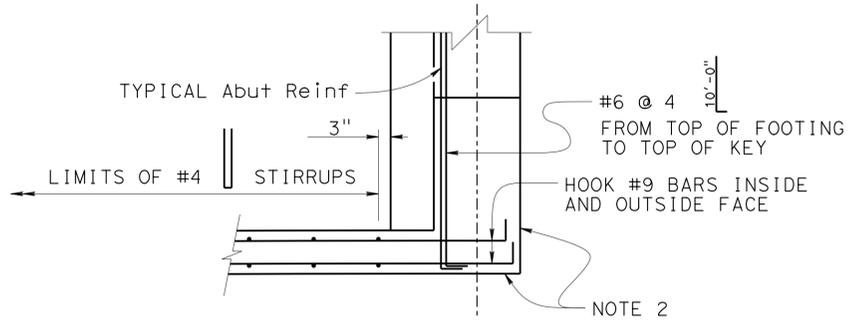
END DIAPHRAGM
 $\frac{1}{2}'' = 1'-0''$



BACK WALL BASE DETAILS
 NO SCALE



SECTION C-C
 $\frac{1}{2}'' = 1'-0''$



DETAIL D
 NO SCALE

- NOTES:
1. For location of Detail D, see "ABUTMENT LAYOUT" sheet.
 2. Concrete Surface Texture not shown.
 3. For location of "DETAIL D", see "ABUTMENT LAYOUT" sheet.

- LEGEND:
- * MAXIMUM SPACING AT DECK LEVEL, FAN BARS AT EXTERIOR GIRDERS TO PROVIDE 2:1 SLOPE
 - ** EPOXY COATED

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

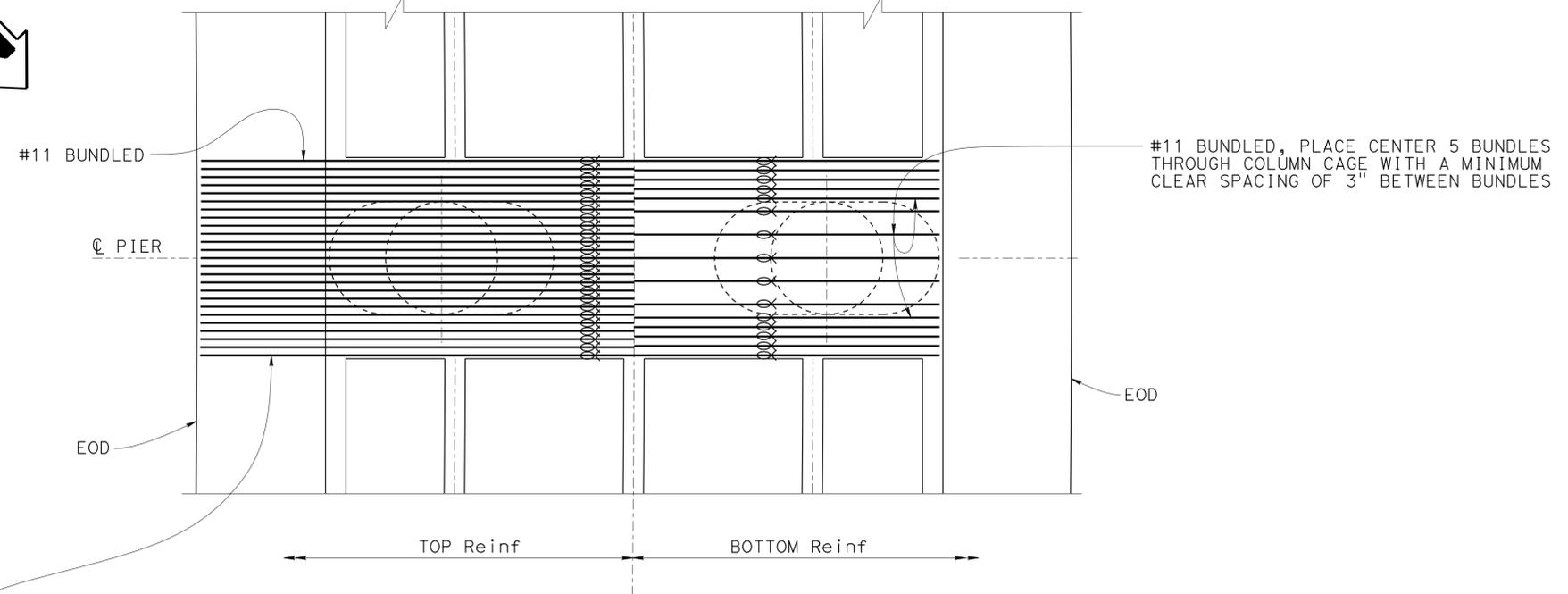
DIVISION OF ENGINEERING SERVICES
 STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1219
POST MILE	R17.6

MINER'S SHACK CREEK BRIDGE
ABUTMENT DETAIL NO. 2



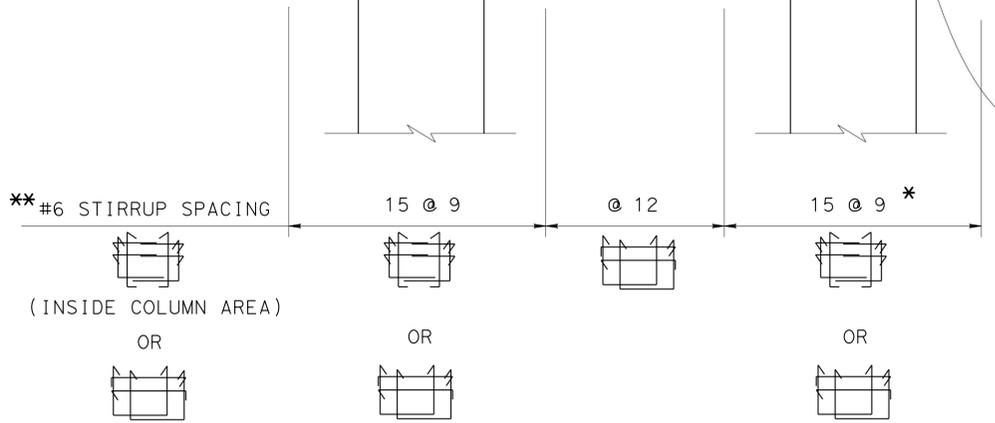
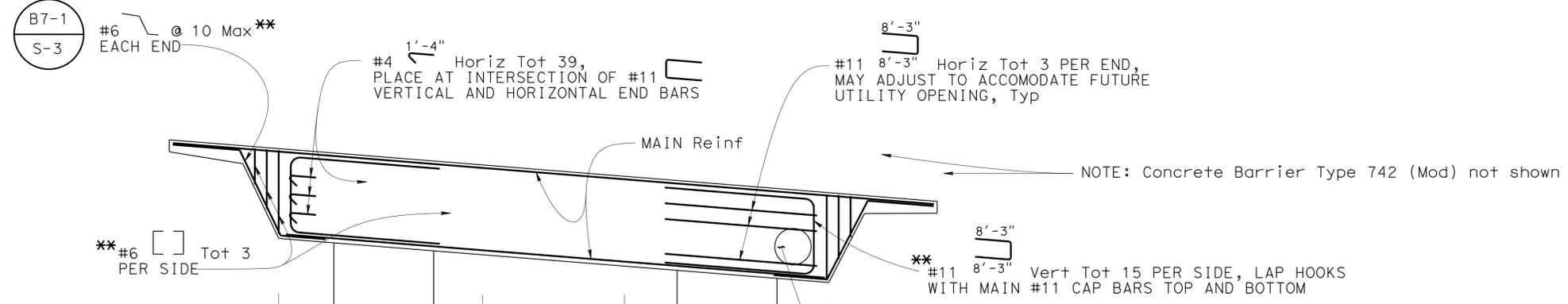
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	170	212
Peter W. Norboe			3-5-15		
REGISTERED CIVIL ENGINEER			DATE		
			9-11-15		
PLANS APPROVAL DATE					
Peter W. Norboe No. 57519 Exp. 12-31-2015 CIVIL STATE OF CALIFORNIA					
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NOTE: Extend 1/2 of main cap bars to edge of deck, and remainder of bars to allow for minimum cover.

PLAN OF CAP

1/4" = 1'-0"



ELEVATION

1/4" = 1'-0"

- LEGEND:
- * STIRRUPS WHICH CONFLICT WITH FUTURE UTILITY OPENING TO BE BUNDLED ON BOTH SIDES.
 - ** EPOXY COATED
 - ∞ DENOTES BUNDLED BAR

B7-10
U-7 FUTURE UTILITY OPENING

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

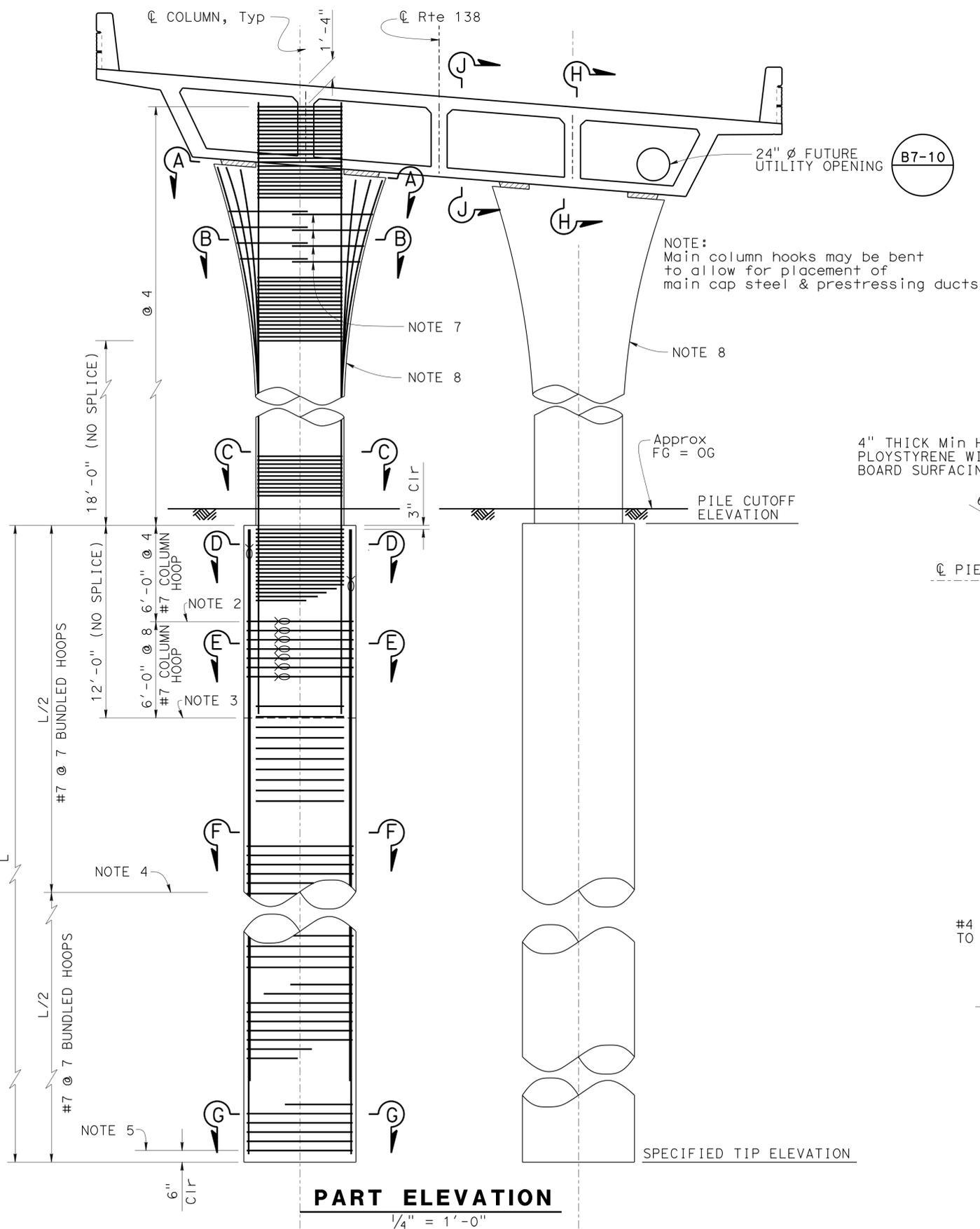
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1219
POST MILE	R17.6

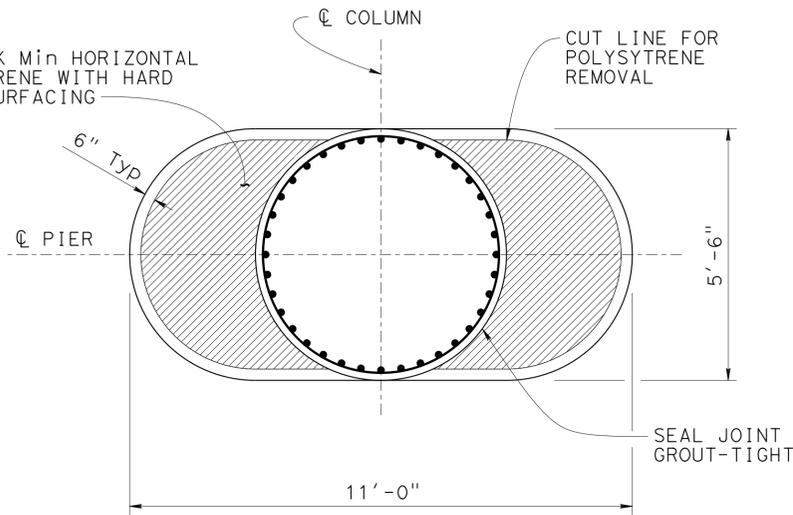
**MINER'S SHACK CREEK BRIDGE
PIER DETAILS**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	171	212

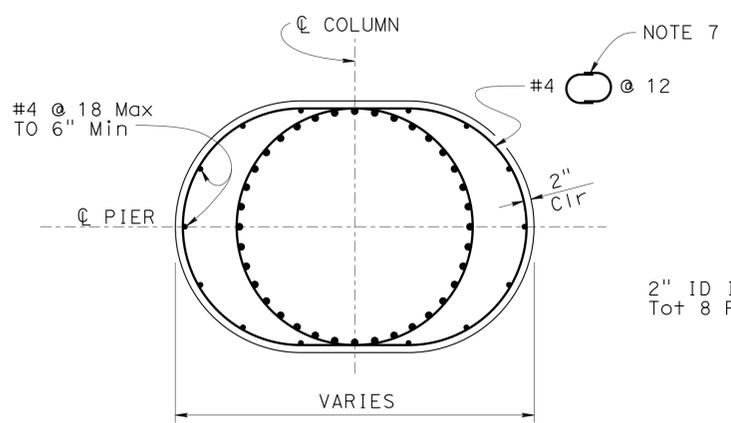
Peter W. Norboe
 REGISTERED CIVIL ENGINEER 3-5-15 DATE
 9-11-15
 PLANS APPROVAL DATE
 Peter W. Norboe
 No. 57519
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA
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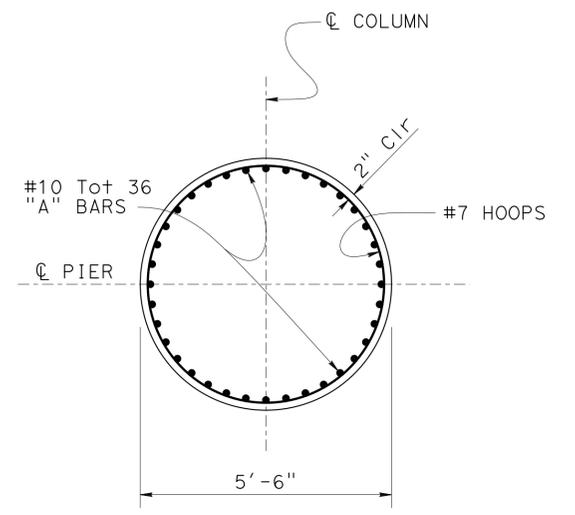
- NOTES:
- All hoops reinf to have ultimate butt splices.
 - Terminate 1/2 of "A" Bars.
 - Terminate remaining "A" bars. (Optional Construction Joint)
 - Terminate 1/2 of "B" Bars
 - Terminate remaining "B" bars.
 - For Sections E-E, F-F, G-G, H-H, and J-J, see "COLUMN DETAILS NO. 2" sheet.
 - Mechanical coupler must be used to splice flare hoops, typ.
 - Prepare and stain all exposed concrete surface. Limits of column prepare and stain are from soffit to CIDH cut off elevation.
- LEGEND:
- ⊗ DENOTES BUNDLES BAR



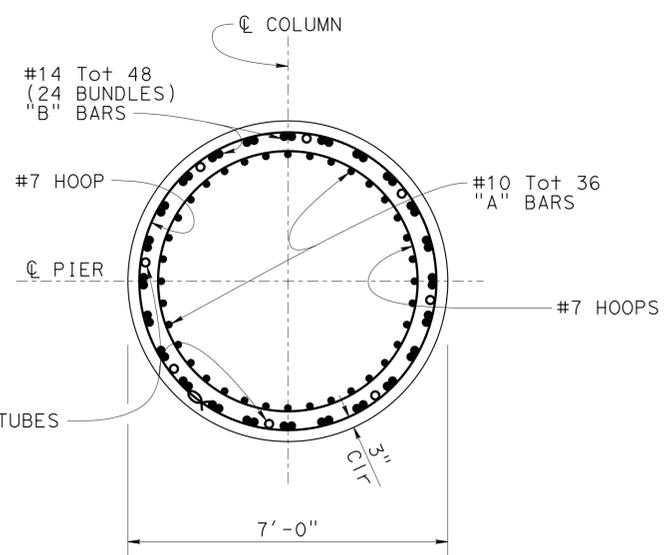
SECTION A-A
1/2" = 1'-0"



SECTION B-B
1/2" = 1'-0"



SECTION C-C
1/2" = 1'-0"



SECTION D-D
1/2" = 1'-0"

DESIGN	BY P. Norboe	CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO.	54-1219	MINER'S SHACK CREEK BRIDGE COLUMN DETAILS NO. 1
DETAILS	BY D. Elliott	CHECKED R. Candiotti			POST MILE	R17.6	
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti			CONTRACT NO.:	08-003004	

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
 UNIT: 3594 PROJECT NUMBER & PHASE: 0800020191-1 CONTRACT NO.: 08-003004
 DISREGARD PRINTS BEARING EARLIER REVISION DATES
 REVISION DATES: 1-18-14, 1-31-14, 2-18-14, 10-6-14
 SHEET 9 OF 21

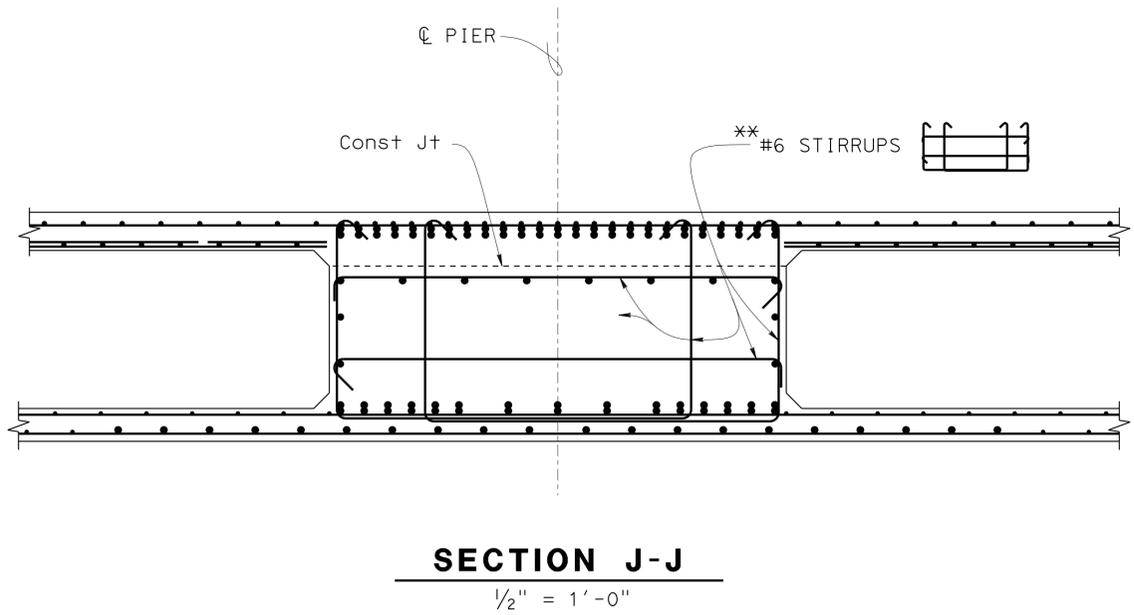
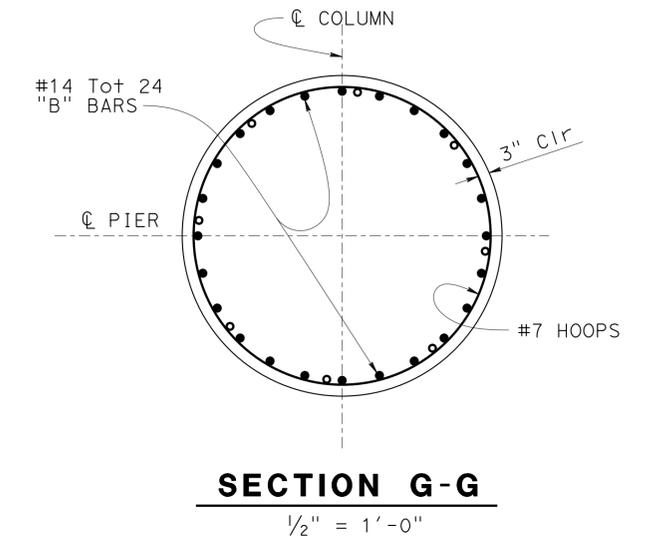
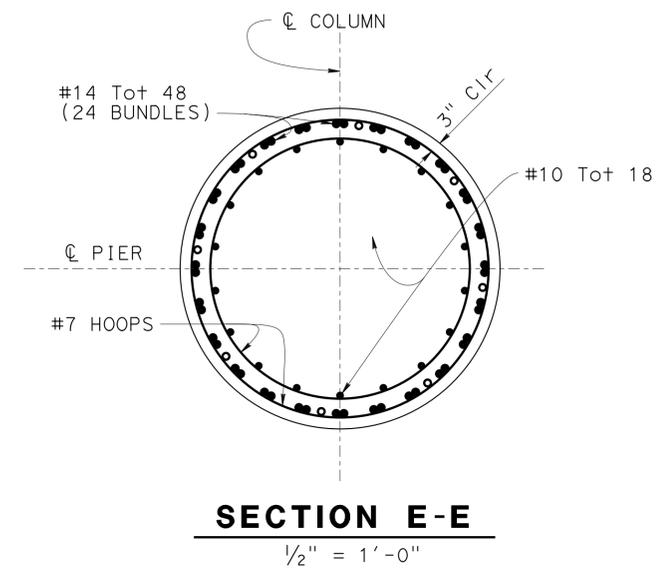
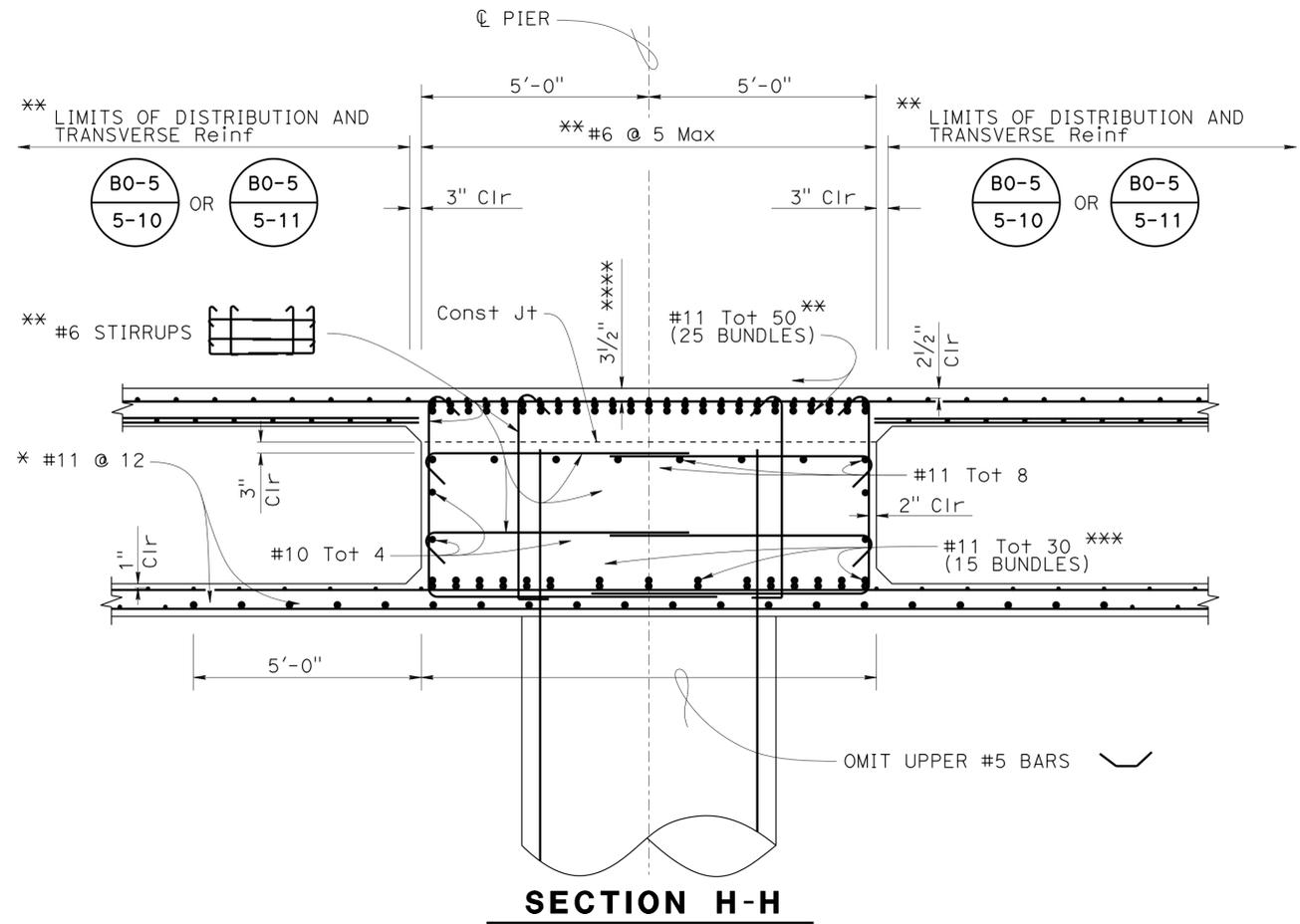
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBD	138	R17.1/R19.2	172	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER			3-5-15 DATE		
9-11-15 PLANS APPROVAL DATE			The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.		

NOTES:

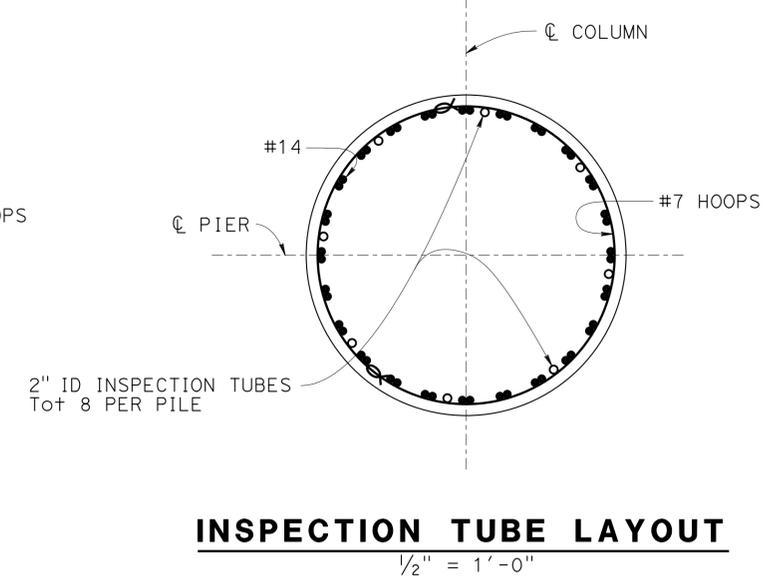
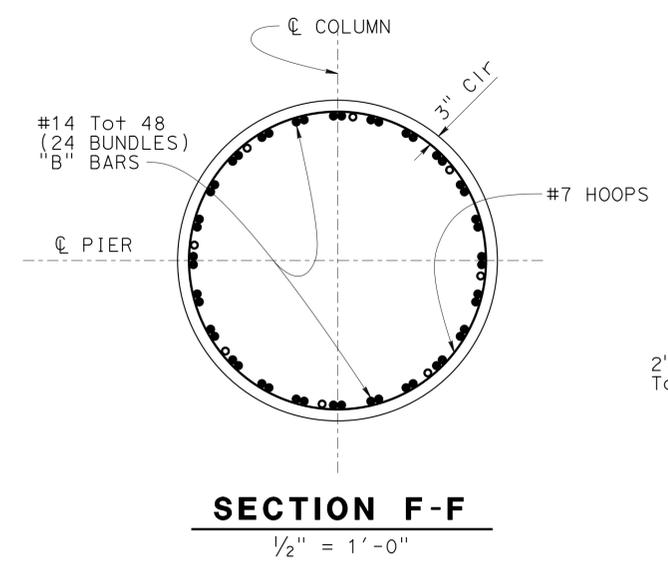
1. For locations of Sections E-E, F-F, G-G, H-H, and J-J, see "COLUMN DETAILS NO. 1" sheet.

LEGEND:

- * REPLACE #5 BARS W/ #11 BARS TO 5'-0" EACH SIDE OF CAP BEAM FACE. DO NOT HOOK INTO GIRDER STEMS.
- ** EPOXY COATED
- *** PLACE CENTER 5 BUNDLES THROUGH COLUMN CAGE WITH A MINIMUM CLEAR SPACING OF 3" BETWEEN BUNDLES.
- **** Clearance to main cap reinforcement



NOTE: For details not shown, see "SECTION H-H"



STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	DESIGN	BY P. Norboe	CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO.	54-1219	MINER'S SHACK CREEK BRIDGE COLUMN DETAILS NO. 2			
	DETAILS	BY D. Elliott	CHECKED R. Candiotti			POST MILE	R17.6				
	QUANTITIES	BY P. Norboe	CHECKED R. Candiotti			UNIT: 3594	PROJECT NUMBER & PHASE: 0800020191-1		CONTRACT NO.: 08-003004		
REVISION DATES: 2-14-13, 3-5-13, 9-12-13, 12-2-13								SHEET	10	OF	21

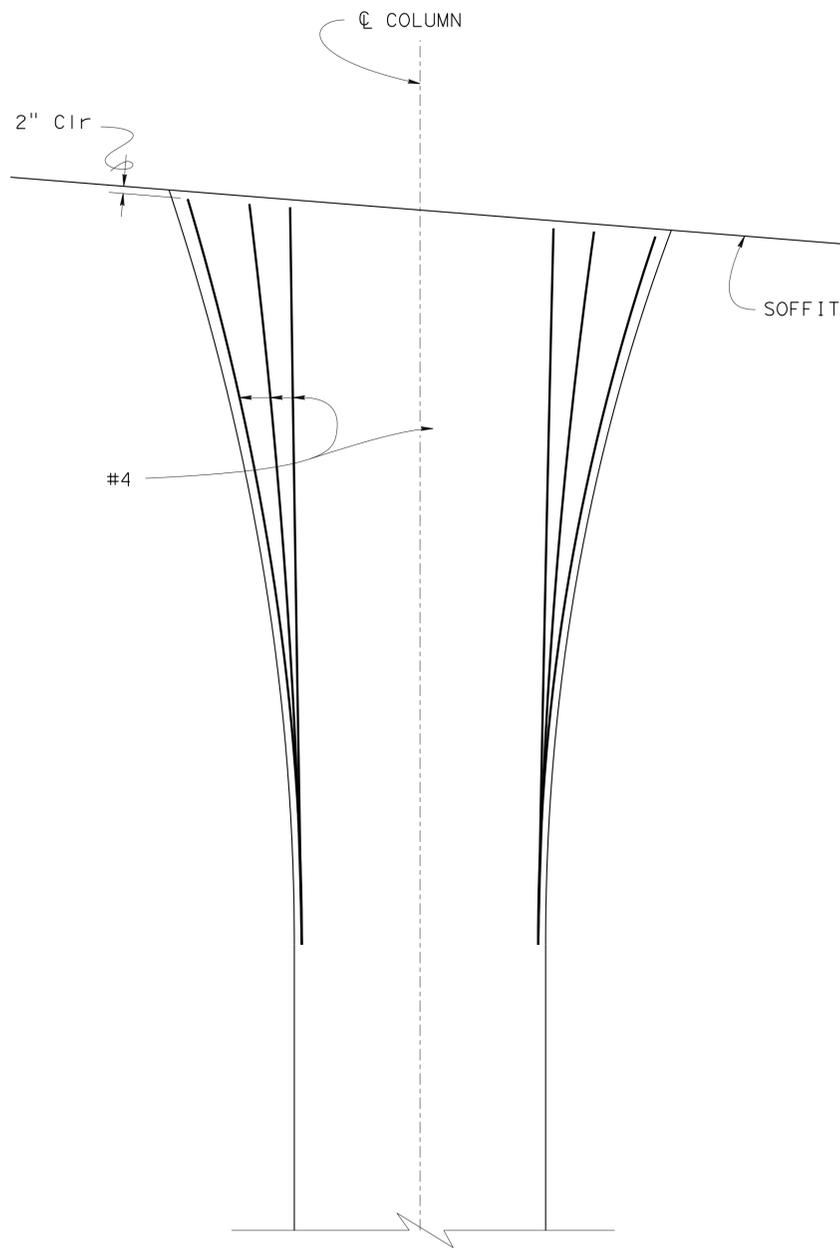
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	173	212

Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE

9-11-15
 PLANS APPROVAL DATE

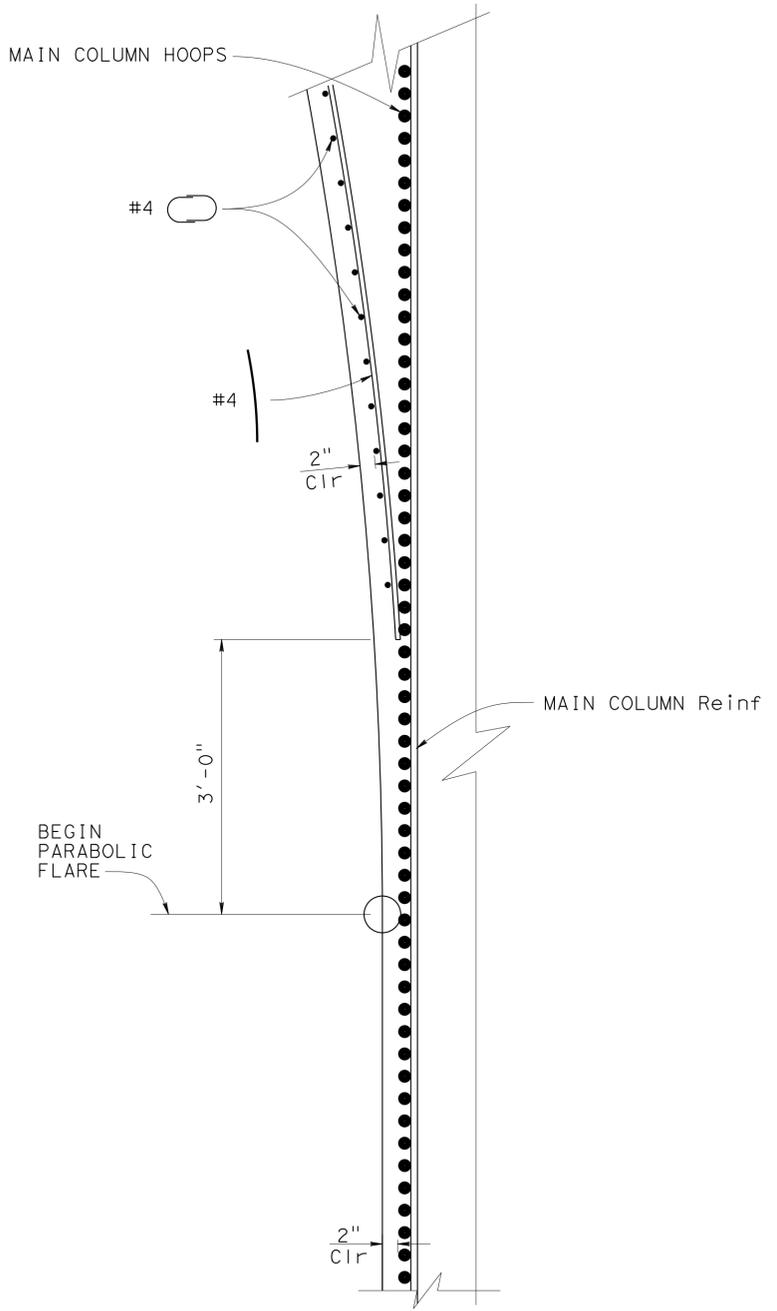
Peter W. Norboe
 No. 57519
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA

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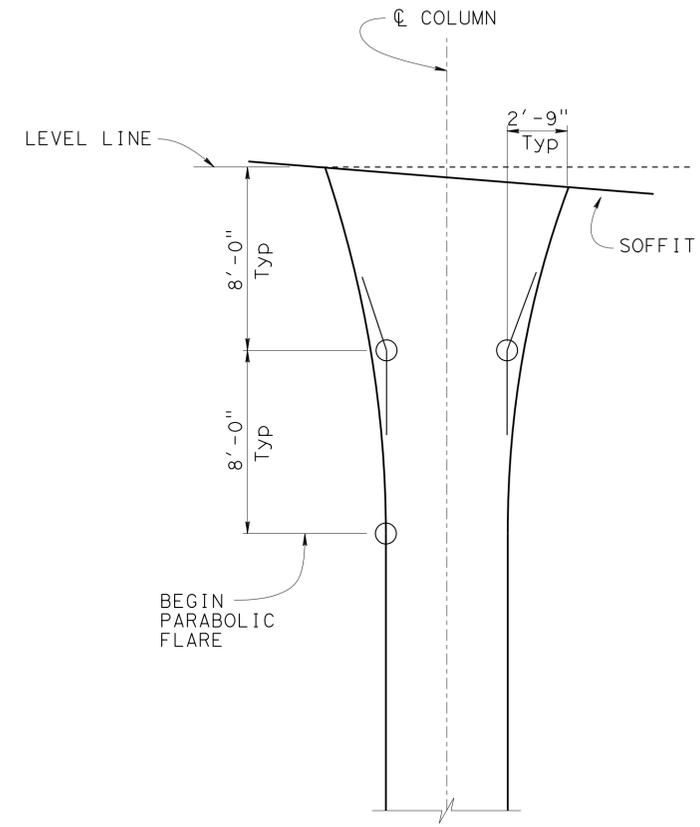


PART ELEVATION
 $\frac{1}{2}'' = 1'-0''$

NOTE:
 Main column reinf not shown, see "COLUMN DETAILS NO. 1" sheet.



HOOPS AND TIE DETAIL
 $1'' = 1'-0''$



COLUMN FLARE
 NO SCALE

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

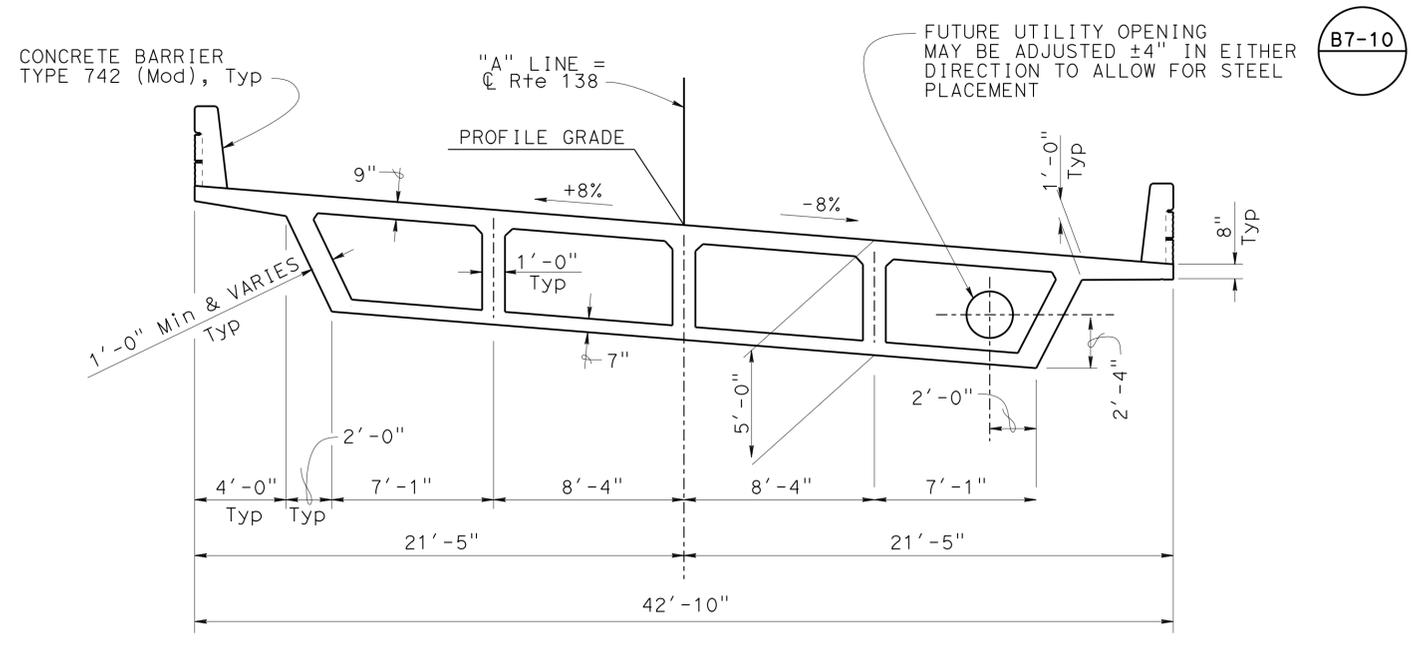
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
 STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1219
POST MILE	R17.6

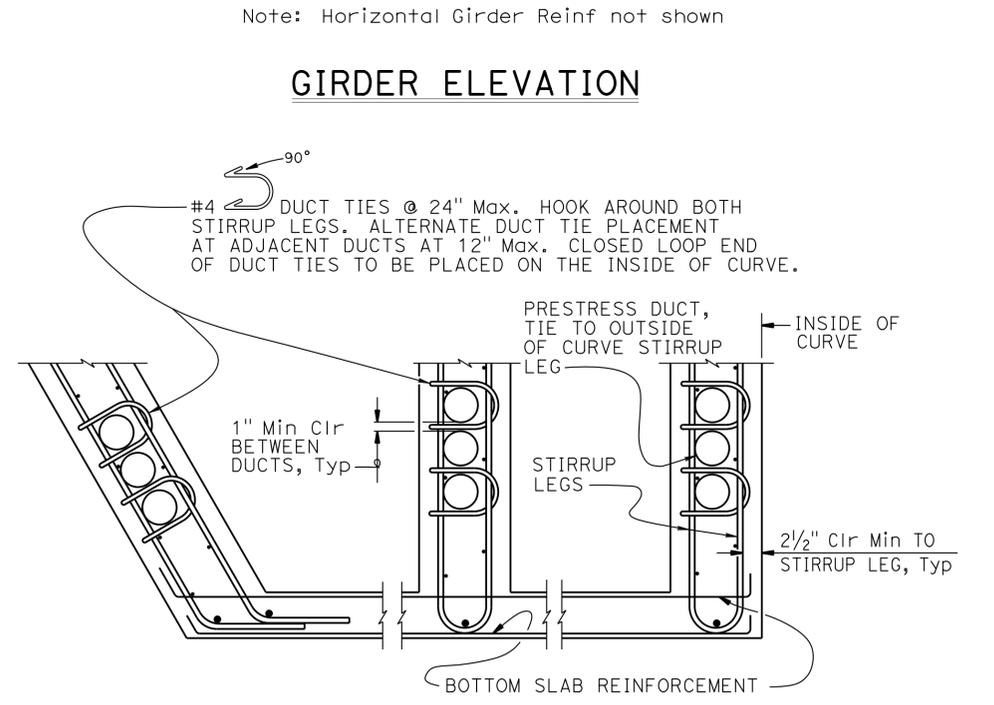
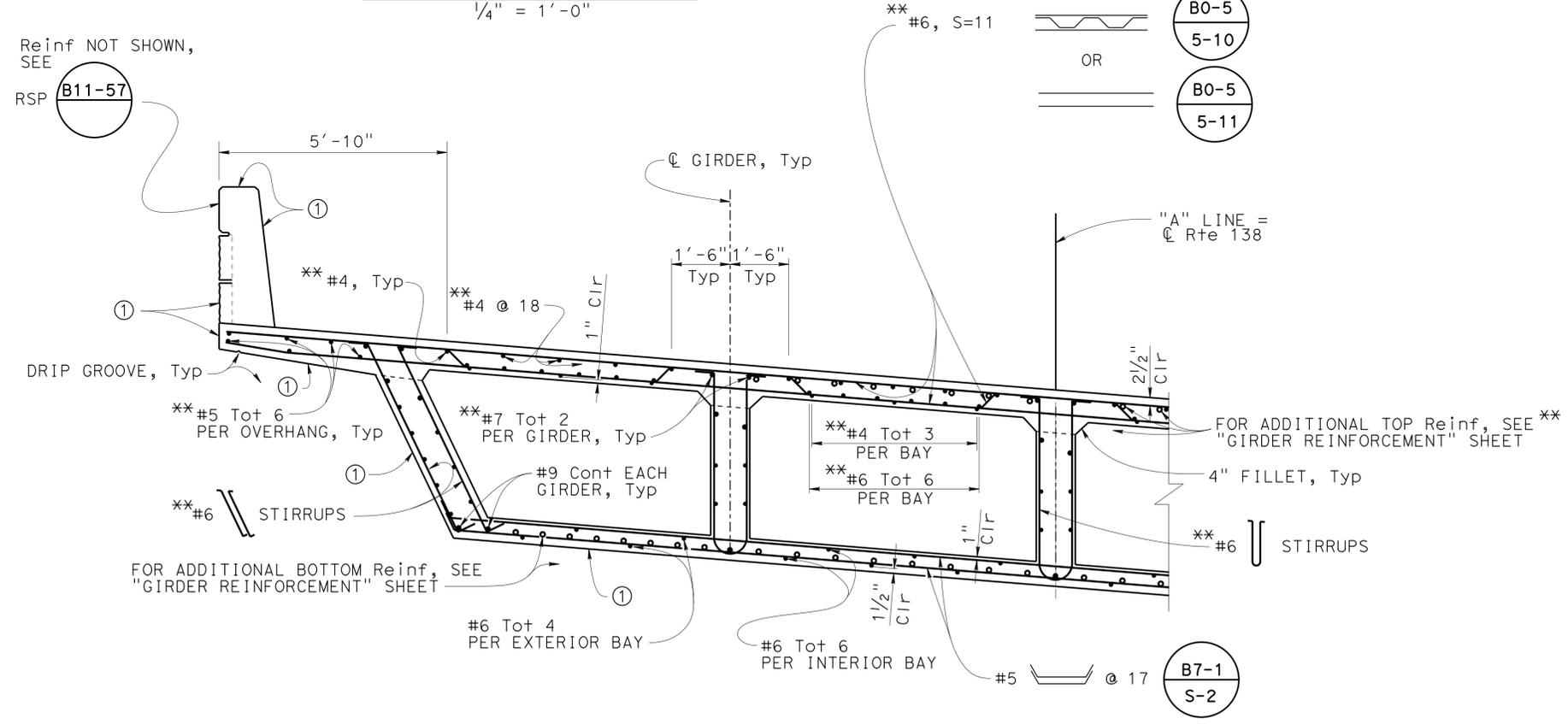
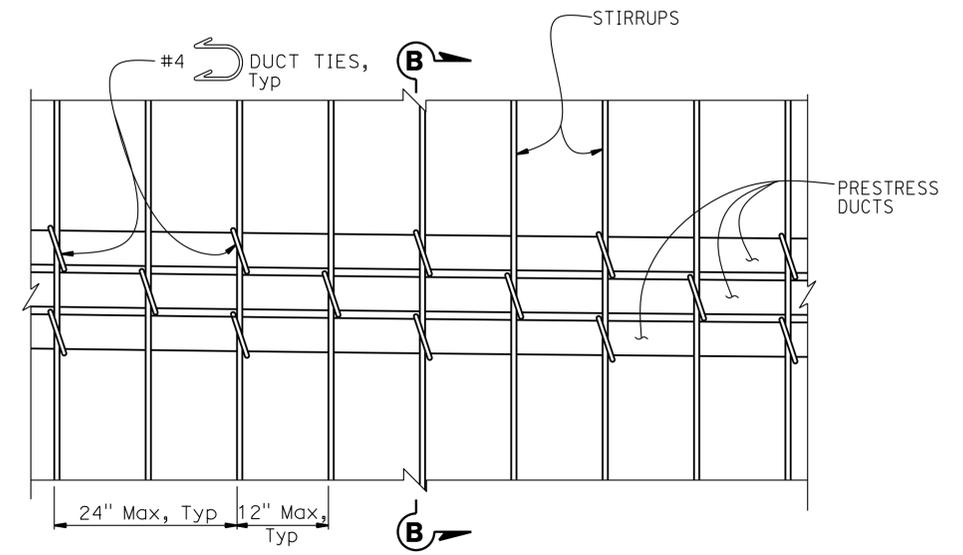
MINER'S SHACK CREEK BRIDGE
COLUMN DETAILS NO. 3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	174	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER			3-5-15 DATE	Peter W. Norboe No. 57519 Exp. 12-31-2015 CIVIL STATE OF CALIFORNIA	
9-11-15 PLANS APPROVAL DATE			The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.		

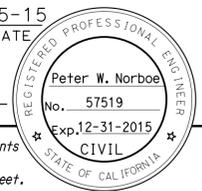


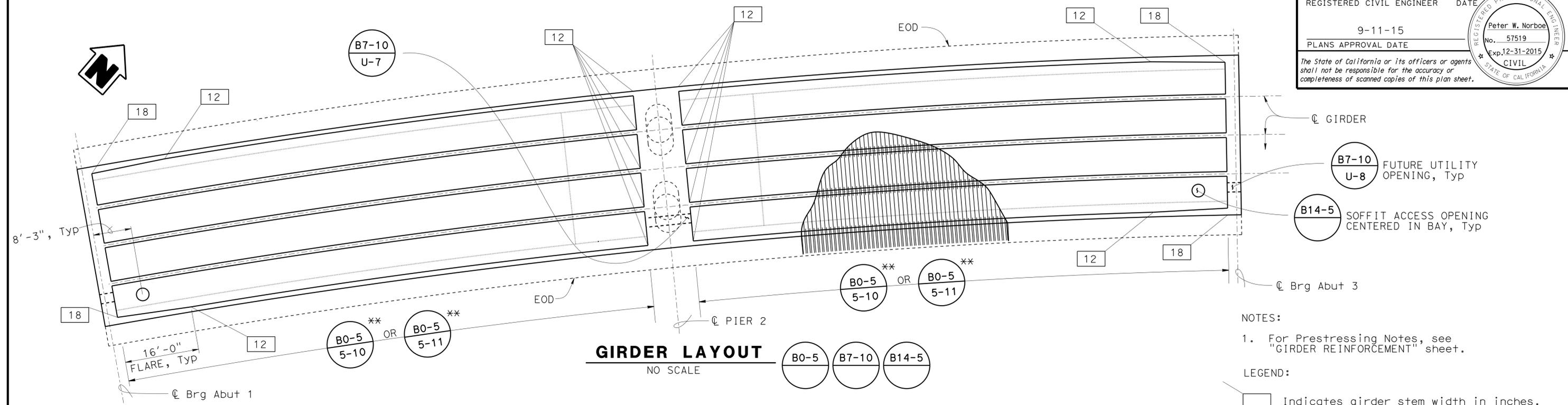
LEGEND:
 ** EPOXY COATED

NOTE:
 ① Prepare and stain all exposed concrete surface, excluding bridge deck.

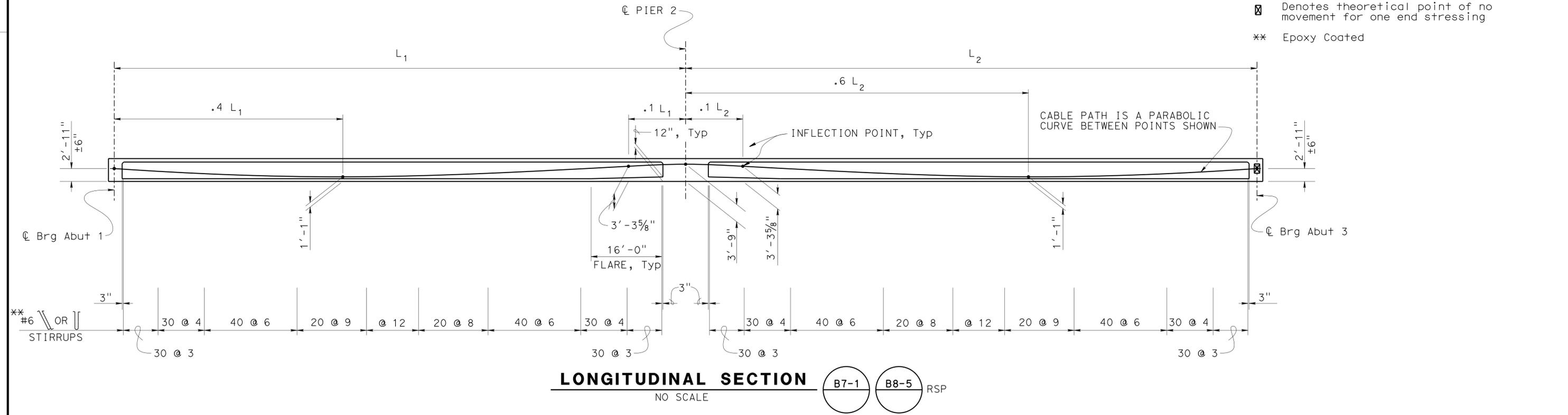


DESIGN BY P. Norboe CHECKED R. Candiotti DETAILS BY D. Elliott CHECKED R. Candiotti QUANTITIES BY P. Norboe CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO. 54-1219 POST MILE R17.6	MINER'S SHACK CREEK BRIDGE TYPICAL SECTION
	UNIT: 3594 PROJECT NUMBER & PHASE: 0800020191-1 CONTRACT NO.: 08-003004	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES 1-13-14 1-31-14 10-6-14 12-2-15	SHEET 12 OF 21
	STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	FILE => 54-1219-k-typ sec-sheet.dgn		

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	175	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER			3-5-15 DATE		
9-11-15 PLANS APPROVAL DATE			The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.		



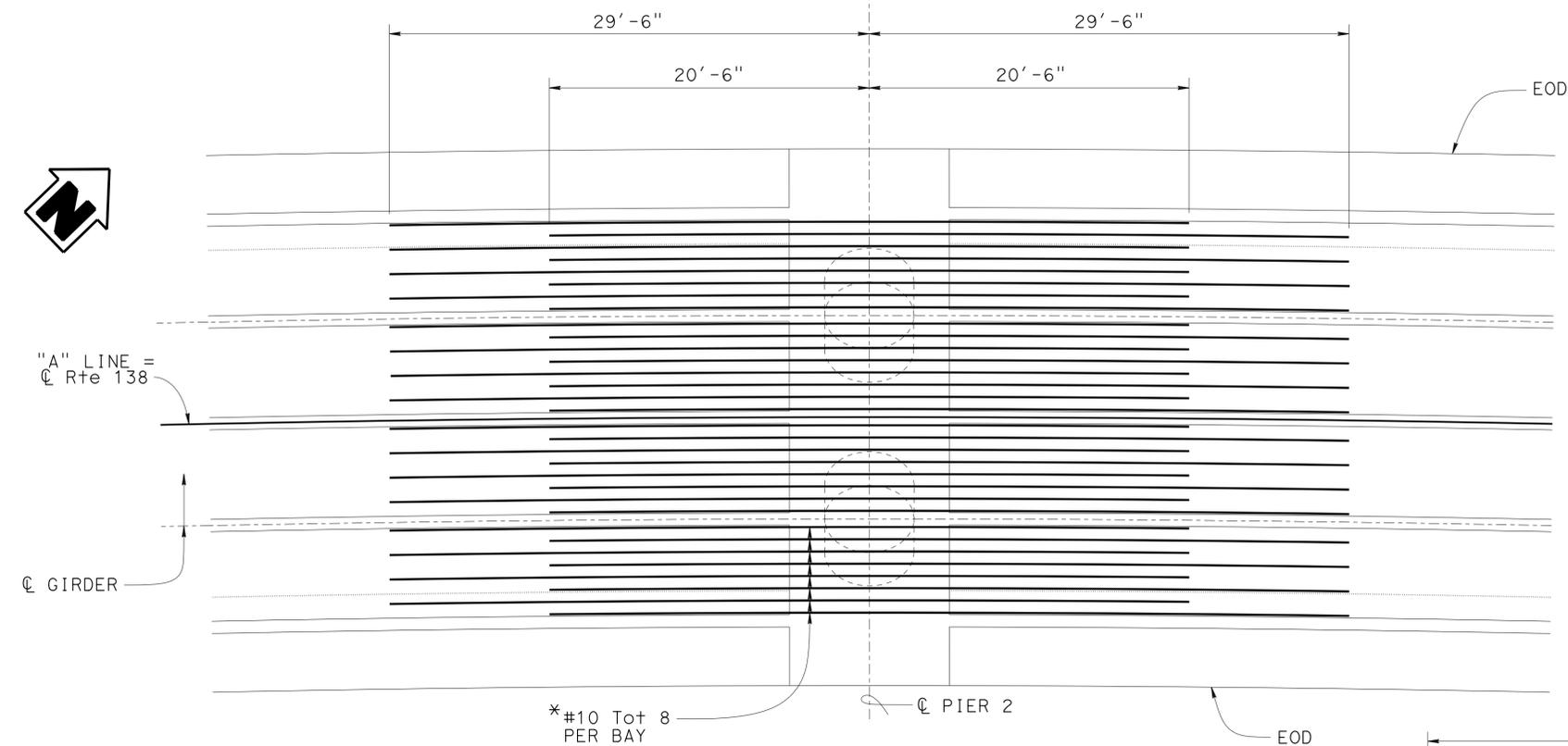
- NOTES:
- For Prestressing Notes, see "GIRDER REINFORCEMENT" sheet.
- LEGEND:
- Indicates girder stem width in inches.
 - ⊠ Denotes theoretical point of no movement for one end stressing
 - ** Epoxy Coated



DESIGN BY P. Norboe CHECKED R. Candiotti DETAILS BY D. Elliott CHECKED R. Candiotti QUANTITIES BY P. Norboe CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO. 54-1219 POST MILE R17.6	MINER'S SHACK CREEK BRIDGE GIRDER LAYOUT						
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		UNIT: 3594 PROJECT NUMBER & PHASE: 0800020191-1 CONTRACT NO.: 08-003004						
				DISREGARD PRINTS BEARING EARLIER REVISION DATES						
				<table border="1" style="font-size: small;"> <tr> <th>REVISION DATES</th> <th>SHEET</th> <th>OF</th> </tr> <tr> <td>2-18-13</td> <td>13</td> <td>21</td> </tr> </table>	REVISION DATES	SHEET	OF	2-18-13	13	21
REVISION DATES	SHEET	OF								
2-18-13	13	21								

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	176	212

Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE
 9-11-15
 PLANS APPROVAL DATE
 Peter W. Norboe
 No. 57519
 Exp. 12-31-2015
 CIVIL
 STATE OF CALIFORNIA
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TOP AND BOTTOM GIRDER REINFORCEMENT
No Scale

LEGEND:
* Top #10 bars must be epoxy coated

PRESTRESSING NOTES

270 KSI Low Relaxation Strand:

P_{jack} = 9750 kips

Anchor Set = $\frac{3}{8}$ in

Friction curvature coefficient, $\mu = 15 \times 10^{-2}$ (1/rad)

Friction wobble coefficient, $K = 20 \times 10^{-5}$ (1/ft)

Assumed long term losses = 20 (ksi)

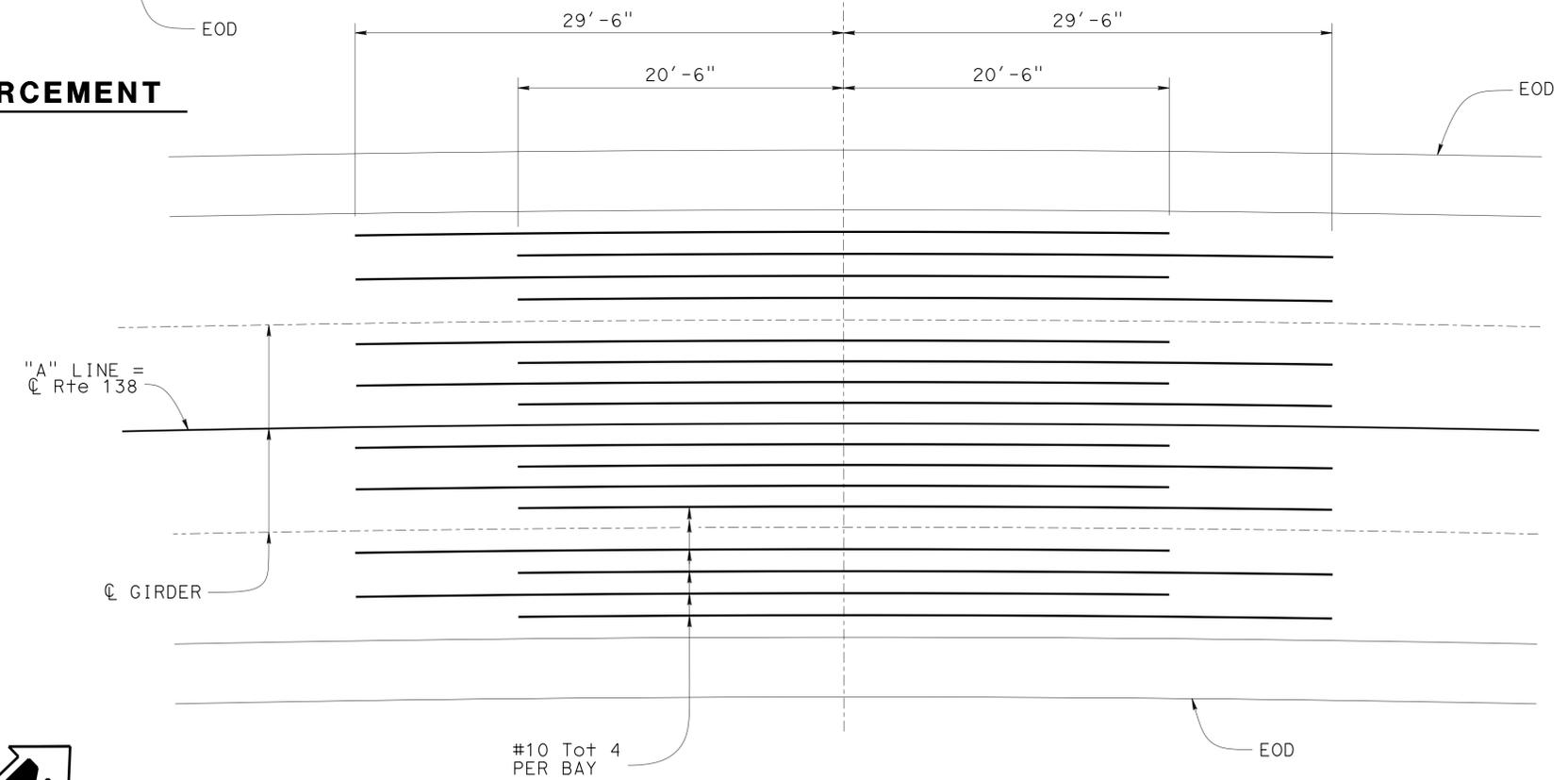
Total Number of Girders = 5

The final force ratio (larger divided by smaller) between any two girders must not exceed the ratio of 10 to 9

Concrete: $f'_c = 5000$ psi @ 28 days
 $f'_{ci} = 3600$ psi @ time of stressing

Contractor must submit elongation calculations based on initial stress at $\lambda = .892$ times jacking stress.

One end stressing must be performed from either end.



BOTTOM GIRDER REINFORCEMENT
No Scale

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

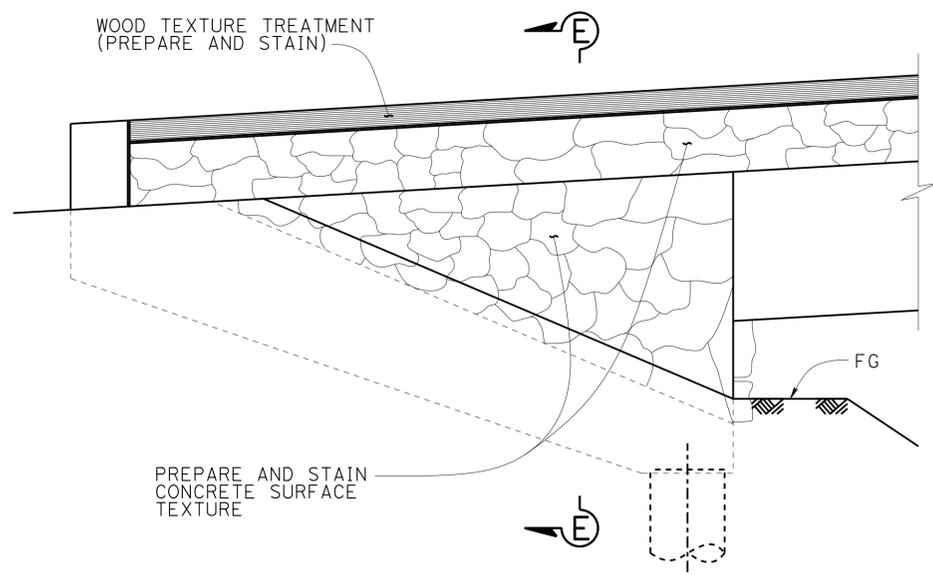
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1219
POST MILE	R17.6

MINER'S SHACK CREEK BRIDGE
GIRDER REINFORCEMENT

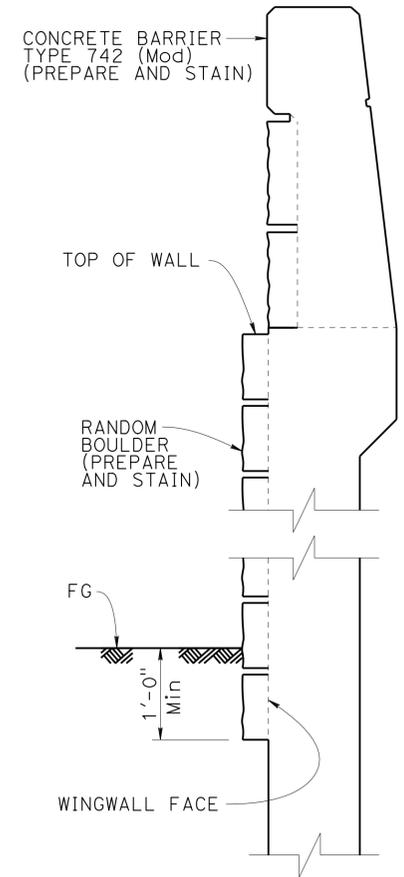
DATE PLOTTED => 16-NOV-2015 TIME PLOTTED => 10:10 USERNAME => s102458

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	177	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER DATE 3-5-15				Peter W. Norboe No. 57519 Exp. 12-31-2015 CIVIL STATE OF CALIFORNIA	
PLANS APPROVAL DATE 9-11-15					
<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>					



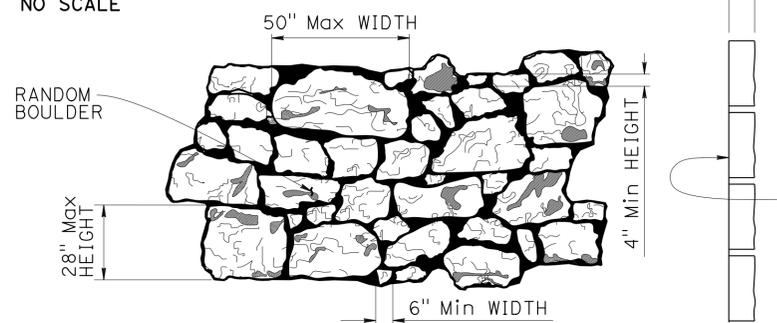
PLAN OF TYPE 736 (MODIFIED)

NO SCALE



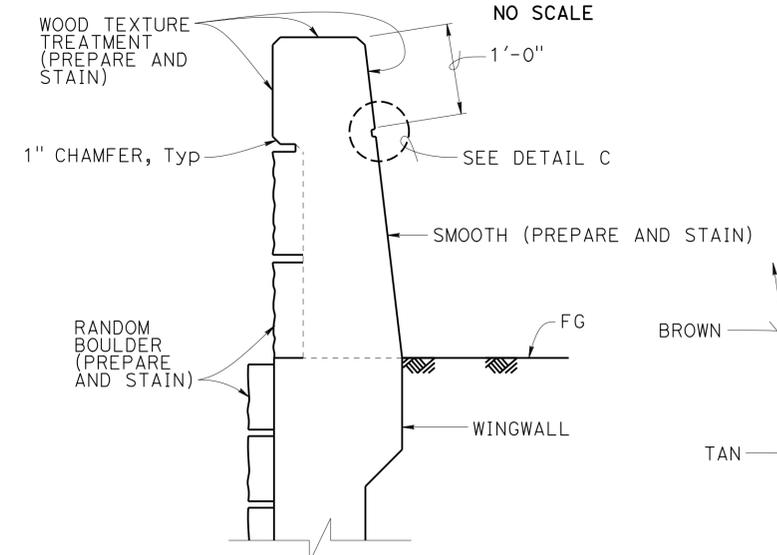
SECTION E-E

1" = 1'-0"



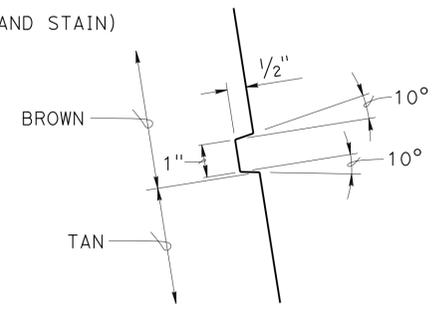
CONCRETE SURFACE TEXTURE

NO SCALE



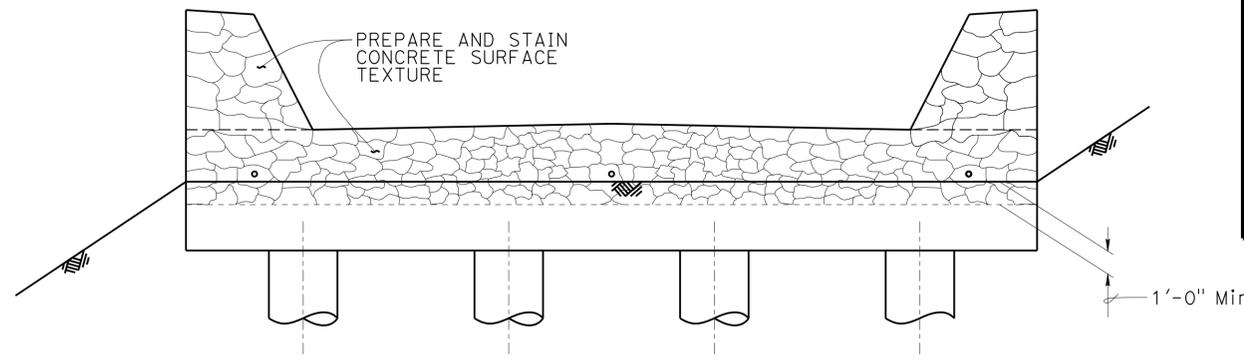
SECTION OF TYPE 736 (MODIFIED)

1" = 1'-0"



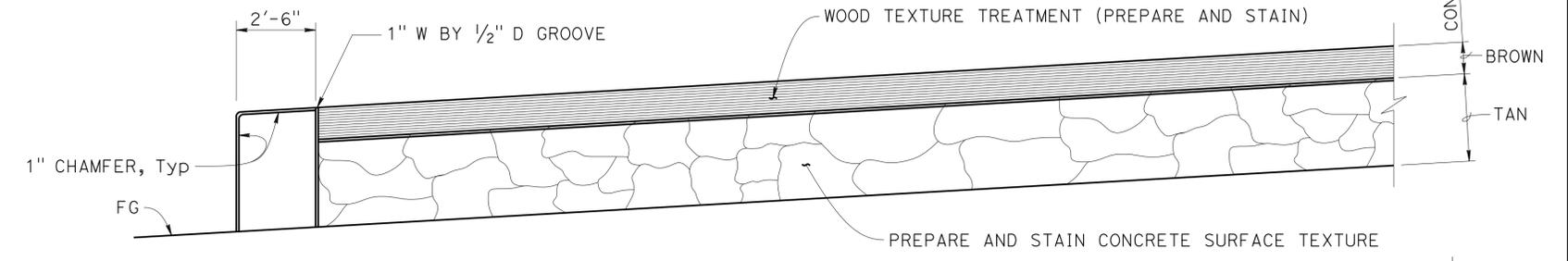
DETAIL C

NO SCALE



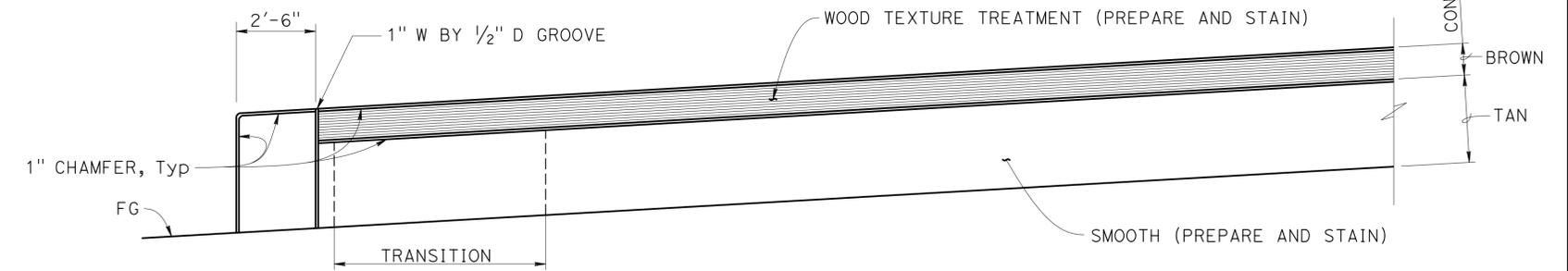
TYPICAL ABUTMENT ELEVATION

NO SCALE



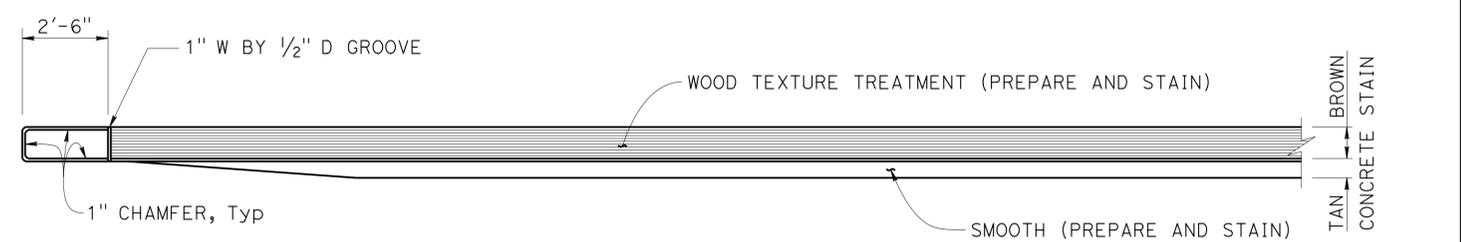
REAR ELEVATION OF TYPE 742 (MODIFIED)

NO SCALE



FRONT ELEVATION OF TYPE 742 (MODIFIED)

NO SCALE



PLAN OF TYPE 742 (MODIFIED)

NO SCALE

NOTE:
1. All exposed concrete surface on bridge must be Prepare and Stain, excluding bridge deck and approach slabs.

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1219
POST MILE	R17.6

MINER'S SHACK CREEK BRIDGE
ARCHITECTURAL TREATMENT DETAILS



REVISION DATES	SHEET	OF
10-6-14 1-13-14 1-31-14 2-18-14	15	21

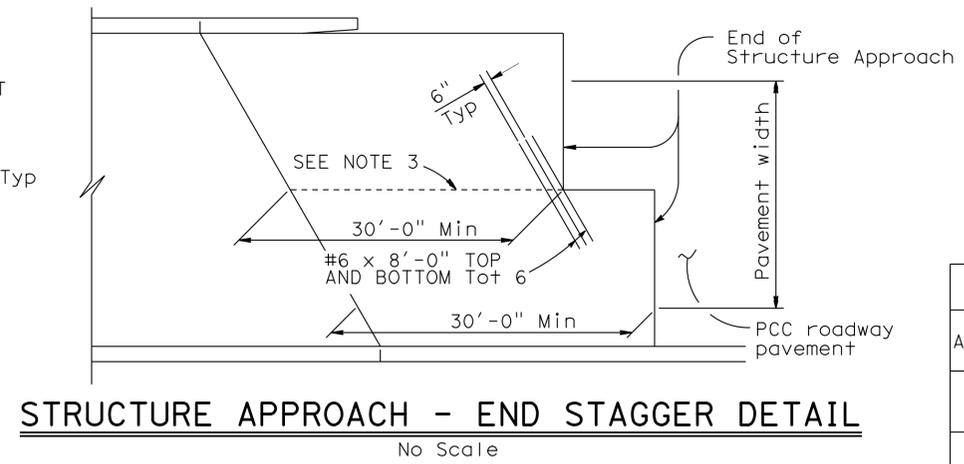
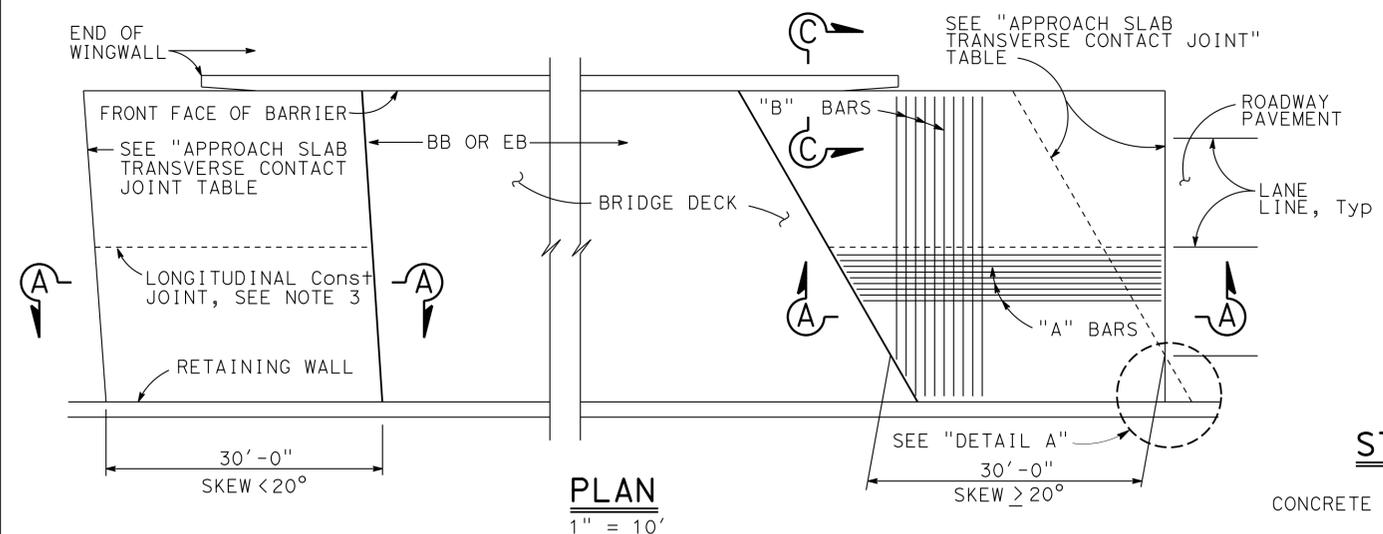
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Sbd	138	R17.1/R19.2	178	212

Pete W. Norboe
REGISTERED CIVIL ENGINEER DATE 3-5-15

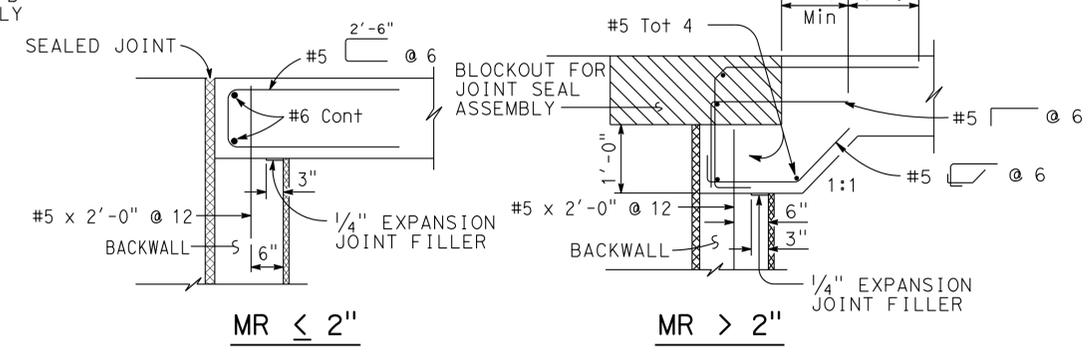
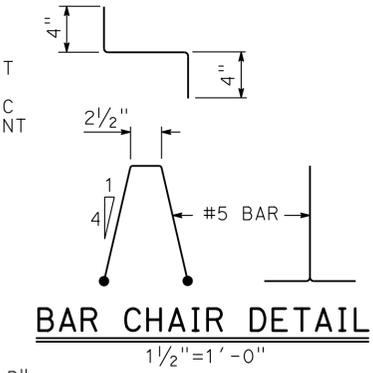
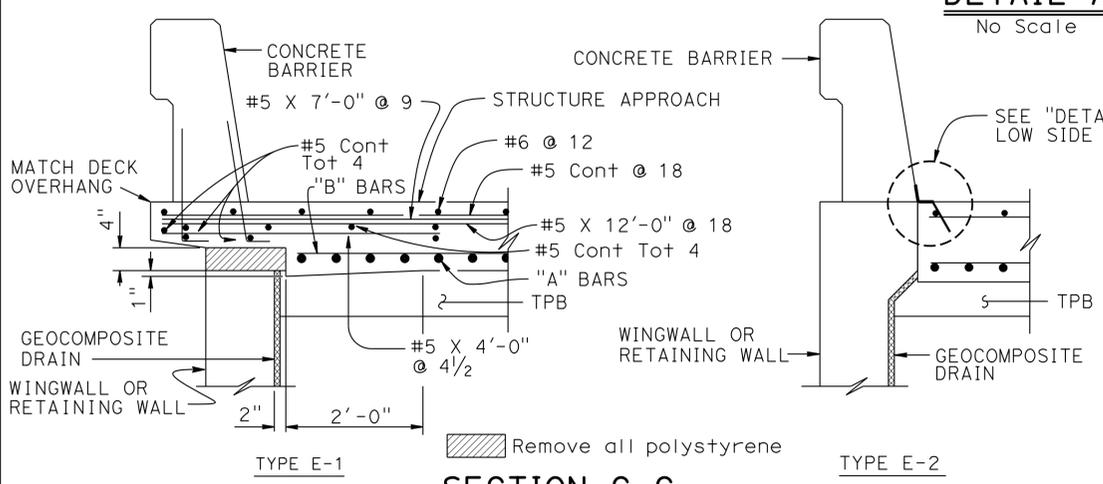
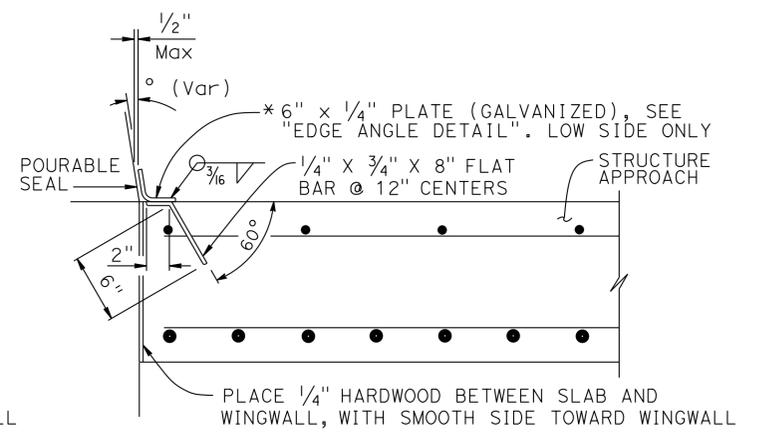
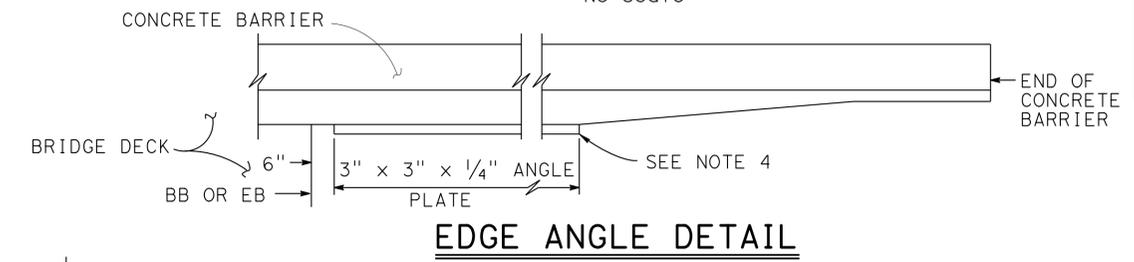
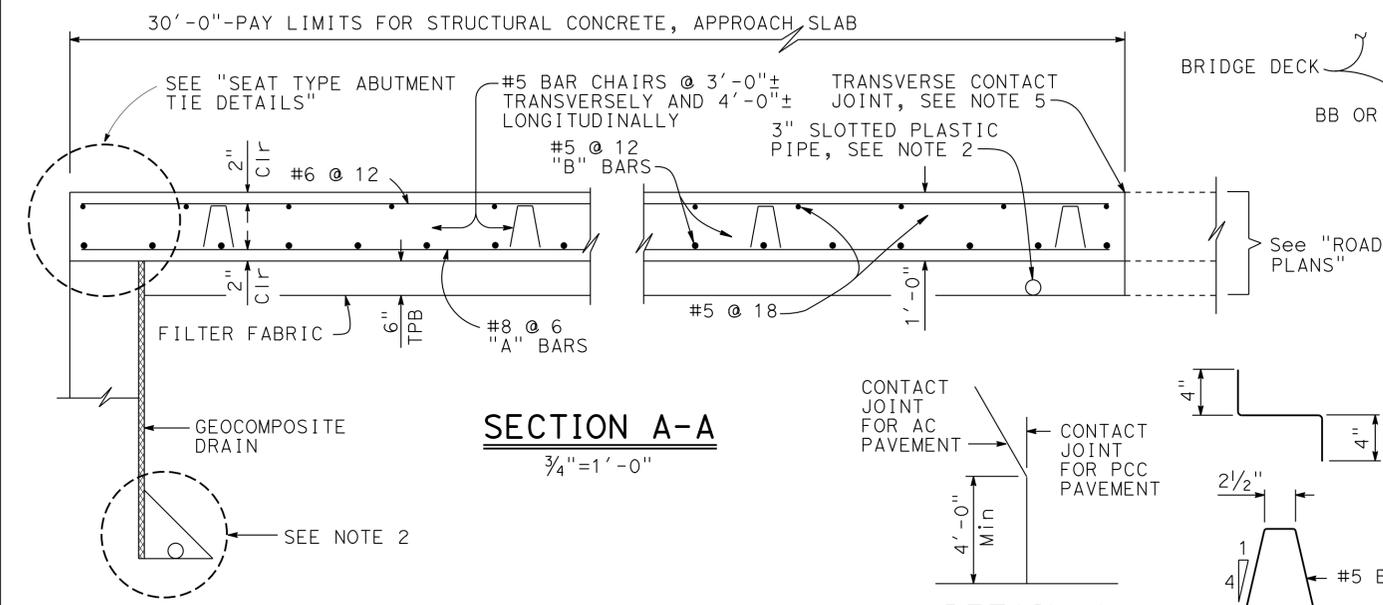
9-11-15
PLANS APPROVAL DATE

Pete Norboe
No. C57519
Exp. 12-31-2015
CIVIL
STATE OF CALIFORNIA

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APPROACH SLAB TRANSVERSE CONTACT JOINT		
APPROACH SKEW	WITH AC ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
<math>< 20^\circ</math>	PARALLEL TO FACE OF PN	PARALLEL TO FACE OF PN
$20^\circ - 45^\circ$	PARALLEL TO FACE OF PN USE "DETAIL A"	STAGGER LINES 24' TO 36' APART
> 45°	PARALLEL TO FACE OF PN USE "DETAIL A"	STAGGER AT EACH LANE LINE



- NOTES:**
- For details not shown, see Structure Plans. For MR $\le 2''$, adjust bar reinforcement to clear a sawcut for sealed joint, when required
 - For drainage details, see "STRUCTURE APPROACH DRAINAGE DETAILS" sheet
 - Longitudinal construction joints, when permitted by the Engineer, must be located on lane lines
 - End angle or plate at beginning of barrier transition, end of wingwall or end of structure approach as applicable
 - For transverse contact joint with new PCC paving, refer to Standard Plan P10
 - At the Contractor's option, approach slab transverse reinforcement may be placed parallel to paving notch. Spacing of transverse reinforcement is measured along ϕ roadway
 - All reinforcement must be epoxy coated

STANDARD DRAWING

FILE NO. **xs3-120**

APPROVAL DATE July 2011

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO. 54-1219
POST MILE R17.6

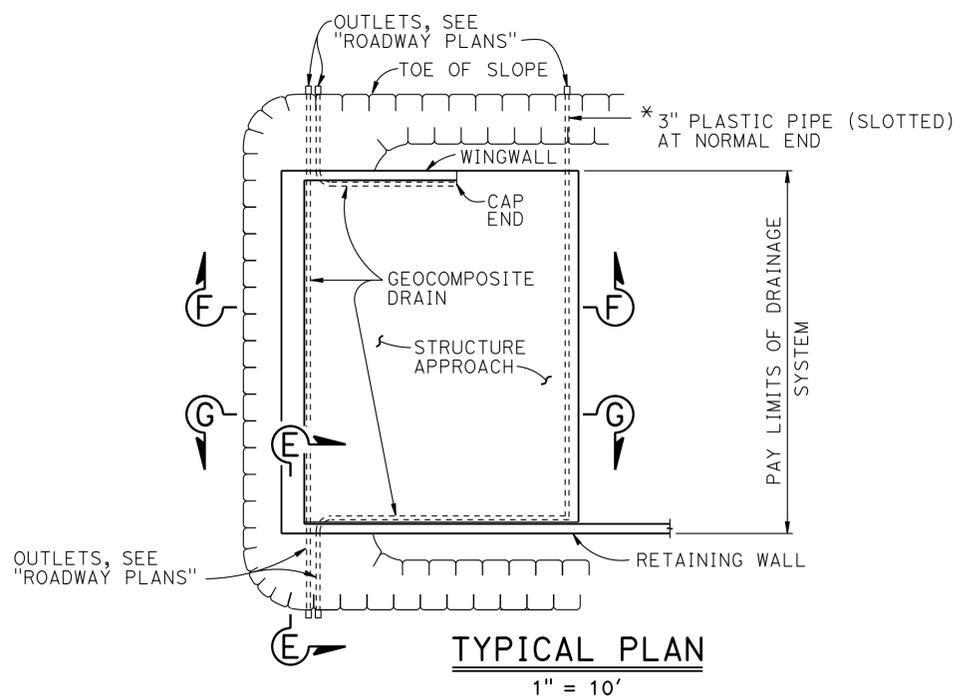
MINER'S SHACK CREEK BRIDGE

STRUCTURE APPROACH TYPE N(30S)

REVISION DATES: 7-18-13, 9-12-13, 10-2-13, 10-6-14

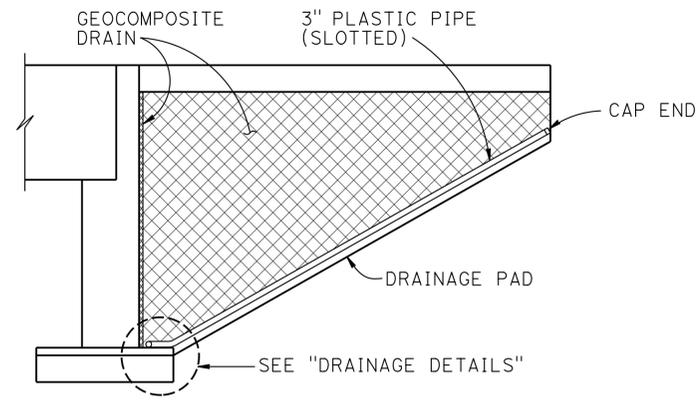
SHEET 16 OF 21

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	179	212
<i>Pete W. Norboe</i> REGISTERED CIVIL ENGINEER				3-5-15 DATE	
				9-11-15 PLANS APPROVAL DATE	
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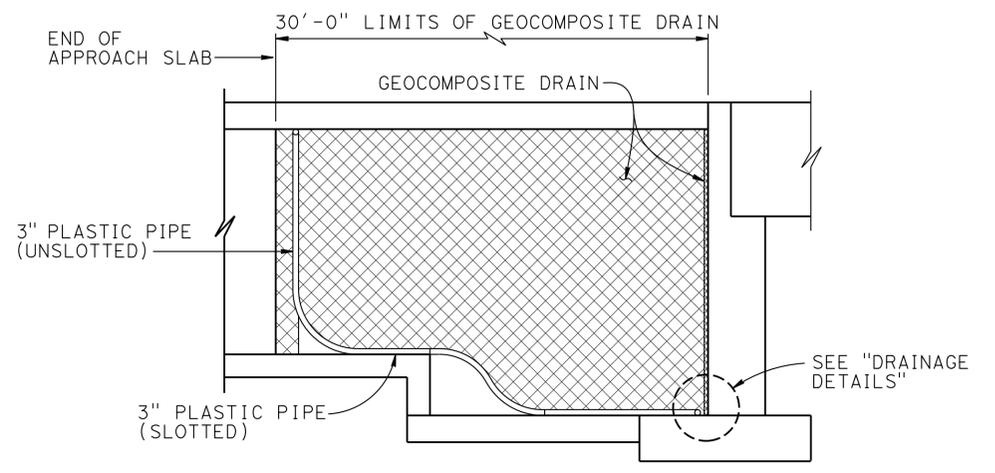
TYPICAL PLAN
1" = 10'

* FOR PIPE LAYOUT AT STAGGERED END, SEE "DETAIL B"



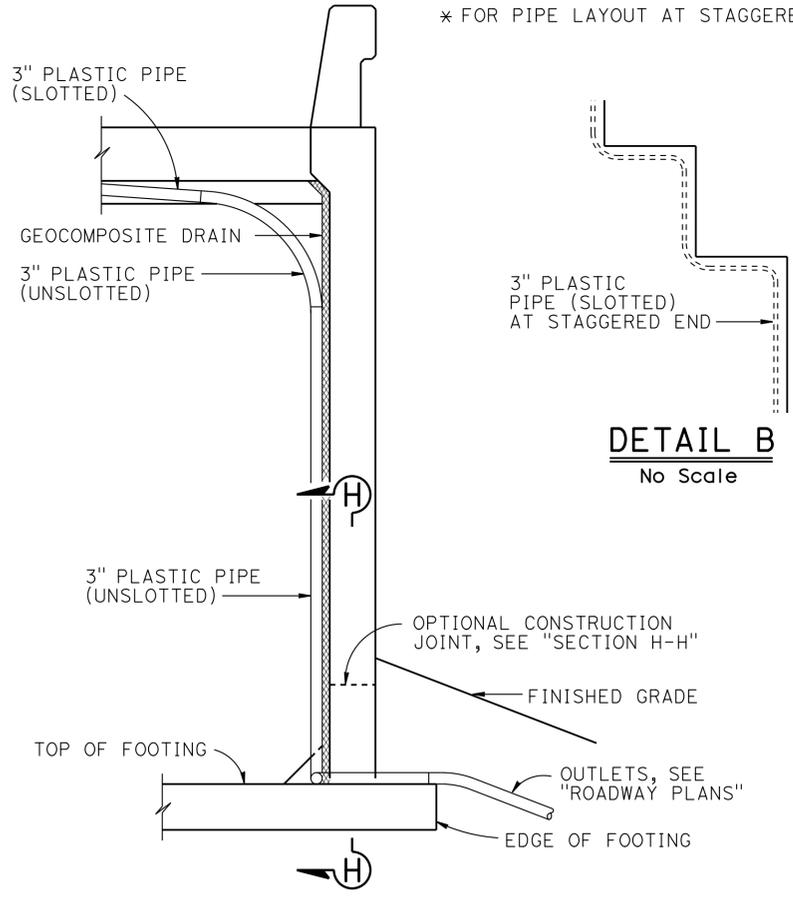
CANTILEVER WINGWALL

SECTION F-F
1/4" = 1'-0"



RETAINING WALL WINGWALL DRAINAGE DETAILS

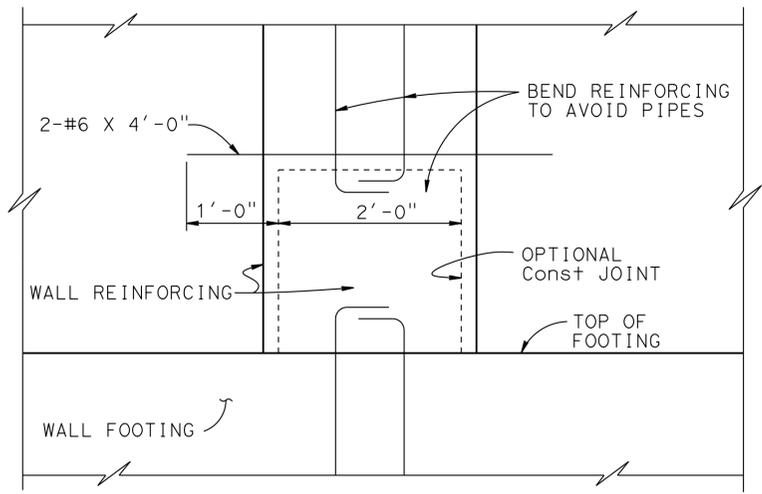
SECTION G-G
1/4" = 1'-0"



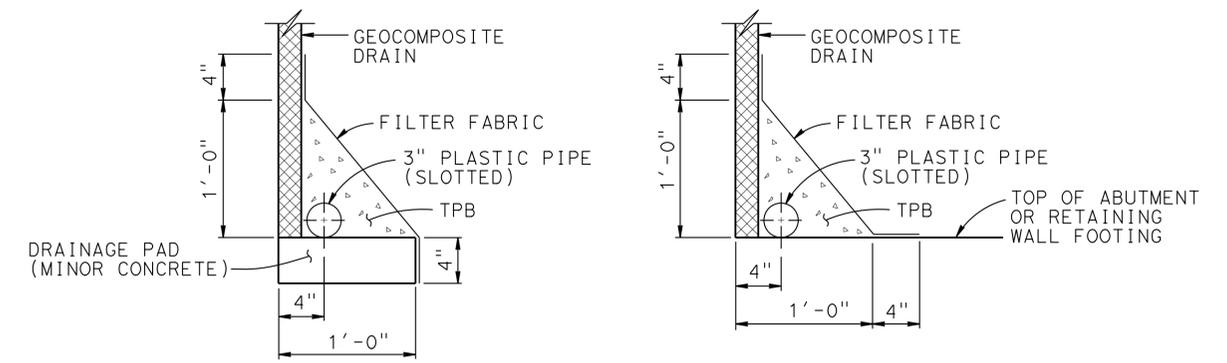
DETAIL B
No Scale

SECTION E-E
1/2" = 1'-0"

NOTE: Bends and junctions in 3" plastic pipe are 30" radius Min



SECTION H-H
1" = 1'-0"



WITHOUT FOOTING

WITH FOOTING

DRAINAGE DETAILS
1 1/2" = 1'-0"

STANDARD DRAWING	
FILE NO. xs3-110	APPROVAL DATE <u>July 2011</u>

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES	BRIDGE NO. 54-1219	MINER'S SHACK CREEK BRIDGE	
		POST MILE R17.6		STRUCTURE APPROACH DRAINAGE DETAILS



DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
08	SRd	138			

REGISTERED GEOLOGIST
Muhammad Gabr Ali Luqman
No. 7297
Exp. 5-31-04
REGISTERED GEOLOGIST
STATE OF CALIFORNIA

PLANS APPROVAL DATE: 8-20-03

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.

DIVISION OF ENGINEERING SERVICES - MATERIALS AND GEOTECHNICAL SERVICES					
DIST	COUNTY	ROUTE	POST MILE-TOTAL PROJECT	Sheet No.	Total Sheets
08	SBd	138	R17.1/R19.2	180	212
			REGISTERED CIVIL ENGINEER		
			10-30-13 DATE		
MINER'S SHACK CREEK BRIDGE					
LOG OF TEST BORINGS 1 OF 4					
UNIT: 3643		CONTRACT No. 08-003000		BRIDGE No. 54-1219	
PROJ. No. & PHASE: 0800020191					
			Sheet	of	



Note: See the General Plan or Foundation Plan for new English units alignment.

BENCH MARK

Bridge Site Control Point:
Fnd 25.4 mm IP, down 0.15 m, CT tag stamped "RP 203"
@ w'ly top of deep ravine;
80.0 m Lt of yellow stripe @ KP 27.8.
N 592060.390
E 2050642.015
Elev. = 1055.333 m

Bridge Site Control Point referenced from:
BM 12-A-72
Std CDH brass disk in concrete, down 0.15 m
@ e'ly top of deep ravine;
76 m Lt of yellow stripe @ KP 28.0.
N 592159.881
E 2050770.112
Elev. = 1062.477 m

LEGEND OF BORING OPERATIONS

ELECTRONIC CONE PENETROMETER TEST
Cone Penetrometer dimensions and testing standards: ASTM F1580-03, F1581-03, F1582-03, F1583-03, F1584-03, F1585-03, F1586-03, F1587-03, F1588-03, F1589-03, F1590-03, F1591-03, F1592-03, F1593-03, F1594-03, F1595-03, F1596-03, F1597-03, F1598-03, F1599-03, F1600-03

75 mm CONE PENETRATION BORING
No. count recorded
Punches
Driving rate, in seconds per 300 mm
MB 136 penetrometer
Number of (4) blows

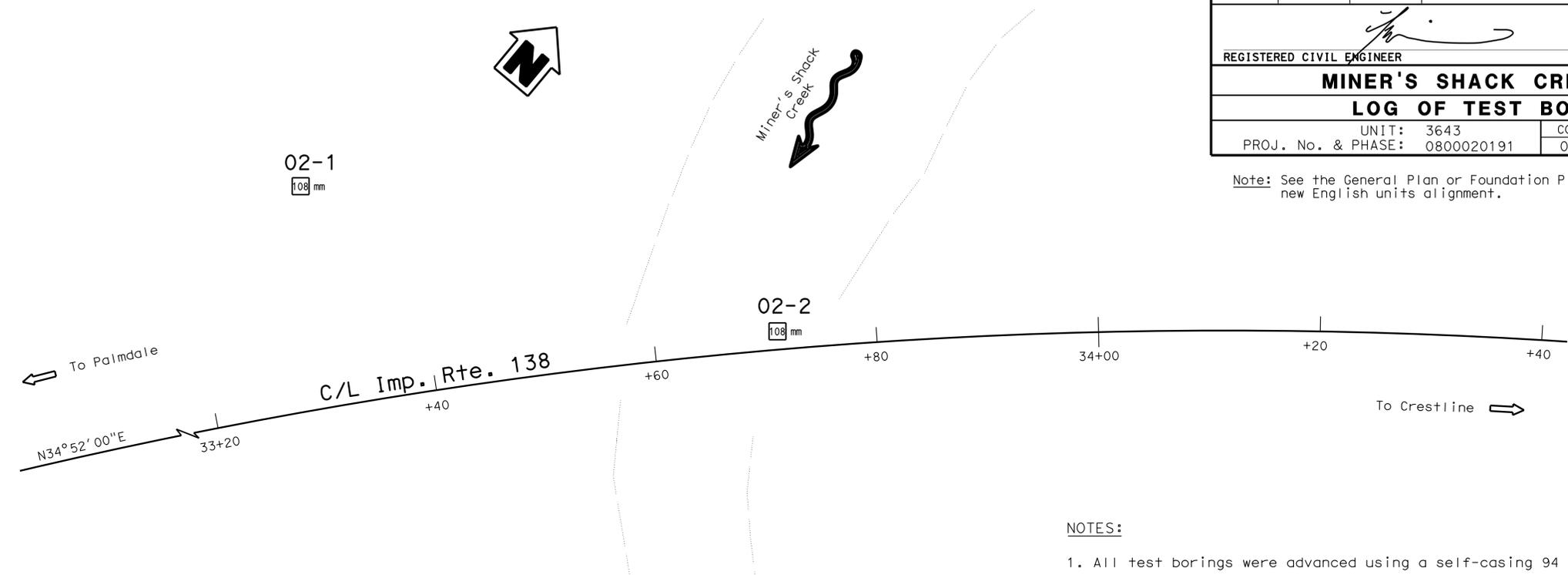
ROTARY SAMPLE BORING (WET)
Casing driven
Size of sampler (mm)
Using a 63.5 kg hammer
300 mm drop or as noted
Uncorr. blow count
Shear strength (kPa)
Vane shear (kPa)

ROTARY SAMPLE BORING (DRY)
Ground water
Elev. measured
Description of materials
Sample taken

LEGEND OF EARTH MATERIALS
GRAVEL, SAND, SILT, CLAY, SANDY CLAY or CLAYEY SAND, SANDY SILT or SILTY SAND, SILTY CLAY, CLAYEY SILT, PEAT and/or ORGANIC MATTER, COBBLES and/or BOULDERS, LENTICULAR ROCK, SEDIMENTARY ROCK, METAMORPHIC ROCK

CONSISTENCY CLASSIFICATION FOR SOILS
According to the Standard Penetration Test
SPT N-value (blows/300 mm)
0-4 Very Loose
5-10 Loose
11-30 Medium Dense
31-50 Dense
51-100 Very Dense
101-150
151-200
201-250
251-300
301-350
351-400
401-450
451-500
501-550
551-600
601-650
651-700
701-750
751-800
801-850
851-900
901-950
951-1000
1001-1050
1051-1100
1101-1150
1151-1200
1201-1250
1251-1300
1301-1350
1351-1400
1401-1450
1451-1500
1501-1550
1551-1600
1601-1650
1651-1700
1701-1750
1751-1800
1801-1850
1851-1900
1901-1950
1951-2000
2001-2050
2051-2100
2101-2150
2151-2200
2201-2250
2251-2300
2301-2350
2351-2400
2401-2450
2451-2500
2501-2550
2551-2600
2601-2650
2651-2700
2701-2750
2751-2800
2801-2850
2851-2900
2901-2950
2951-3000
3001-3050
3051-3100
3101-3150
3151-3200
3201-3250
3251-3300
3301-3350
3351-3400
3401-3450
3451-3500
3501-3550
3551-3600
3601-3650
3651-3700
3701-3750
3751-3800
3801-3850
3851-3900
3901-3950
3951-4000
4001-4050
4051-4100
4101-4150
4151-4200
4201-4250
4251-4300
4301-4350
4351-4400
4401-4450
4451-4500
4501-4550
4551-4600
4601-4650
4651-4700
4701-4750
4751-4800
4801-4850
4851-4900
4901-4950
4951-5000
5001-5050
5051-5100
5101-5150
5151-5200
5201-5250
5251-5300
5301-5350
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7551-7600
7601-7650
7651-7700
7701-7750
7751-7800
7801-7850
7851-7900
7901-7950
7951-8000
8001-8050
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8451-8500
8501-8550
8551-8600
8601-8650
8651-8700
8701-8750
8751-8800
8801-8850
8851-8900
8901-8950
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9001-9050
9051-9100
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9351-9400
9401-9450
9451-9500
9501-9550
9551-9600
9601-9650
9651-9700
9701-9750
9751-9800
9801-9850
9851-9900
9901-9950
9951-10000

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.



PLAN
1:250

NOTES:

- All test borings were advanced using a self-casing 94 mm wireline drill system.
- The descriptions and classifications of soil, including consistency and relative density descriptors, used by the field personnel for the exploration boreholes shown on these sheets are based on the "Soil and Rock Logging Classification Manual (Field Guide)," Engineering Service Center, Office of Structural Foundations, August 1996.
- Soil colors were determined using Munsell Soil Color Charts (1994, Revised Edition). Rock colors were determined using the Geological Society of America rock color charts (1995, revised text).
- Test borings utilized a CME automatic hammer to advance the sampler using a 63.5 kg hammer with a 762 mm drop. Penetration index values shown on the Log of Test Boring (LOTB) sheets were the actual values recorded in the field. Soil consistency shown on the LOTB sheets is based on the actual penetration index values recorded in the field.
- Soil Consistency Classifications for all test borings are based on a conversion factor of 1.5 times the uncorrected blow count.
- E=Blow count for 0.3 m penetration extrapolated from blow count for less than 0.3 m (due to change in material or hard driving).
- REF= Refusal. Refusal is defined as blow counts >50 blows for less than 0.03 m penetration of the 0.3 m (due to change in material or hard driving).
- Classification of earth materials shown on these sheets is based on field visual classification and is not to be construed to imply mechanical and/or laboratory analysis.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		FIELD INVESTIGATION BY:		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF STRUCTURES STRUCTURE DESIGN		BRIDGE NO. 54-1219		MINER'S SHACK CREEK BRIDGE	
DRAWN BY W. Tang 01/03				J. Martin						KILOMETER POST 27.7		LOG OF TEST BORINGS 1 OF 4	
CHECKED BY J. Martin													



DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES (PRELIMINARY STAGE ONLY)		SHEET OF	
7-25-03		4-30-03		18 21	

USERNAME => S102458 DATE PLOTTED => 16-NOV-2015 TIME PLOTTED => 10:10

LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION FOR SOILS

ENGINEERING SERVICES

GEOTECHNICAL SERVICES

FIELD INVESTIGATION BY:

STATE OF CALIFORNIA

DIVISION OF STRUCTURES

BRIDGE NO. 54-1219

KILOMETER POST 27.7

MINER'S SHACK CREEK BRIDGE

LOG OF TEST BORINGS 2 OF 4

CU 08 EA 437001

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 19 OF 21

FOR PLAN VIEW, SEE "LOG OF TEST BORINGS" 1 OF 4



Boring	Station	Offset from C Imp. Rte 138	Top Hole EL.	Bottom Hole EL.	Notes
02-1	109+28.7	72.2' Left	1061 m	1046 m	
			1058 m	1046 m	
			1055 m	1046 m	
			1052 m	1046 m	
			1049 m	1046 m	
			1046 m	1046 m	
			1043 m	1046 m	SILT with fine grained SAND (ML), medium dense, pale brown and light yellowish brown, moist, trace oxide staining.
			1040 m	1046 m	SANDSTONE, dark yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM) with GRAVEL, very dense, brown, moist, fine to medium grained subangular SAND, fine to coarse grained subangular GRAVEL, trace medium grained subangular SAND, fine to coarse grained subangular GRAVEL, trace GWS EL. 100 mm carbonate veins (2 mm thick). (CROWDER FORMATION)
			1037 m	1046 m	SANDSTONE, pale yellowish brown, very intensely weathered, weakly to noncemented consisting of a poorly graded SAND with GRAVEL (SP) and COBBLES (10%), very dense, moist, medium to coarse grained subangular GRAVEL, fine to coarse grained subrounded and subangular GRAVEL, COBBLES (up to 100 mm in size), hard, moderately weathered, rounded. (CROWDER FORMATION)
			1034 m	1046 m	From elev. 1038.9 m to 1038.4 m, weakly cemented consisting of SANDY GRAVEL (GM), fine to coarse grained subrounded SAND and GRAVEL.
			1031 m	1046 m	SANDSTONE, dark yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium with trace coarse grained subangular SAND, fine to coarse grained subrounded and subangular GRAVEL. (CROWDER FORMATION)
			1028 m	1046 m	From elev. 1029.3 m to 1028.7 m, becomes subangular coarse grained slightly cemented poorly graded SAND (SP).
			1025 m	1046 m	SANDSTONE, pale yellowish brown, very intensely weathered, weakly cemented consisting of a poorly graded SAND with GRAVEL (SP), very dense, moist, medium to coarse grained subangular SAND, fine to coarse grained subrounded and subangular GRAVEL. (CROWDER FORMATION)
			1022 m	1046 m	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subangular SAND, fine to coarse grained subrounded and subangular GRAVEL. (CROWDER FORMATION)
			1019 m	1046 m	SANDSTONE, pale yellowish brown, very intensely weathered, weakly cemented consisting of a poorly graded SAND with GRAVEL (SP) and COBBLES (5%), very dense, moist, medium to coarse grained subangular SAND, fine to coarse grained subangular GRAVEL, COBBLES (up to 75 mm in size), hard, moderately cemented, subrounded. (CROWDER FORMATION)
			1016 m	1046 m	SANDSTONE, dark yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular SAND, fine grained subrounded GRAVEL. (CROWDER FORMATION)
			1013 m	1046 m	
			1010 m	1046 m	
			1007 m	1046 m	

22.0 m Lt. Sta. 33+30.9
C/L Imp. Rte. 138

Revisions made to this Log of Test Borings from the original 2002 Log of Test Borings are the addition of the following table and notes:

Notes:

- See the General Plan or Foundation Plan for new English alignment.
- Boring stationing and offset are directly converted to English units in the table above.

DIVISION OF ENGINEERING SERVICES - MATERIALS AND GEOTECHNICAL SERVICES

REGISTERED CIVIL ENGINEER

MINER'S SHACK CREEK BRIDGE

LOG OF TEST BORINGS 2 OF 4

UNIT: 3643
PROJ. No. & PHASE: 0800020191

CONTRACT No. 08-QQ3000

BRIDGE No. 54-1219

Sheet of

Caltrans

Metric

REGISTERED PROFESSIONAL ENGINEER

David T-M Liao
No. C59838
Exp. 12-31-13
CIVIL
STATE OF CALIFORNIA

REGISTERED GEOLOGIST

Muhammad Gabr
Ali Luqman
No. 7297
Exp. 5-31-04
REGISTERED GEOLOGIST
STATE OF CALIFORNIA

DIST 08 COUNTY SBd ROUTE 138

KILOMETER POST TOTAL PROJECT SHEET No. TOTAL SHEETS

PLANS APPROVAL DATE 8-20-03

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CONSISTENCY CLASSIFICATION FOR SOILS
According to the Standard Penetration Test

SPT N-value (0.3m)	SPT N-value (0.75m)	Consistency
0-4	Very Loose	Very Soft
5-10	Loose	Soft
11-30	Medium Dense	Firm
31-50	Dense	Stiff
>50	Very Dense	Very Stiff
>50	>50	Hard

LEGEND OF EARTH MATERIALS

GRAVEL	CLAYEY SILT
SAND	PEAT and/or ORGANIC MATTER
SILT	COBBLES and/or BOULDERS
CLAY	LEUCOUS ROCK
SANDY CLAY or CLAYEY SAND	SEDIMENTARY ROCK
SANDY SILT or SILTY SAND	METAMORPHIC
SILTY CLAY	

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

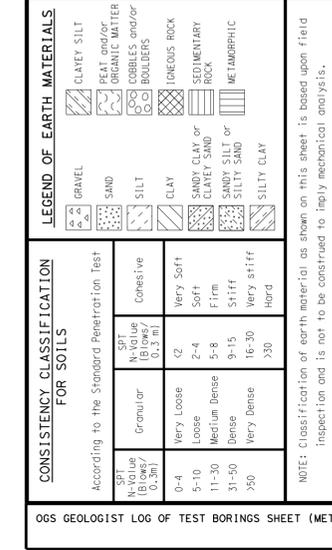
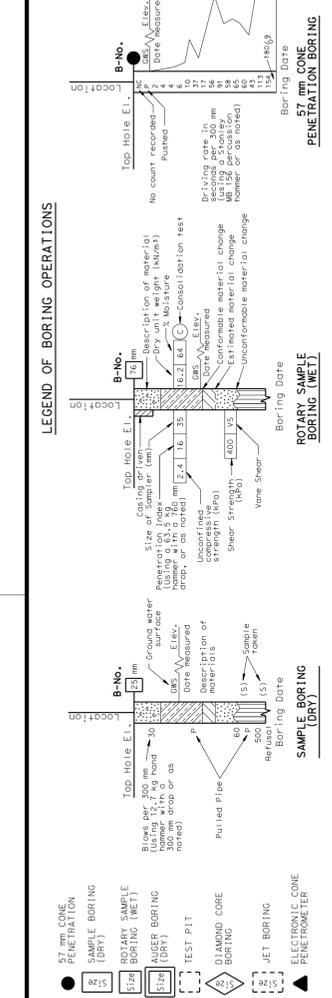
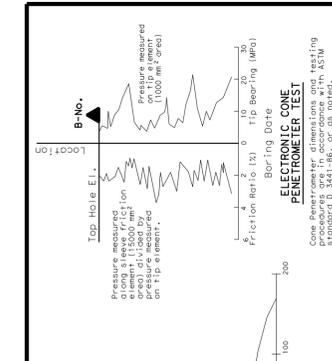
ENGINEERING SERVICES | **GEOTECHNICAL SERVICES**

DRAWN BY: W. Tang 01/03
CHECKED BY: J. Martin

FIELD INVESTIGATION BY: J. Martin

FOR PLAN VIEW, SEE "LOG OF TEST BORINGS" 1 OF 4

Boring No.	Station	Depth (m)	Soil Description	Notes
1045	110+48	1045.48	SILTY SAND with GRAVEL (SM) and COBBLES (10%), dense, brown, moist, fine to coarse grained SAND, fine grained subangular to angular GRAVEL, COBBLES (up to 150 mm in size), hard, moderately weathered, rounded. (ALLUVIUM)	
1042	110+35	1042.35	SILTY SAND with GRAVEL (SM) and COBBLES (10%), dense, light brownish gray, moist, fine to medium grained SAND, fine grained subangular GRAVEL, COBBLES (up to 100 mm in size), hard, slightly weathered and moderately weathered, rounded.	
1039	110+39	1039.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1036	110+36	1036.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1033	110+33	1033.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1030	110+30	1030.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1027	110+27	1027.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1024	110+24	1024.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1021	110+21	1021.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1018	110+18	1018.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1015	110+15	1015.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1012	110+12	1012.00	SANDSTONE, pale yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND with GRAVEL (SM), very dense, moist, fine to medium grained subrounded and subangular GRAVEL. (CROWDER FORMATION)	
1009	110+09	1009.00	SANDSTONE, dark yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM), very dense, moist, fine to medium grained subrounded and subangular SAND. (CROWDER FORMATION)	
1006	110+06	1006.00	SANDSTONE, dark yellowish brown, very intensely weathered, moderately cemented consisting of a SILTY SAND (SM), very dense, moist, fine to medium grained subrounded and subangular SAND. (CROWDER FORMATION)	
1003	110+03	1003.00	SANDSTONE, moderate brown, very intensely weathered, consisting of a lean CLAY (CL), hard, moist, low plasticity CLAY. (CROWDER FORMATION)	
1000	110+00	1000.00	SANDSTONE, moderate brown, very intensely weathered, consisting of a lean CLAY (CL), hard, moist, low plasticity CLAY. (CROWDER FORMATION)	
997	110-03	997.00	SANDSTONE, moderate brown, very intensely weathered, consisting of a lean CLAY (CL), hard, moist, low plasticity CLAY. (CROWDER FORMATION)	
994	110-06	994.00	SANDSTONE, moderate brown, very intensely weathered, consisting of a lean CLAY (CL), hard, moist, low plasticity CLAY. (CROWDER FORMATION)	
991	110-09	991.00	SANDSTONE, moderate brown, very intensely weathered, consisting of a lean CLAY (CL), hard, moist, low plasticity CLAY. (CROWDER FORMATION)	



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES - MATERIALS AND GEOTECHNICAL SERVICES

REGISTERED CIVIL ENGINEER: David T-M Liao
DATE: 10-30-13

MINER'S SHACK CREEK BRIDGE
LOG OF TEST BORINGS 3 OF 4

UNIT: 3643 | CONTRACT No.: 08-003000 | BRIDGE No.: 54-1219
PROJ. No. & PHASE: 0800020191 | Sheet: 27.7 of 27.7

REGISTERED GEOLOGIST
Muhammad Gabr Ali Luqman
No. 7297
Exp. 5-31-04

REGISTERED PROFESSIONAL ENGINEER
David T-M Liao
No. C59838
Exp. 12-31-13
CIVIL

Revisions made to this Log of Test Borings from the original 2002 Log of Test Borings are the addition of the following table and notes:

Boring	Station	Offset from @ Imp. Rte 138
02-2	110+60.9	5.2' Left

Notes:
1. See the General Plan or Foundation Plan for new English alignment.
2. Boring stationing and offset are directly converted to English units in the table above.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

MINER'S SHACK CREEK BRIDGE
LOG OF TEST BORINGS 3 OF 4

BRIDGE NO.: 54-1219
KILOMETER POST: 27.7

CU 08
EA 437001

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY): 7-26-03, 7-30-03, 8-20-03

SHEET 20 OF 21

FILE => 54-1219-Z-1FD_3.dgn

06S GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 3/02)

Caltrans Metric

REGISTERED GEOLOGIST

REGISTERED PROFESSIONAL ENGINEER

REGISTERED CIVIL ENGINEER

MINER'S SHACK CREEK BRIDGE

LOG OF TEST BORINGS 3 OF 4

DIVISION OF ENGINEERING SERVICES - MATERIALS AND GEOTECHNICAL SERVICES

REGISTERED CIVIL ENGINEER

REGISTERED GEOLOGIST



DIST	COUNTY	ROUTE	KILOMETER TOTAL PROJECT	POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
08	SBD	138				
					8-20-03	
					REGISTERED GEOLOGIST	
					PLANS APPROVAL DATE	
					REGISTERED GEOLOGIST Muhammad Gabr Ali Luqman No. 7297 Exp. 5-31-04 REGISTERED GEOLOGIST STATE OF CALIFORNIA	

DIVISION OF ENGINEERING SERVICES - MATERIALS AND GEOTECHNICAL SERVICES

DIST	COUNTY	ROUTE	POST MILE-TOTAL PROJECT	Sheet No.	Total Sheets
08	SBD	138	R17.1/R19.2	183	212

REGISTERED CIVIL ENGINEER 10-30-13 DATE

MINER'S SHACK CREEK BRIDGE

LOG OF TEST BORINGS 4 OF 4

UNIT: 3643	CONTRACT No. 08-0Q3000	BRIDGE No. 54-1219
PROJ. No. & PHASE: 0800020191		Sheet of

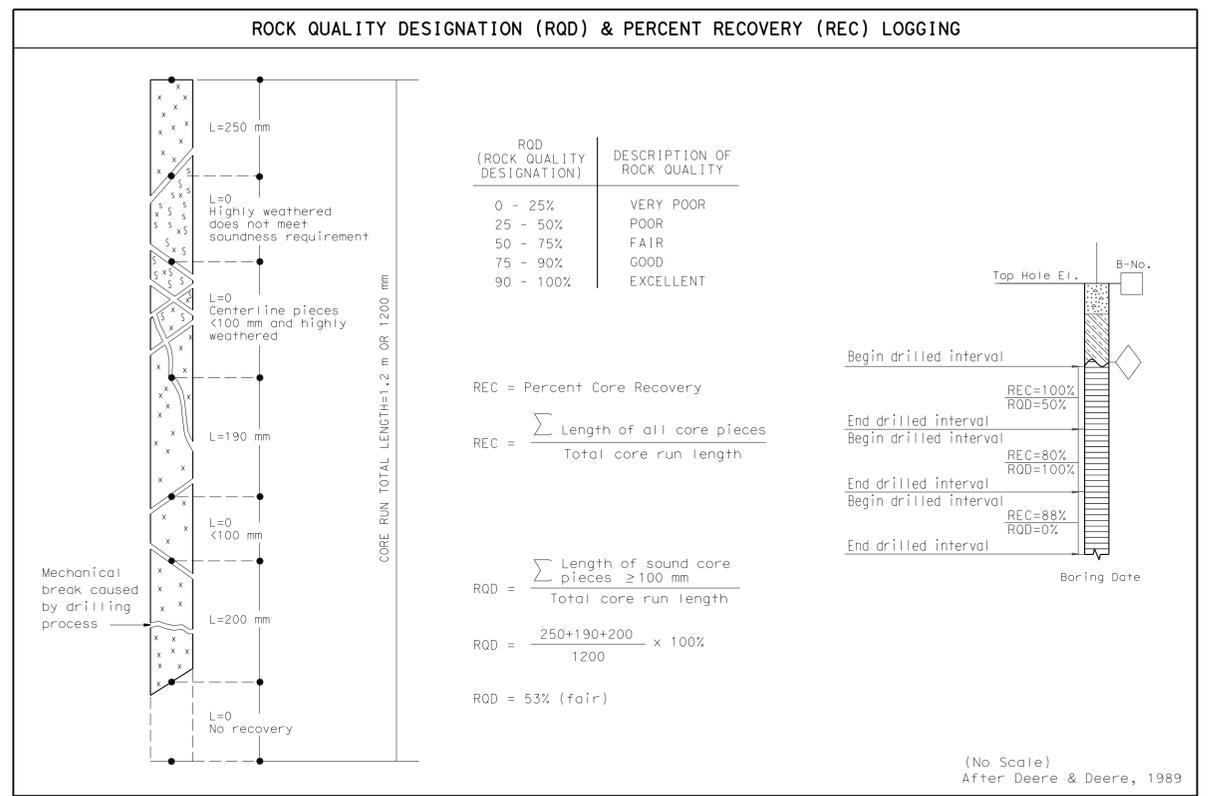
WEATHERING DESCRIPTORS		Diagnostic features				General characteristics (strength, excavation, etc.) [§]	
Alphanumeric descriptor	Descriptive term	Chemical weathering-Discoloration and/or oxidation	Mechanical weathering-Grain boundary conditions (disaggregation) primarily for granitics and some coarse-grained sediments	Texture and solutioning			
W1	Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change.	No solutioning.	Hammer rings when crystalline rocks are struck. Almost always rock excavation except for naturally weak or weakly cemented rocks such as siltstones or shales.
W2	Slightly weathered to fresh ^o						
W3	Slightly weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull.	Minor to complete discoloration or oxidation of most surfaces.	No visible separation, intact (tight).	Preserved.	Minor leaching of some soluble minerals may be noted.	Hammer rings when crystalline rocks are struck. Body of rock not weakened. With few exceptions, such as siltstones or shales, classified as rock excavation.
W4	Moderately to slightly weathered ^o						
W5	Moderately weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty," feldspar crystals are "cloudy."	All fracture surfaces are discolored or oxidized.	Partial separation of boundaries visible.	Generally preserved.	Soluble minerals may be mostly leached.	Hammer does not ring when rock is struck. Body of rock is slightly weakened. Depending on fracturing, usually is rock excavation except in naturally weak rocks such as siltstones or shales.
W6	Intensely to moderately weathered ^o						
W7	Intensely weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in-situ disaggregation, see grain boundary conditions.	All fracture surfaces are discolored or oxidized, surfaces friable.	Partial separation, rock is friable; in semiarid conditions granitics are disaggregated.	Texture altered by chemical disintegration (hydration, argillation).	Leaching of soluble minerals may be complete.	Dull sound when struck with hammer, usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures, or veinlets. Rock is significantly weakened. Usually common excavation.
W8	Very intensely weathered						
W9	Decomposed	Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay.		Complete separation of grain boundaries (disaggregated).	Resembles a soil, partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete.		Can be granulated by hand. Always common excavation. Resistant minerals such as quartz may be present as "stringers" or "dikes."

Note: This chart and its horizontal categories are more readily applied to rocks with feldspars and mafic minerals. Weathering in various sedimentary rocks, particularly limestones and poorly indurated sediments, will not always fit the categories established. This chart and weathering categories may have to be modified for particular site conditions or alteration such as hydrothermal effects; however, the basic framework and similar descriptors are to be used.

^oCombination descriptors are permissible where equal distribution of both weathering characteristics are present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, dual descriptors should not be used where significant, identifiable zones can be delineated. When given as a range only two adjacent terms may be combined. "Decomposed to slightly weathered," or "moderately weathered to fresh" are not acceptable.

[†]Does not include directional weathering along shears or faults and their associated features. For example, a shear zone that carried weathering to great depths into a fresh rock mass would not require the rock mass to be classified as weathered.

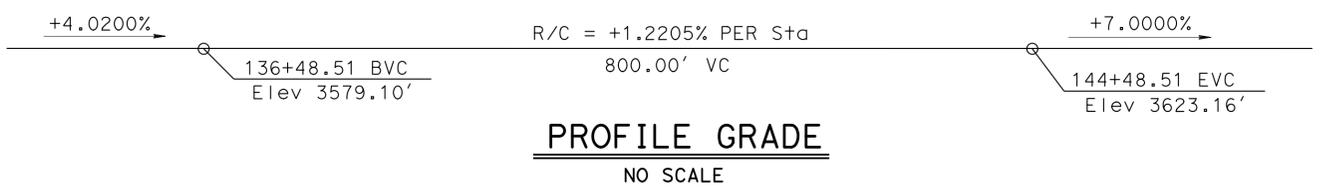
[§]These are generalizations and should not be used as diagnostic features for weathering or excavation classification. These characteristics vary to a large extent based on naturally weak materials or cementation and type of excavation.



FRACTURE DENSITY		Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.
<p>FRACTURE DENSITY- Based on the spacing of all natural fractures in an exposure or core recovery lengths in boreholes; excludes mechanical breaks, shears, and shear zones; however, shear-disturbed zones (fracturing outside the shear) are included. Descriptors for fracture density apply to all rock exposures such as tunnel walls, dozer trenches, outcrops, or foundation cut slopes and inverts, as well as boreholes. Descriptive criteria presented below are based on borehole cores where lengths are measured along the core axis, for other exposures the criteria is distance measured between fractures (size of blocks).</p> <p>UNFRACTURED (FD0): No fractures.</p> <p>VERY SLIGHTLY FRACTURED (FD1): Core recovered mostly in lengths greater than 1 m.</p> <p>SLIGHTLY TO VERY SLIGHTLY FRACTURED (FD2)*</p> <p>SLIGHTLY FRACTURED (FD3): Core recovered mostly in lengths from 300 to 1000 mm, with few scattered lengths less than 300 mm or greater than 1000 mm.</p> <p>MODERATELY TO SLIGHTLY FRACTURED (FD4)*</p> <p>MODERATELY FRACTURED (FD5): Core recovered mostly in 100 to 300 mm lengths with most lengths about 200 mm.</p> <p>INTENSELY TO MODERATELY FRACTURED (FD6)*</p> <p>INTENSELY FRACTURED (FD7): Lengths average from 30 to 100 mm with scattered fragmented intervals. Core recovered mostly in lengths less than 100 mm.</p> <p>VERY INTENSELY TO INTENSELY FRACTURED (FD8)*</p> <p>VERY INTENSELY FRACTURED (FD9): Core recovered mostly as chips and fragments with a few scattered short core lengths.</p> <p>* Combinations of fracture densities (e.g. very intensely to intensely fractured, or moderately to slightly fractured) are used where equal distribution of both fracture density characteristics are present over a significant interval or exposure, or where characteristics are "in between" the descriptor definitions.</p>		

ROCK HARDNESS DESCRIPTORS		
Alphanumeric Descriptor	Descriptor	Criteria
H1	Extremely hard	Core, fragment, or exposure cannot be scratched with knife or sharp pick; can only be chipped with repeated heavy hammer blows.
H2	Very hard	Cannot be scratched with knife of sharp pick. Core or fragment breaks with repeated heavy hammer blows.
H3	Hard	Can be scratched with knife or sharp pick with difficulty (heavy pressure). Heavy hammer blow required to break specimen.
H4	Moderately hard	Can be scratched with knife or sharp pick with light or moderate pressure. Core or fragment breaks with moderate hammer blow.
H5	Moderately soft	Can be grooved 2 mm deep by knife or sharp pick with moderate or heavy pressure. Core or fragment breaks with light hammer blow or heavy manual pressure.
H6	Soft	Can be grooved or gouged easily by knife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
H7	Very soft	Can be readily indented, grooved or gouged with fingernail, or carved with a knife. Breaks with light manual pressure.
Any bedrock unit softer than H7, very soft, is to be described using ASTM D-2488 consistency descriptors.		
Note: Although "sharp pick" is included in these definitions, descriptions of ability to be scratched, grooved or gouged by a knife is the preferred criteria.		
Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.		

BEDDING, FOLIATION, OR FLOW TEXTURE DESCRIPTORS	
Descriptors	Thickness / Spacing
Massive	Greater than 3 m
Very thickly (bedded, foliated, or banded)	1 to 3 m
Thickly	300 mm to 1 m
Moderately	100 to 300 mm
Thinly	30 to 100 mm
Very thinly	10 to 30 mm
Laminated (intensely foliated or banded)	Less than 10 mm
Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.	



PROFILE GRADE
NO SCALE

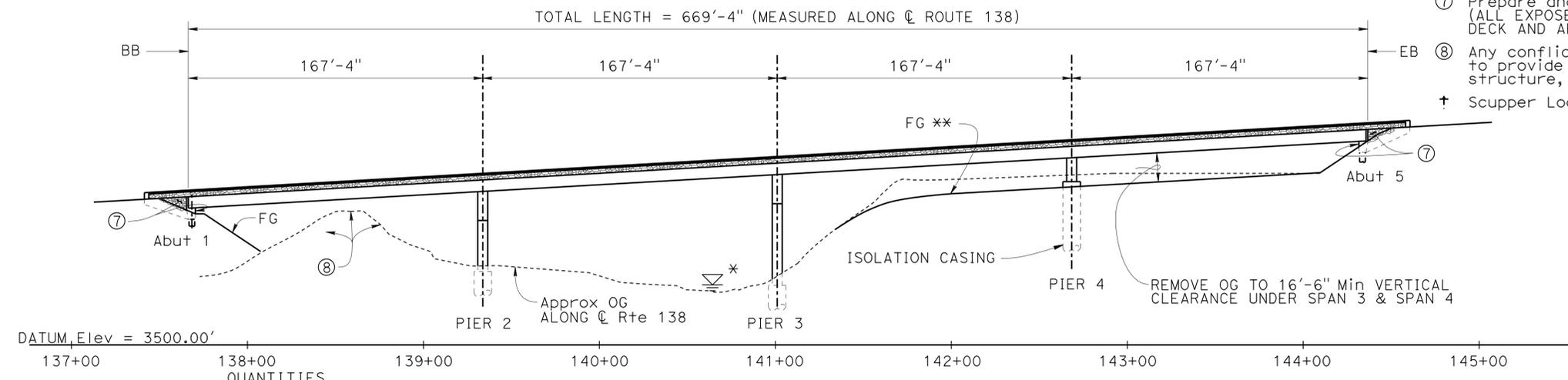
- LEGEND:
- ① Paint "Bridge Number 54-1220"
 - ② Paint "Double Drain Creek Bridge"
 - ③ MGS, see "ROADWAY PLANS"
 - ④ Future Utility Opening
 - ⑤ Structure Approach, Type N(30S)
 - ⑥ Concrete Barrier Type 736 (Mod)
 - ⑦ Prepare and Stain Concrete Surface (ALL EXPOSED SURFACE, EXCLUDING BRIDGE DECK AND APPROACH SLABS)
 - ⑧ Any conflicting OG shall be removed to provide a minimum 2' clearance to structure, unless otherwise noted

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	184	212

Pete W. Norboe
REGISTERED CIVIL ENGINEER
DATE: 3-5-15
9-11-15
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Peter W. Norboe
No. C57519
Exp. 12-31-15
CIVIL
STATE OF CALIFORNIA

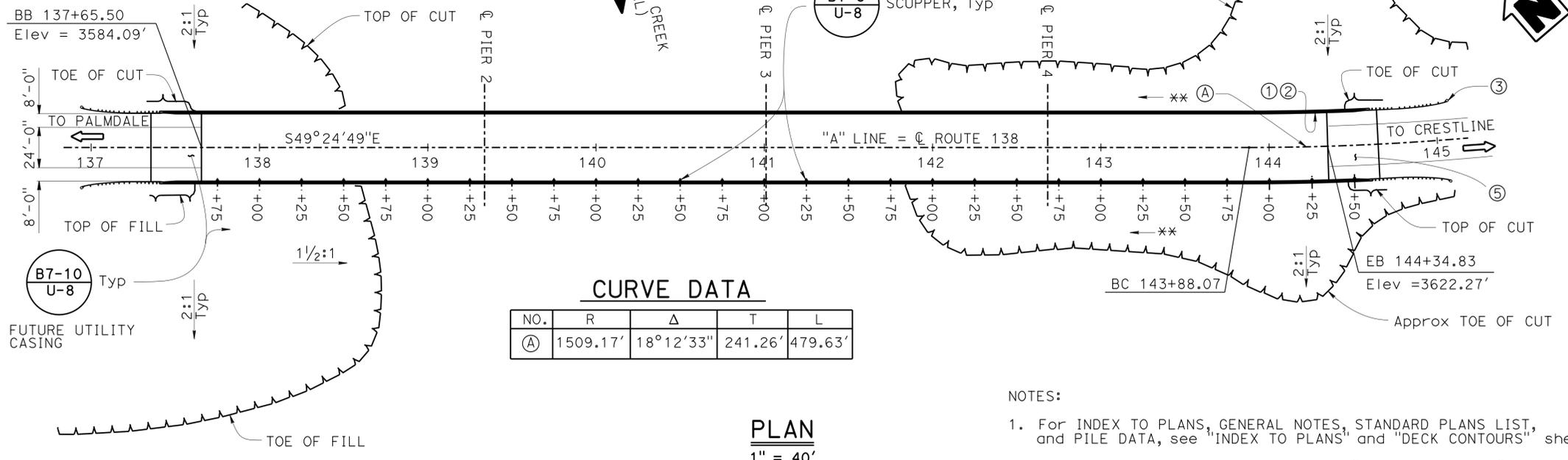
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ELEVATION
1" = 40'

QUANTITIES

STRUCTURE EXCAVATION (BRIDGE)	687	CY
STRUCTURE BACKFILL (BRIDGE)	163	CY
42" CAST-IN-DRILLED-HOLE CONCRETE PILING	416	LF
84" CAST-IN-DRILLED-HOLE CONCRETE PILING	467	LF
PRESTRESSING CAST-IN-PLACE CONCRETE	LUMP	SUM
STRUCTURAL CONCRETE, BRIDGE	2,660	CY
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	104	CY
RANDOM BOULDER TEXTURE	630	SQFT
PTFE SPHERICAL BEARING	8	EA
JOINT SEAL ASSEMBLY (MR 4")	80	LF
BAR REINFORCING STEEL (BRIDGE)	692,487	LB
BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	428,904	LB
PREPARE AND STAIN CONCRETE	41,833	SQFT
24" WELDED STEEL PIPE CASING (BRIDGE)	80	LF
ISOLATION CASING	53,600	LB
CONCRETE BARRIER (TYPE 736 MODIFIED)	1,431	LF

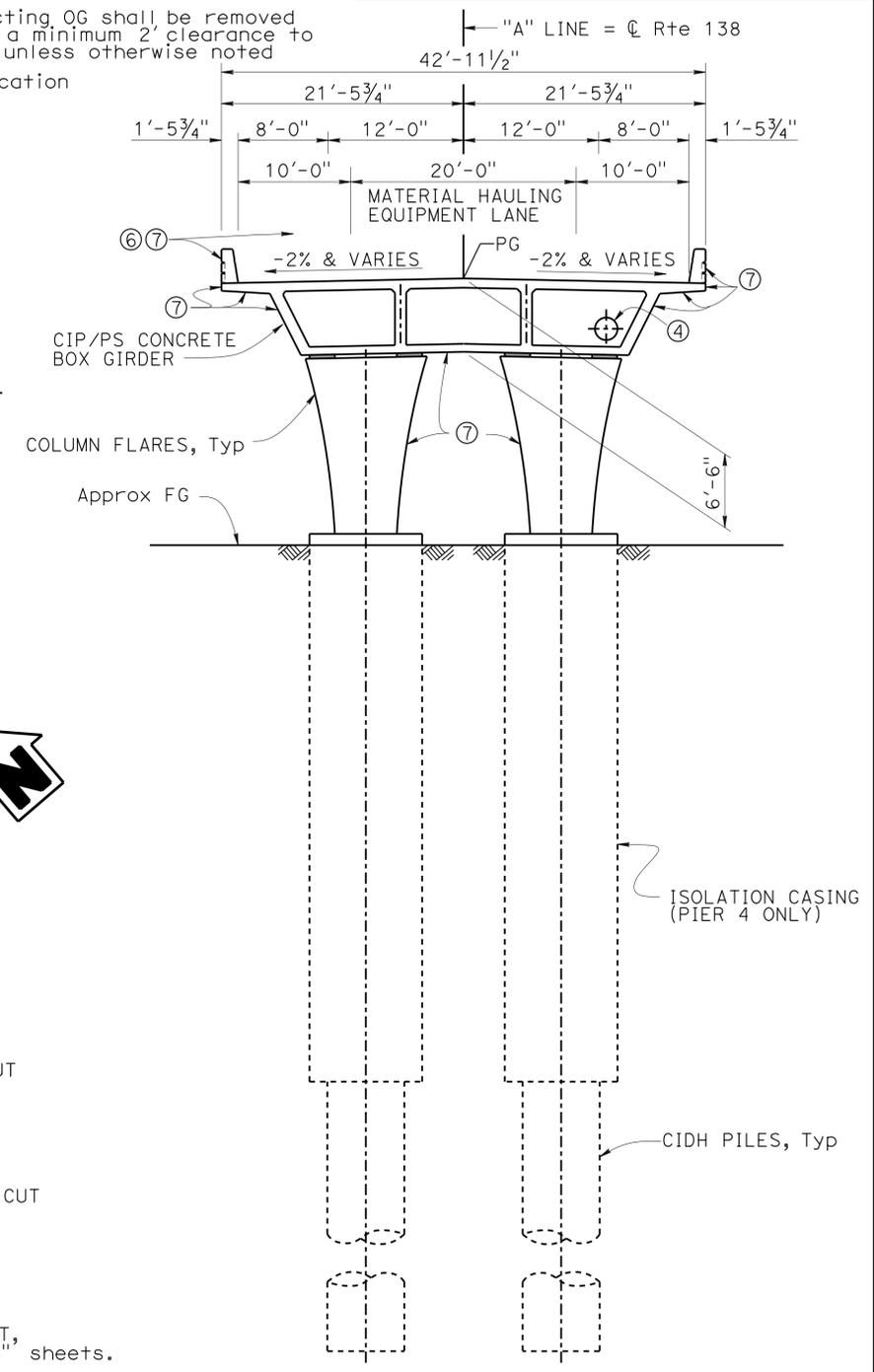


CURVE DATA

NO.	R	Δ	T	L
①	1509.17'	18°12'33"	241.26'	479.63'

PLAN
1" = 40'

- NOTES:
- For INDEX TO PLANS, GENERAL NOTES, STANDARD PLANS LIST, and PILE DATA, see "INDEX TO PLANS" and "DECK CONTOURS" sheets.
 - For HYDROLOGIC SUMMARY TABLE, see, "FOUNDATION PLAN" sheet.
- ** Grade to drain.



TYPICAL SECTION
1/8" = 1'-0"

Gordon Danke
DESIGN ENGINEER

DESIGN	BY Pete Norboe	CHECKED Rosa Candiotti	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE
DETAILS	BY David Elliott	CHECKED Rosa Candiotti	LAYOUT	BY Pete Norboe
QUANTITIES	BY Pete Norboe	CHECKED Rosa Candiotti	SPECIFICATIONS	BY Theresa Nedwick

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

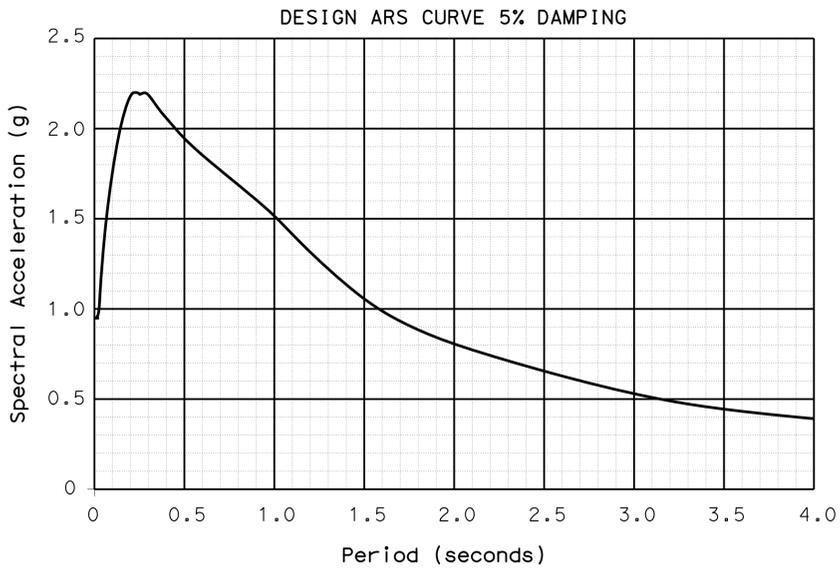
BRIDGE NO. 54-1220
POST MILE R18.1
DOUBLE DRAIN CREEK BRIDGE
GENERAL PLAN

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	185	212

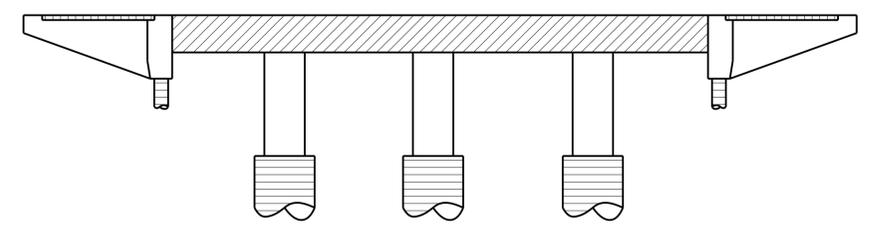
Peter W. Norboe 3-5-15
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE _____

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ACCELERATION RESPONSE SPECTRA
No Scale



- Structural Concrete, Bridge
- CIDH Pile (5000 psi @ 28 days)
- Structural Concrete, Bridge (5000 psi @ 28 days)
- Structural Concrete, Approach Slab Type N(30S)

CONCRETE STRENGTH AND TYPE LIMITS
No Scale

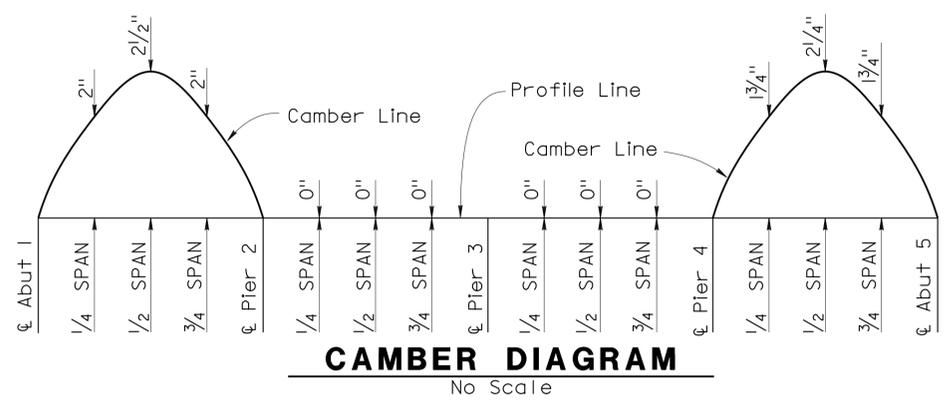
INDEX TO PLANS

1. GENERAL PLAN
2. INDEX TO PLANS
3. DECK CONTOUR
4. FOUNDATION PLAN NO. 1
5. FOUNDATION PLAN NO. 2
6. ABUTMENT LAYOUT
7. ABUTMENT DETAILS NO. 1
8. ABUTMENT DETAILS NO. 2
9. ABUTMENT DETAILS NO. 3
10. PIER DETAILS
11. COLUMN DETAILS NO. 1
12. COLUMN DETAILS NO. 2
13. COLUMN DETAILS NO. 3
14. TYPICAL SECTION
15. GIRDER LAYOUT
16. GIRDER REINFORCEMENT
17. ARCHITECTURAL TREATMENT DETAILS
18. PTFE/SPHERICAL EXPANSION BEARING DETAILS NO. 1
19. PTFE/SPHERICAL EXPANSION BEARING DETAILS NO. 2
20. JOINT SEAL ASSEMBLY (MAXIMUM MOVEMENT RATING = 4")
21. STRUCTURE APPROACH TYPE N(30S)
22. STRUCTURE APPROACH DRAINAGE DETAILS
23. LOG OF TEST BORINGS NO. 1
24. LOG OF TEST BORINGS NO. 2
25. LOG OF TEST BORINGS NO. 3
26. LOG OF TEST BORINGS NO. 4
27. LOG OF TEST BORINGS NO. 5
28. LOG OF TEST BORINGS NO. 6
29. LOG OF TEST BORINGS NO. 7

PILE DATA TABLE

SUPPORT LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		DESIGN TIP ELEVATION (FT)	SPECIFIED TIP ELEVATION (FT)	FINISH GRADE @ PIER ELEVATION (FT)	CUT-OFF ELEVATION (FT)
		COMPRESSION	TENSION				
Abut 1	42" CIDH	880	0	3513.0 (a)	3513.0	VARIES	3572.00
PIER 2	84" CIDH	4970	2070	3442.0 (a) 3465.0 (b)	3442.0	3553.0 (LEFT) 3540.0 (RIGHT)	3528.50
PIER 3	84" CIDH	4860	2180	3452.0 (a) 3473.0 (b)	3452.0	3550.0 (LEFT) 3543.0 (RIGHT)	3536.75
PIER 4	84" CIDH	5220	1950	3486.0 (a) 3511.0 (b)	3486.0	3588.1 (LEFT) 3588.1 (RIGHT)	3548.25
Abut 5	42" CIDH	860	0	3564.0 (a)	3564.0	VARIES	3609.00

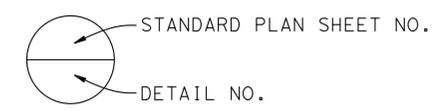
NOTE:
1) Design Tip Elevation are controlled by: (a) Compression, (b) Tension.



CAMBER DIAGRAM
No Scale
DOES NOT INCLUDE ALLOWANCE FOR FALSEWORK SETTLEMENT
CAMBER VALUE IN INCHES

STANDARD PLANS 2010

SHEET NO.	TITLE
B0-1	Bridge Details
B0-3	Bridge Details
B0-5	Bridge Details
B0-13	Bridge Details
B7-1	Box Girder Details
B7-8	Deck Drainage Details
B7-10	Utility Opening Box Girder
RSP B8-5	Cast-In-Place Prestressed Girder Details
RSP B11-56	Concrete Barrier Type 736
B14-5	Water Supply Line (Details) (Pipe Sizes Less Than NPS 4)



DESIGN	BY	P. Norboe	CHECKED	R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO.	54-1220	DOUBLE DRAIN CREEK BRIDGE		
	DETAILS	BY	D. Elliott	CHECKED			R. Candiotti	POST MILE		R18.1	INDEX TO PLANS
	QUANTITIES	BY	P. Norboe	CHECKED			R. Candiotti				

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: 3594 PROJECT NUMBER & PHASE: 0800020191-1 CONTRACT NO.: 08-003004

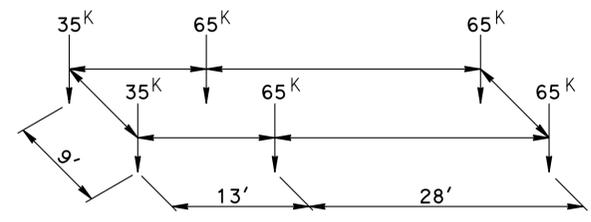
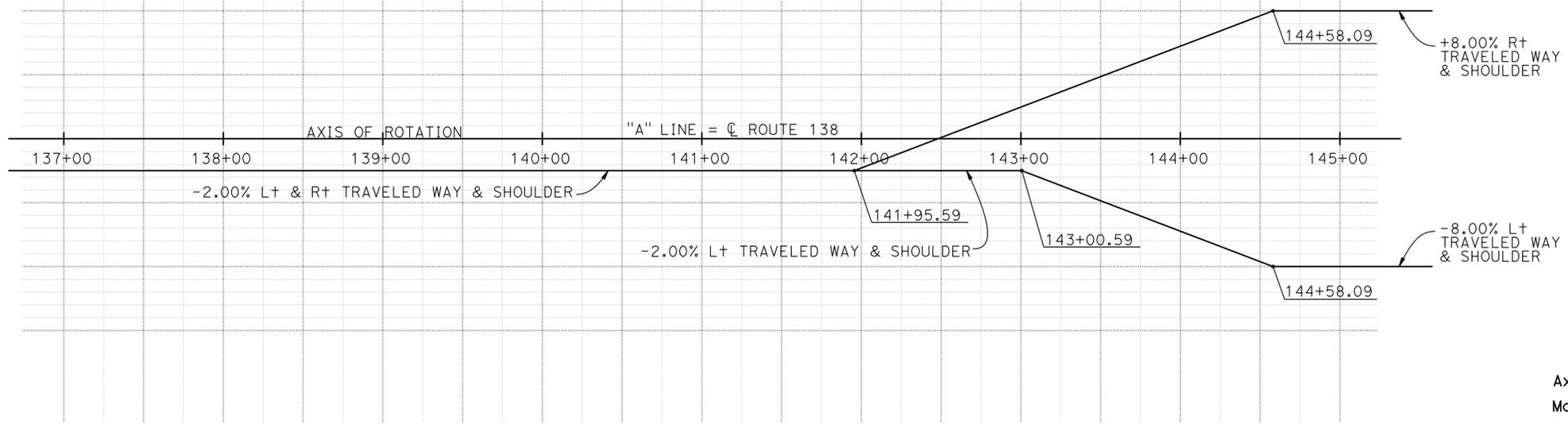
DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
9-18-13	2	29

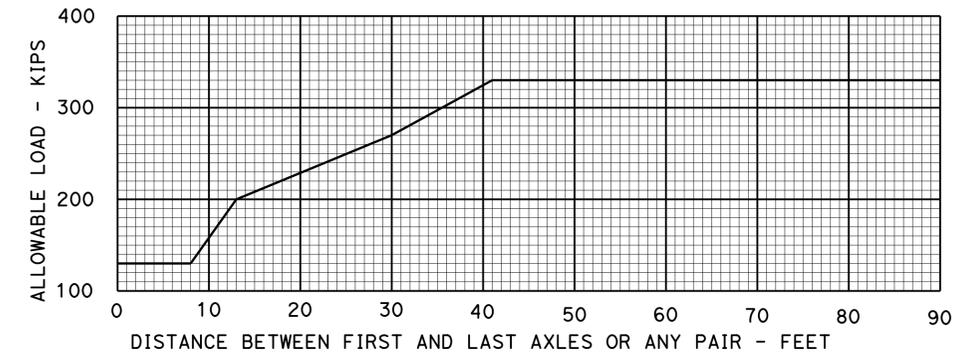
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	186	212

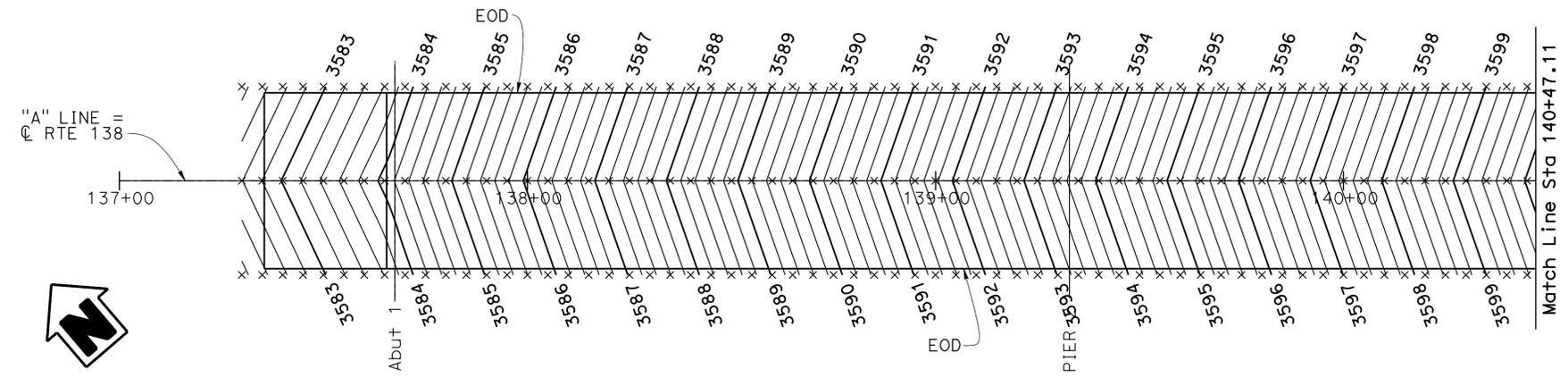
Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE
 9-11-15
 PLANS APPROVAL DATE
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Axle pairs less than 8 feet will be considered as a single axle.
 Maximum single axle load = 130 Kips
 The gross axle loads, in pairs or in total, must be within the limits shown below.



SUPERELEVATION DIAGRAM
NO SCALE



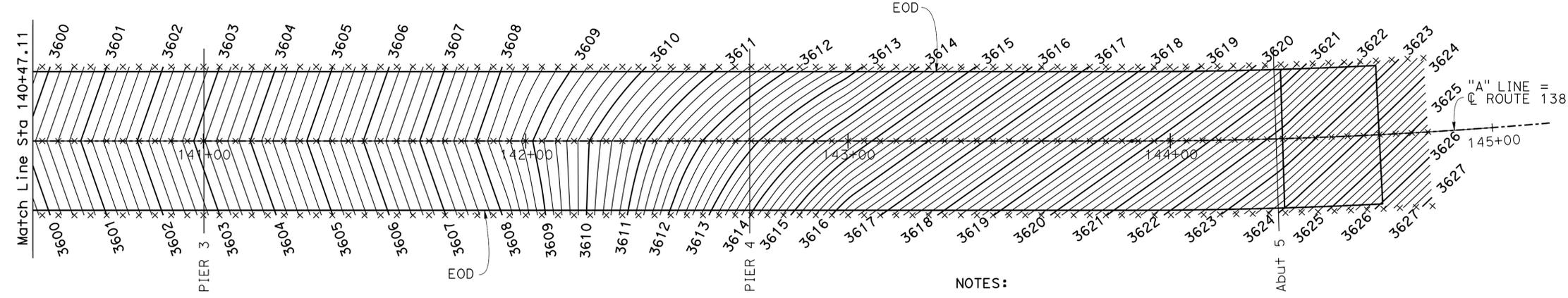
MATERIALS HAULING EQUIPMENT LOADING

GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

- DESIGN:** AASHTO LRFD Bridge Design Specifications, 4th edition with the 2007 Interims and the November 2011 California Amendments
SEISMIC DESIGN: Caltrans Seismic Design Criteria (SDC), Version 16 dated November 2010
DEAD LOAD: Includes 35 psf for future wearing surface.
LIVE LOADING: HL93, permit design load, and MHE truck load.
SEISMIC LOADING: See Site Specific ARS on "INDEX TO PLANS" sheet. $V_{50} = 400$ m/s; PGA 0.96
CONCRETE:
 $f_y = 60$ ksi
 $f'_c = 3.6$ ksi
 $n = 8$
 See prestressing notes.
STRUCTURAL STEEL:
 $f_y =$ ASTM A709 Grade 50

- NOTES:**
 - 5' intervals along station line
 - Contours do not include camber
 - Contours interval = .20'

PLAN
1" = 20'



DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
 STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1220
POST MILE	R18.1

DOUBLE DRAIN CREEK BRIDGE
DECK CONTOURS

HYDROLOGIC SUMMARY

DRAINAGE AREA : 0.31 SQUARE MILES

	DESIGN FLOOD	BASE FLOOD	OVERTOPPING FLOOD
FREQUENCY (YEARS)	50	100	>>500
DISCHARGE (CUBIC FEET PER SECONDS)	320	475	-
WATER SURFACE ELEV. AT BRIDGE (FEET)	3528	3529	3587

FLOOD PLAIN DATA ARE BASED UPON INFORMATION AVAILABLE WHEN THE PLANS WERE PREPARED AND ARE SHOWN TO MEET FEDERAL REQUIREMENTS. THE ACCURACY OF SAID INFORMATION IS NOT WARRANTED BY THE STATE AND INTERESTED OR AFFECTED PARTIES SHOULD MAKE THEIR OWN INVESTIGATIONS.

NOTE: For purposes of converting the metric LOTB stationing to these Plans, use the following equivalent stationing: BB on LOTB's = 41+96.000 (m) converts to BB = 137+65.50 (ft).

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
8	SBd	138	R17.1/R19.2	187	212

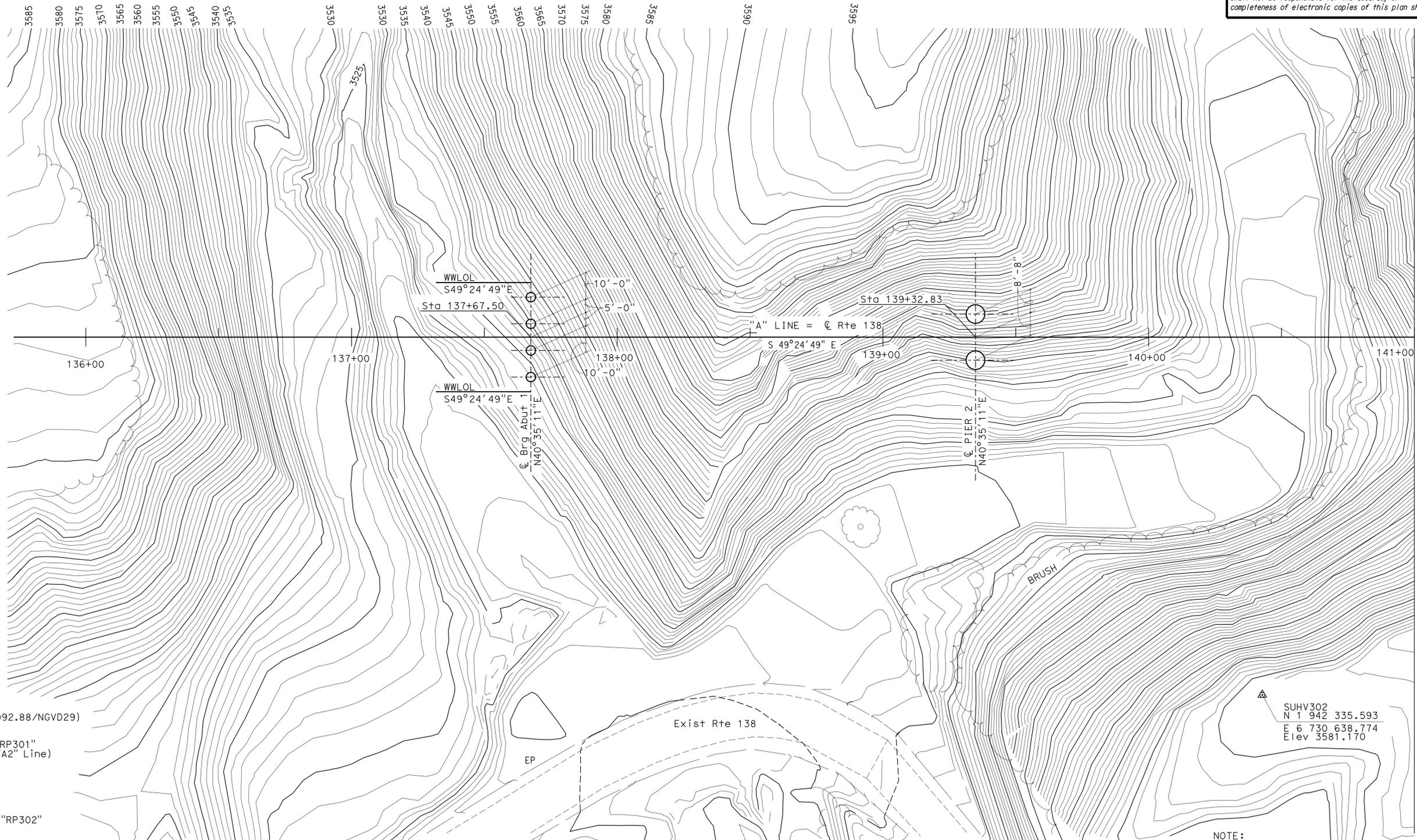
Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE

9-11-15
 PLANS APPROVAL DATE

Peter W. Norboe
 No. C57519
 Exp. 12-31-15
 CIVIL
 STATE OF CALIFORNIA

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- LEGEND:
- Denotes 42" Ø CIDH PILE
 - Denotes 84" Ø CIDH PILE



SURVEY CONTROL (EPOCH DATE 1992.88/NGVD29)

SUHV301
 FND: 1" IP w/CT Tag Stamped "RP301"
 52.910 Lt. Proposed Rte 138 ("A2" Line)
 Sta 143+99.270
 N 1 942 246.150
 E 6 731 031.068
 Elev 3639.250

SUHV302
 FND: 1" IP w/ CT Tag Stamped "RP302"
 134.350 Lt. Proposed Rte 138
 Sta 140+42.770
 N 1 942 335.593
 E 6 730 638.774
 Elev 3581.170

NOTE:
 Underground utilities as shown are approximate.
 See District Utility Plans for details.

PRELIMINARY INVESTIGATION SECTION				DESIGN BY PETE NORBOE	CHECKED ROSA CANDIOTTI	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO. 54-1220	DOUBLE DRAIN CREEK BRIDGE FOUNDATION PLAN NO. 1 OF 2		
SCALE VERT. DATUM NGVD29	PHOTOGRAMMETRY AS OF: X	DETAILS BY DAVID ELLIOTT	CHECKED ROSA CANDIOTTI	POST MILE R18.1							
1"=20' HORZ. DATUM NAD83	SURVEYED BY D8	QUANTITIES BY PETE NORBOE	CHECKED ROSA CANDIOTTI								
ALIGNMENT TIES Dist. Traverse Sheet	DRAFTED BY C. Pham	CHECKED BY E. Viagar				UNIT: 3647	PROJECT NUMBER & PHASE: 0800020191-1	CONTRACT NO.: 08-003004	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 4 OF 29

STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

FILE => 54-1220-e-fdpi01.dgn

Match Line- See "FOUNDATION PLAN No. 2 OF 2"

USERNAME => s102458 DATE PLOTTED => 16-NOV-2015 TIME PLOTTED => 10:10

No.	R	Δ	T	L
①	1509.174	18°12'33"	241.855	479.632

LEGEND:

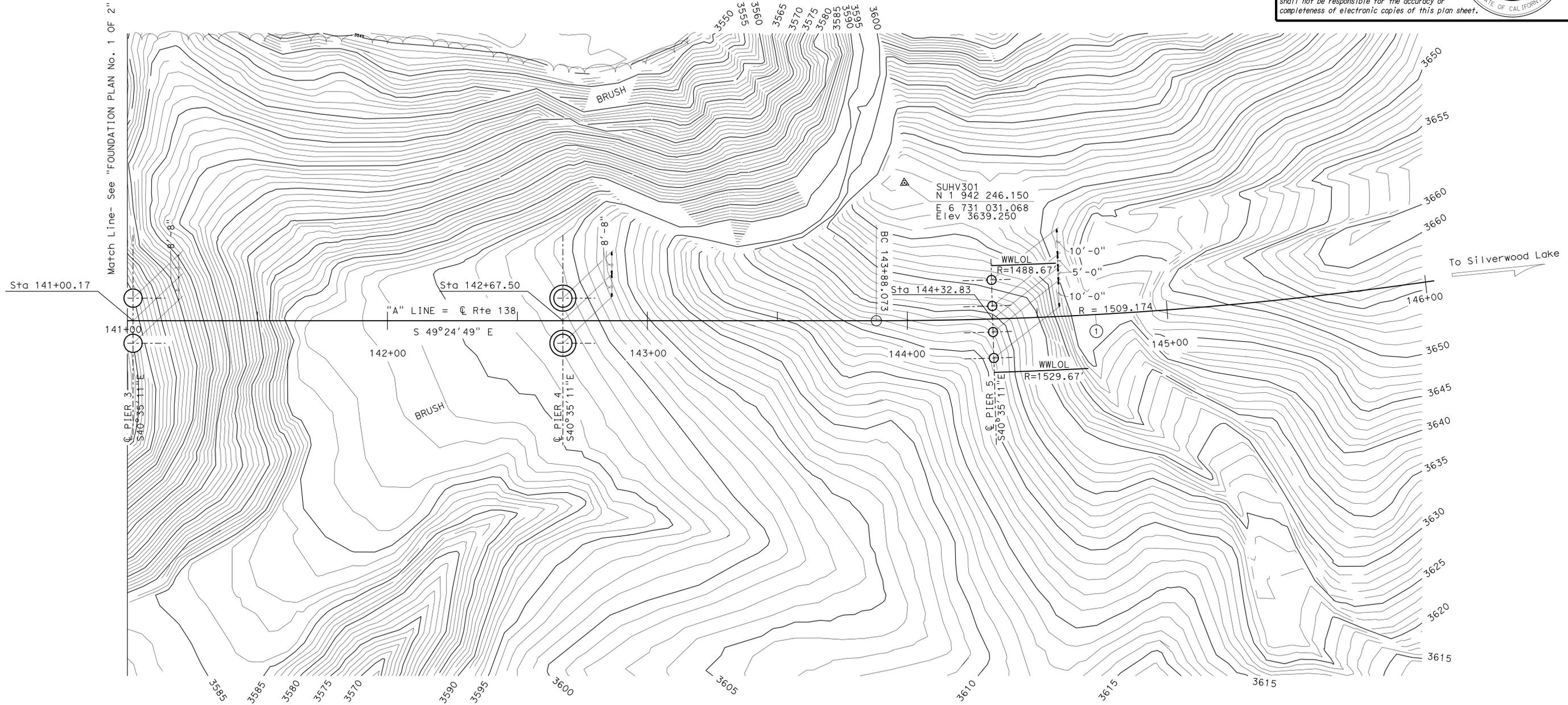
- Denotes 42" Ø CIDH PILE
- ⊙ Denotes 84" Ø CIDH PILE with Isolation Casing
- Denotes 84" Ø CIDH PILE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
8	SBd	138	R17.1/R19.2	188	212

Peter W. Norboe
 REGISTERED CIVIL ENGINEER DATE 3-5-15
 9-11-15
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 Peter W. Norboe
 No. C57519
 Exp. 12-31-15
 CIVIL
 STATE OF CALIFORNIA

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SURVEY CONTROL
 See "FOUNDATION PLAN No. 1 OF 2"

NOTE:
 Underground utilities as shown are approximate.
 See District Utility Plans for details.

PRELIMINARY INVESTIGATION SECTION				DESIGN BY PETE NORBOE	CHECKED ROSA CANDIOTTI	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO. 54-1220	DOUBLE DRAIN CREEK BRIDGE FOUNDATION PLAN No. 2 OF 2		
SCALE 1"=20'	VERT.DATUM NGVD29	PHOTOGRAMMETRY AS OF: X	DETAILS BY DAVID ELLIOTT	CHECKED ROSA CANDIOTTI	POST MILE R18.1						
ALIGNMENT TIES Dist. Traverse Sheet	DRAFTED BY C. Pham	CHECKED BY E. Viagar	QUANTITIES BY PETE NORBOE	CHECKED ROSA CANDIOTTI							
STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 09-01-10)						ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: 3647 PROJECT NUMBER & PHASE: 0800020191-1	CONTRACT NO.: 08-003004	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 5 OF 29

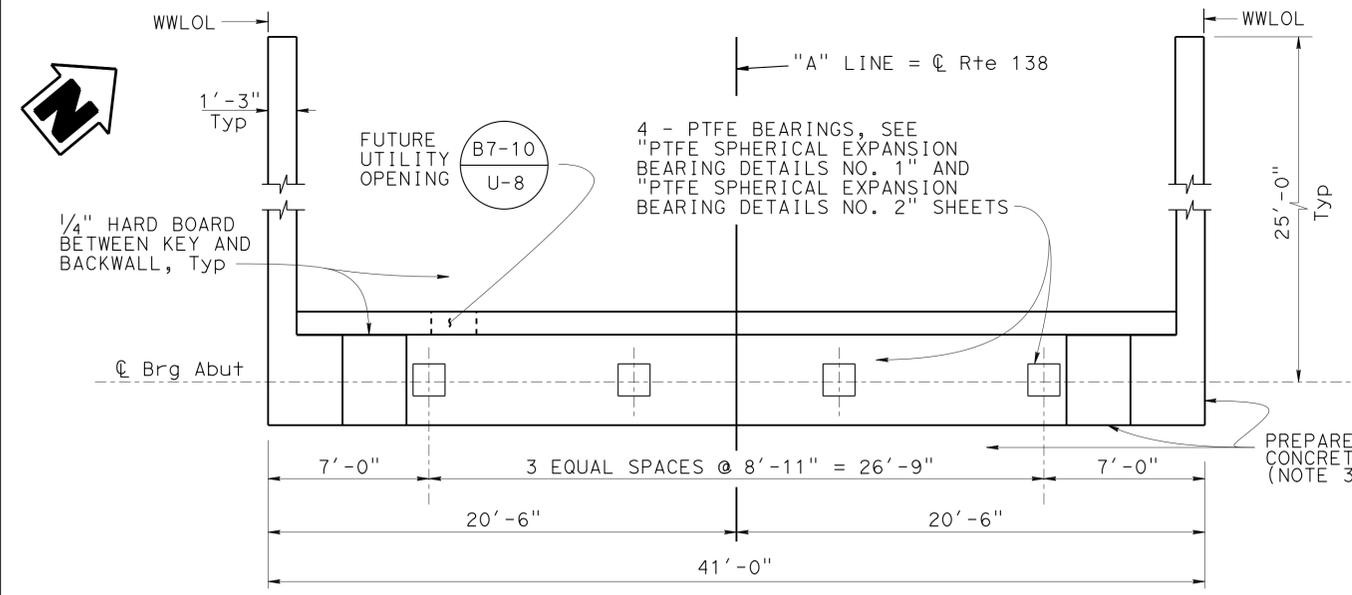
USERNAME => s102458 DATE PLOTTED => 16-NOV-2015 TIME PLOTTED => 10:10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBD	138	R17.1/R19.2	189	212

Peter W. Norboe
 REGISTERED CIVIL ENGINEER
 DATE 3-5-15
 PLANS APPROVAL DATE 9-11-15

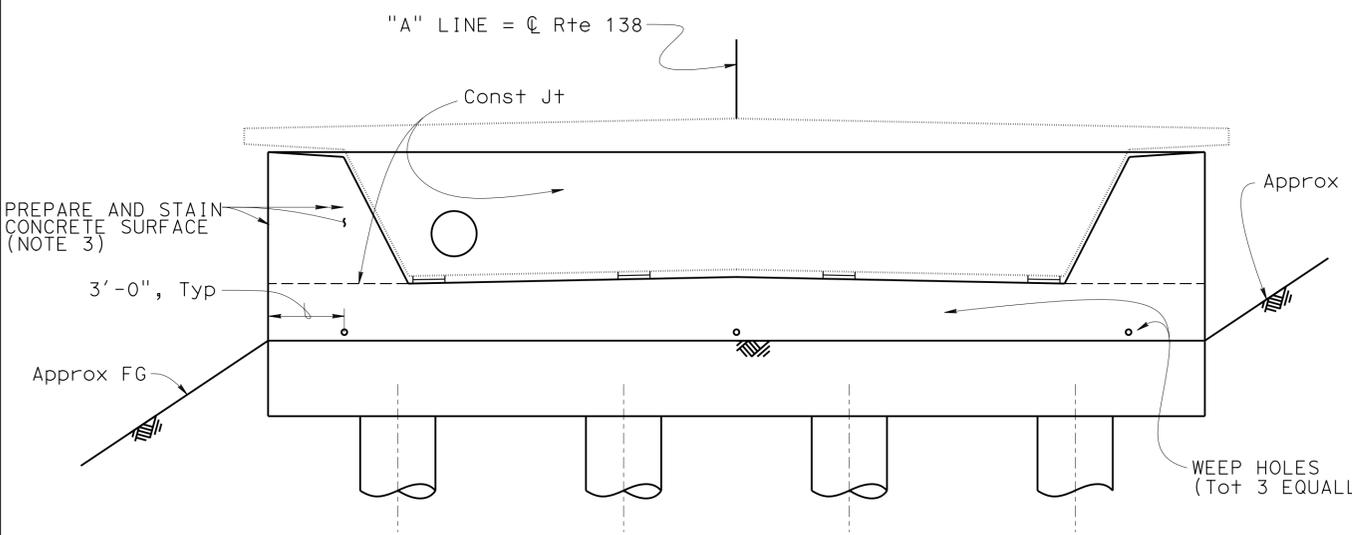
Peter W. Norboe
 No. C57519
 Exp. 12-31-15
 CIVIL
 STATE OF CALIFORNIA

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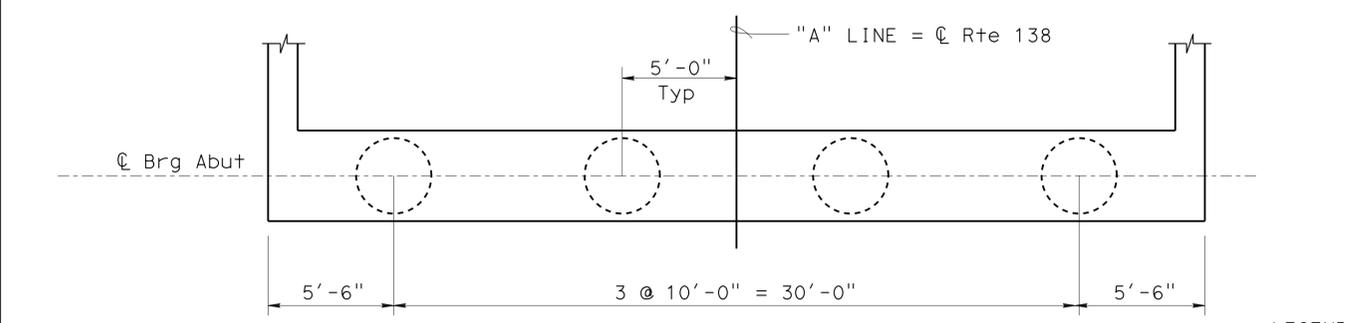
PLAN

1/4" = 1'-0"



ELEVATION

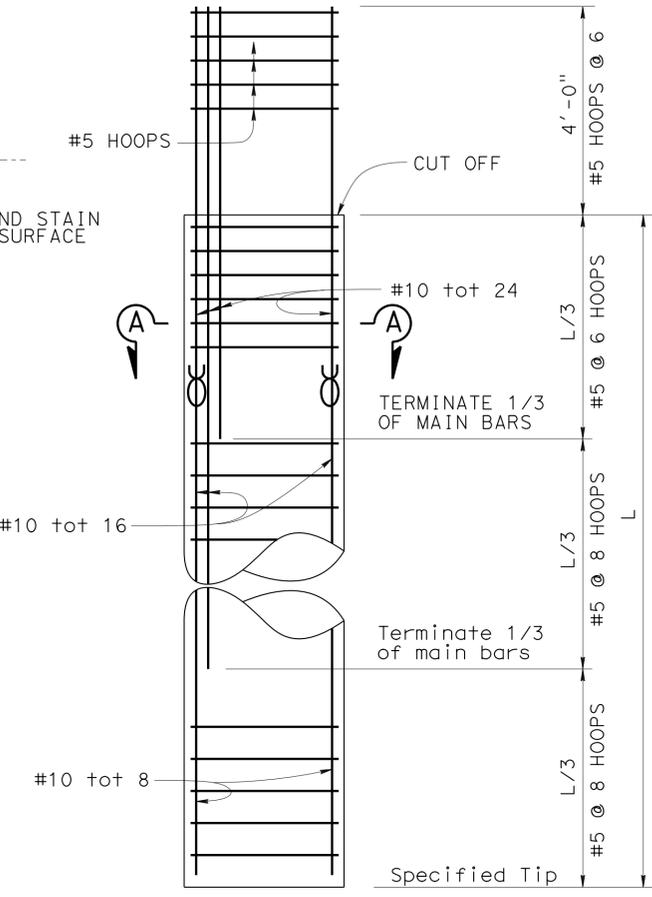
1/4" = 1'-0"



PILE LAYOUT

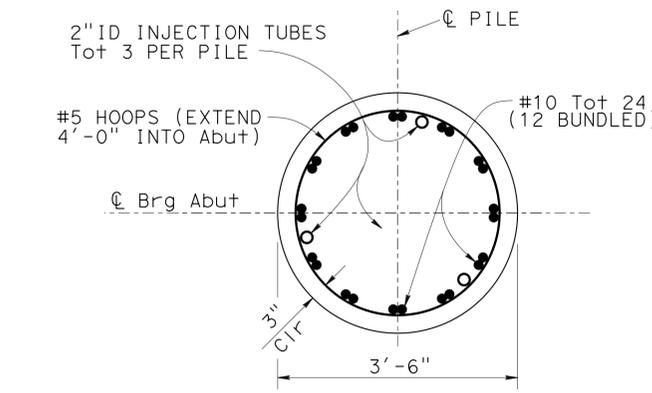
1/4" = 1'-0"

- NOTES:
- For bar splice detail, see "ABUTMENT DETAILS NO. 2" sheet.
 - Abutment 1 shown, Abutment 5 similar.
 - Concrete Surface Texture not shown.
 - Stirrups spacing is continuous through CIDH Piling, spacing may be adjusted when in conflict with main pile reinforcing.



PART ELEVATION

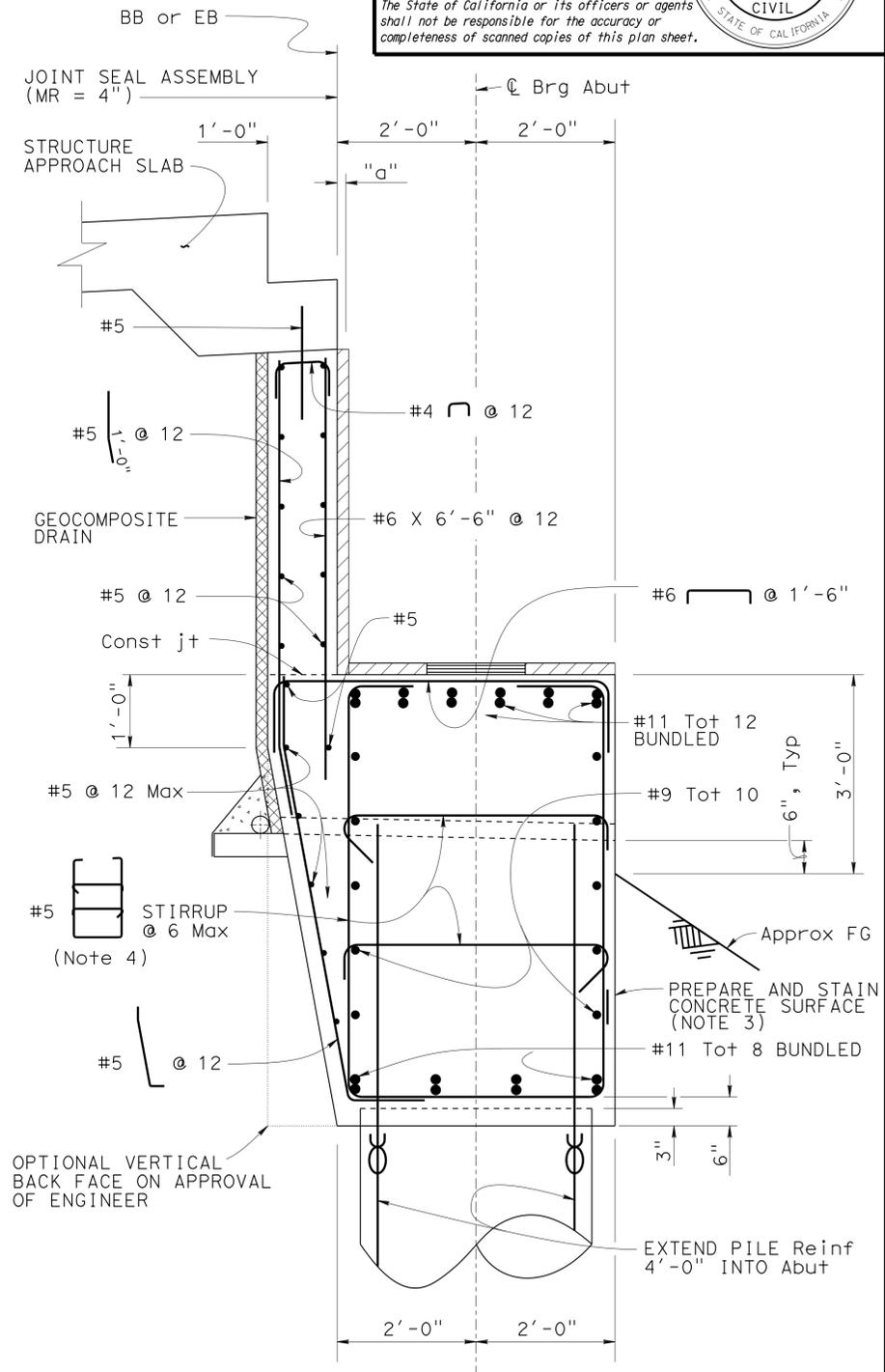
1/2" = 1'-0"



SECTION A-A

3/4" = 1'-0"

LEGEND:
 ∞ Denotes bundled bar



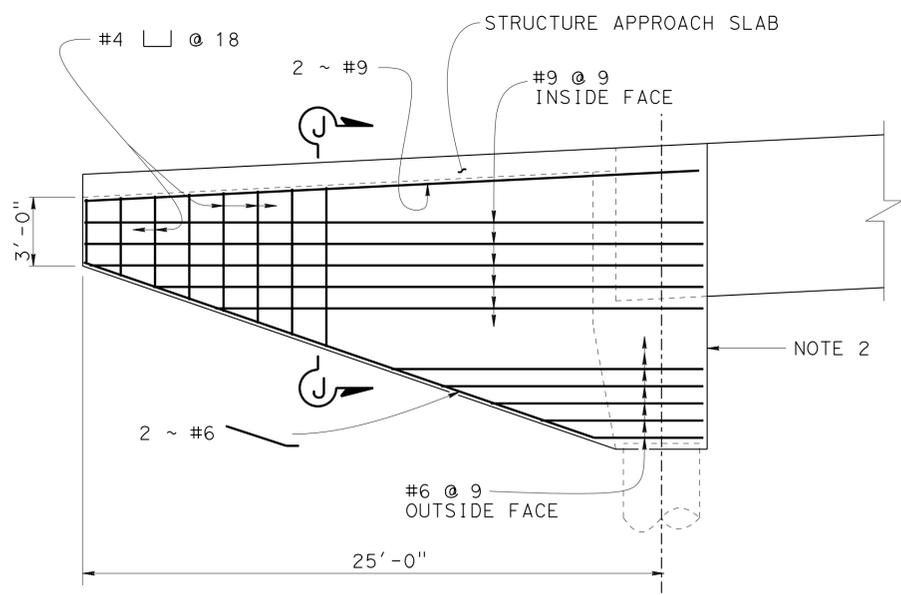
TYPICAL SECTION

3/4" = 1'-0"

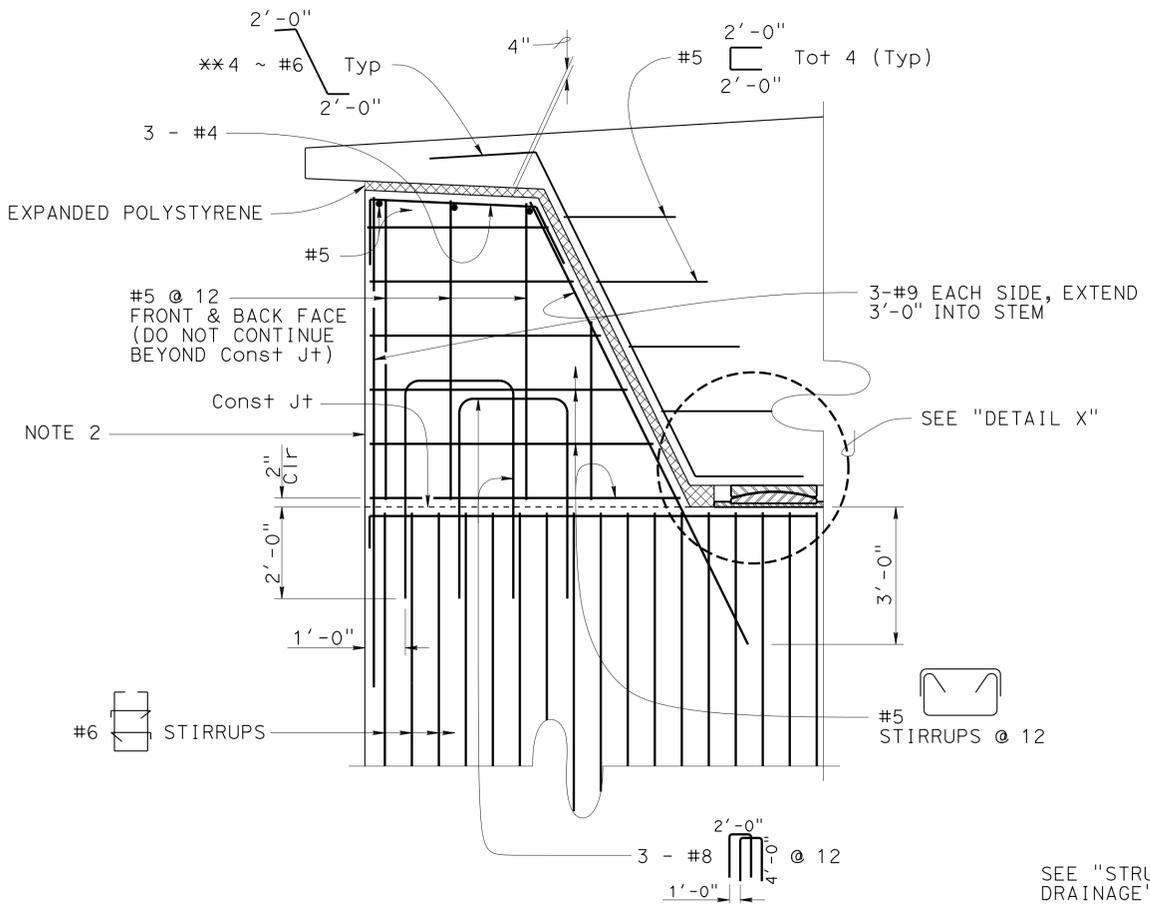
DESIGN BY P. Norboe	CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO. 54-1220	DOUBLE DRAIN CREEK BRIDGE ABUTMENT LAYOUT
DETAILS BY D. Elliott	CHECKED R. Candiotti			POST MILE R18.1	
QUANTITIES BY P. Norboe	CHECKED R. Candiotti				

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	190	212

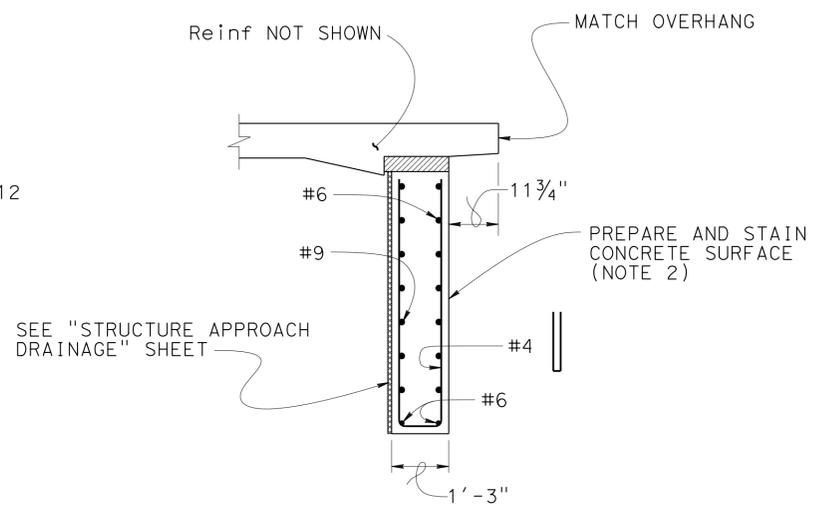
Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE
 9-11-15
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.



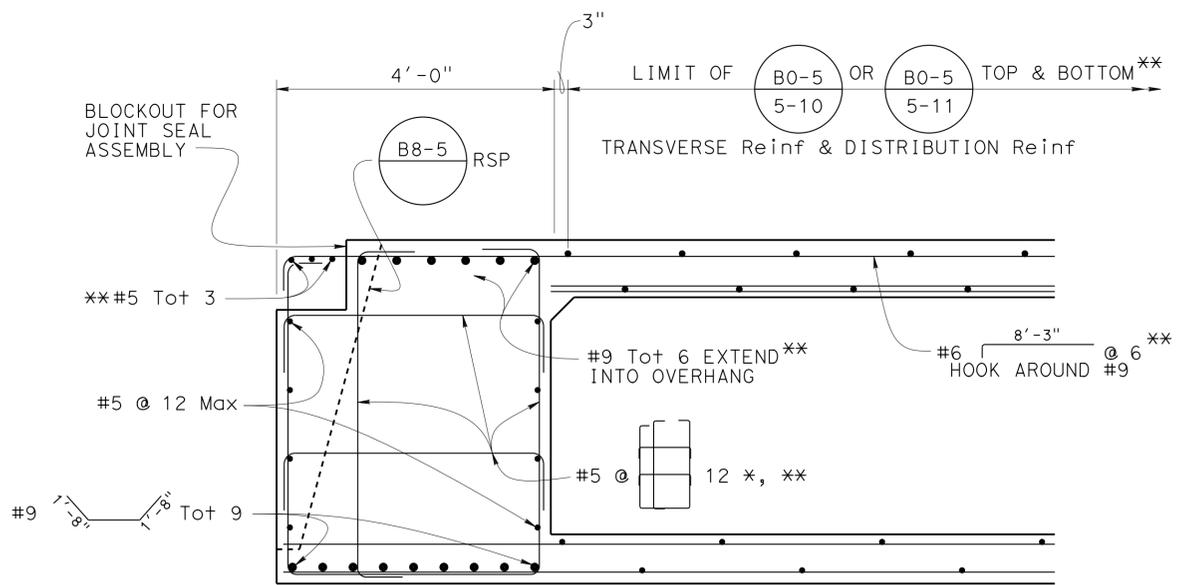
WINGWALL ELEVATION
1/4" = 1'-0"



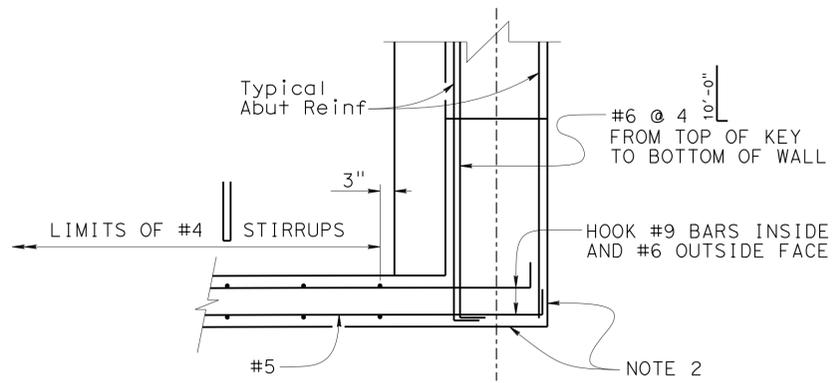
PART ELEVATION SHEAR KEY
1/2" = 1'-0"



SECTION J-J
NO SCALE



END DIAPHRAGM
3/4" = 1'-0"



CORNER DETAIL
1/2" = 1'-0"

- LEGEND:
- * Maximum spacing at deck level, fan bars at exterior girders to provide 2:1 slope
 - ** Epoxy coated
- NOTES:
1. Blockout reinforcing may be adjusted as necessary to accommodate installation of the joint seal assembly upon approval of the joint shop plans and as directed by the engineer.
 2. Concrete Surface Texture not shown.
 3. For "DETAIL X" see, "ABUTMENT DETAILS NO. 2" sheet.

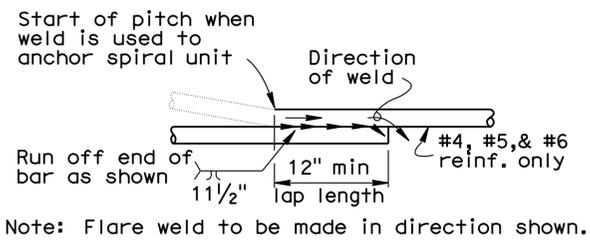
DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

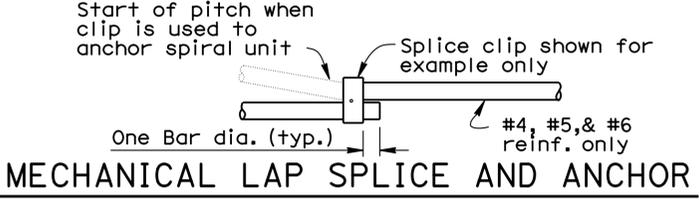
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1220
POST MILE	R18.1

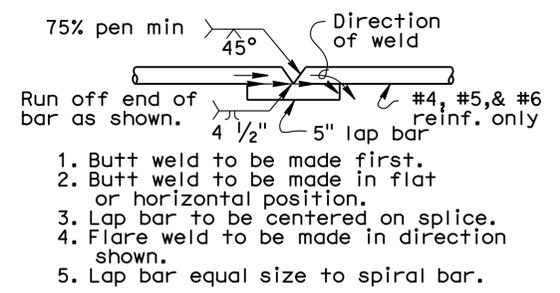
DOUBLE DRAIN CREEK BRIDGE
ABUTMENT DETAILS NO. 1



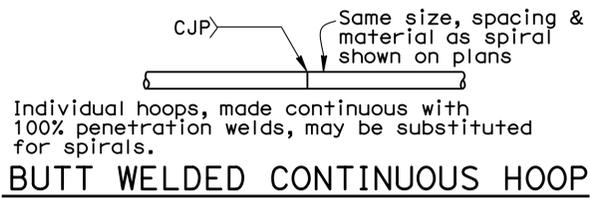
WELDED LAP SPLICE AND ANCHOR



MECHANICAL LAP SPLICE AND ANCHOR

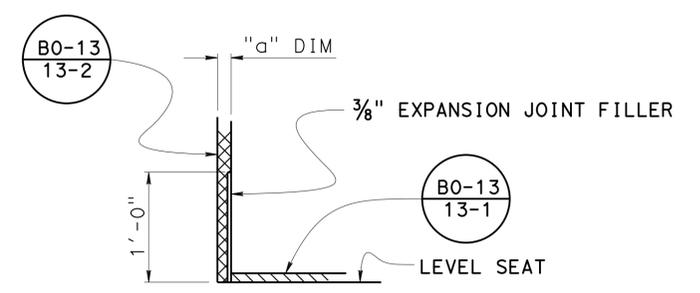
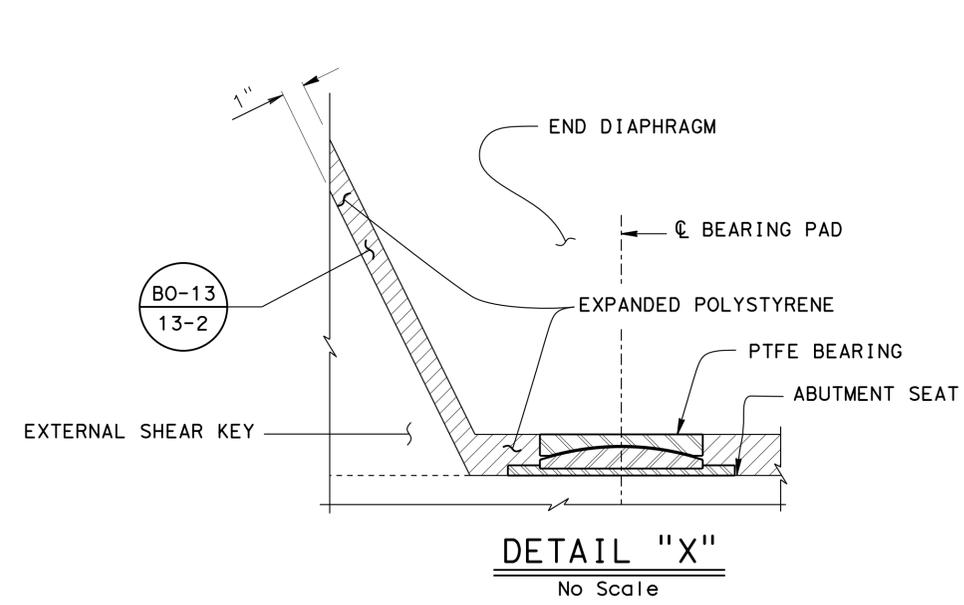


VEE GROOVE WELDED SPLICE



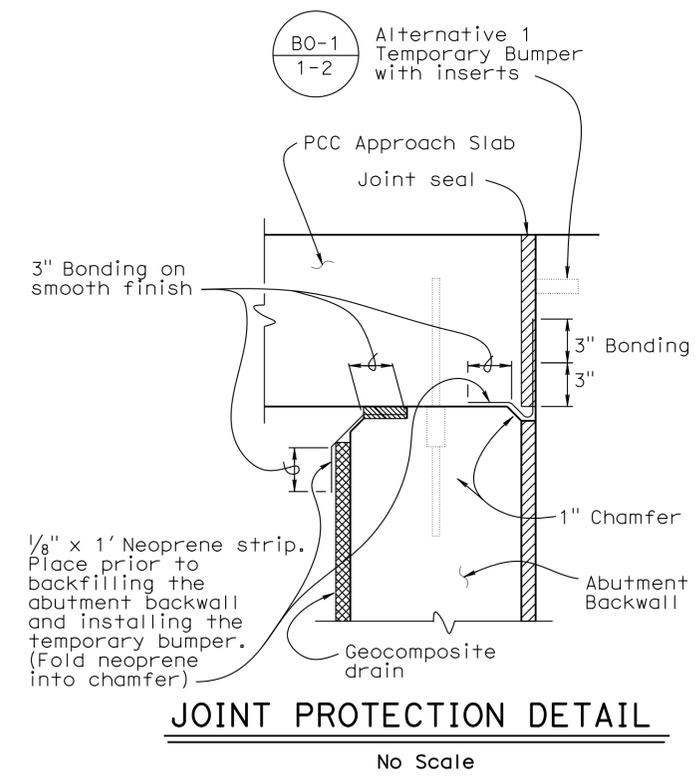
BUTT WELDED CONTINUOUS HOOP

BAR SPIRAL SPLICE & SPIRAL ANCHOR AND HOOP DETAIL



BACK WALL BASE DETAILS

3/4" = 1'-0"



NOTES:

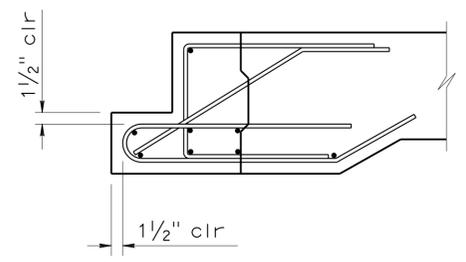
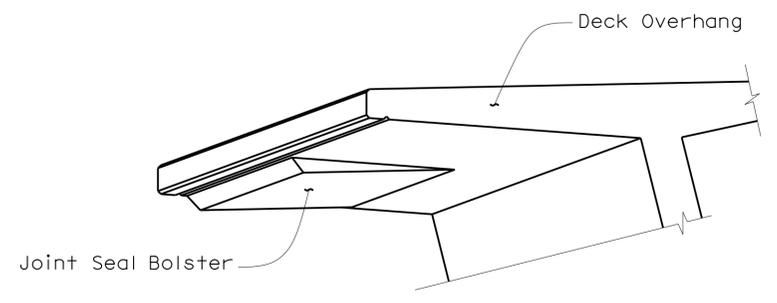
- Expanded Polystyrene same thickness as PTFE Bearing.
- For location of "DETAIL X", see "ABUTMENT DETAILS NO. 1" sheet.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	192	212

Peter W. Norboe 3-5-15
 REGISTERED CIVIL ENGINEER DATE
 9-11-15
 PLANS APPROVAL DATE

Peter W. Norboe
 No. C57519
 Exp. 12-31-15
 CIVIL
 STATE OF CALIFORNIA

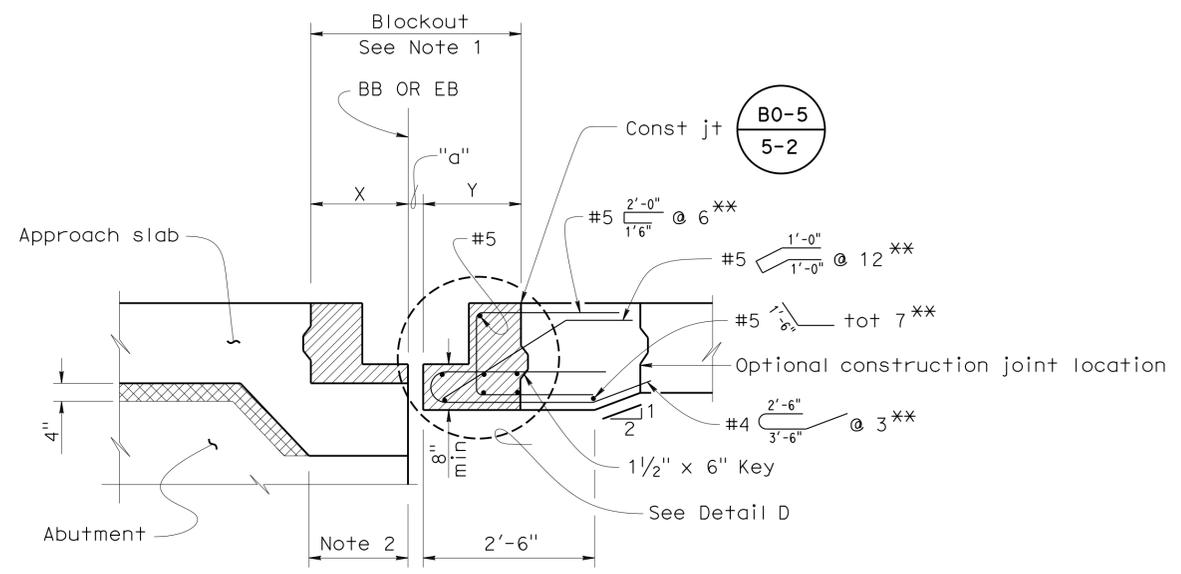
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.



DETAIL D
No Scale

DECK OVERHANG AT ABUTMENT
No Scale

Note: Abutment and barrier not shown

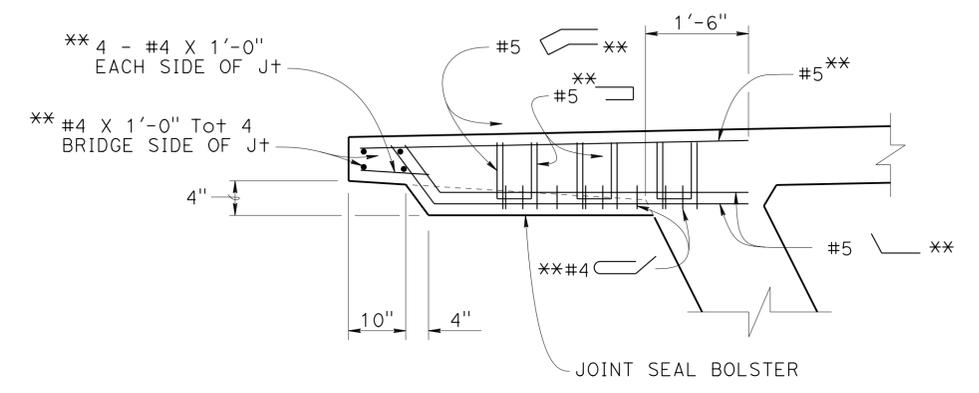


SECTION THROUGH JOINT
No Scale

- Indicates Joint Seal Assembly Blockout
- Indicates limits of expanded polystyrene

- NOTES:
- X is greater or equal to Y.
 - See "STRUCTURE APPROACH TYPE N(30S)" sheet for details.

LEGEND:
** Epoxy Coated



PART SECTION
3/4" = 1'-0"

Note: Reinf shown is in addition to deck overhang reinf

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

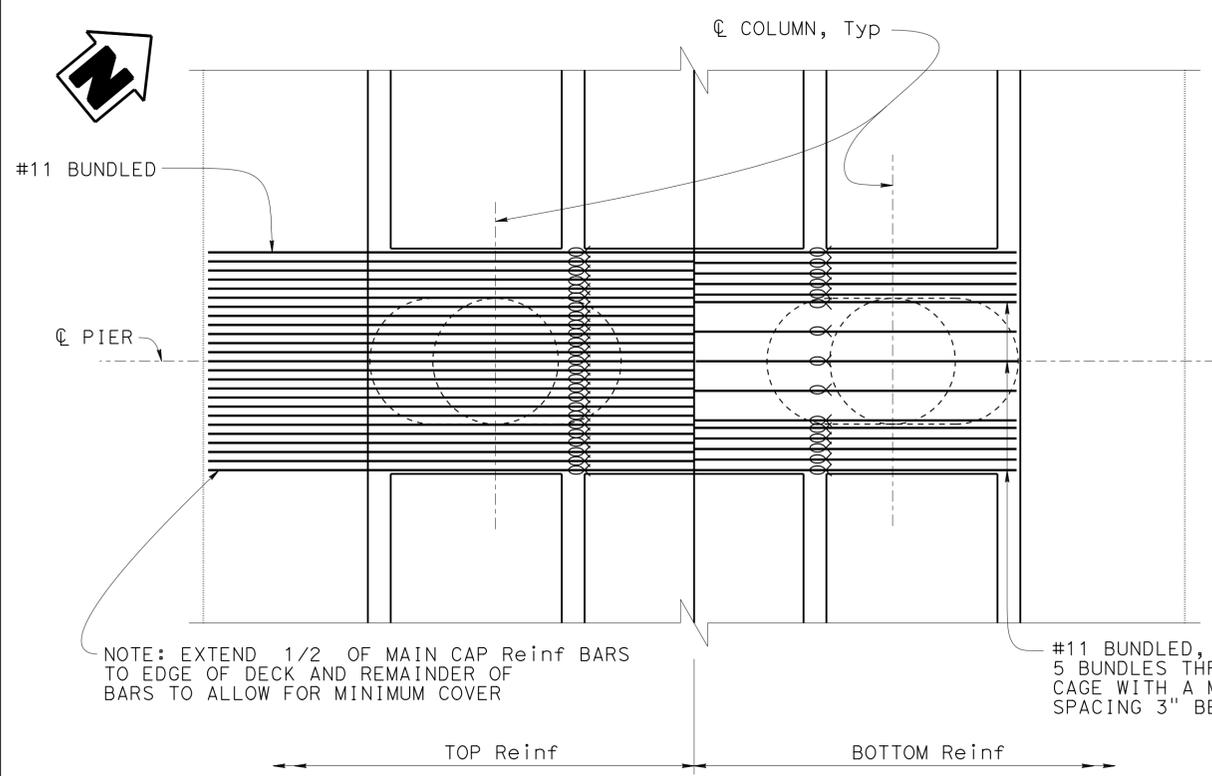
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1220
POST MILE	R18.1

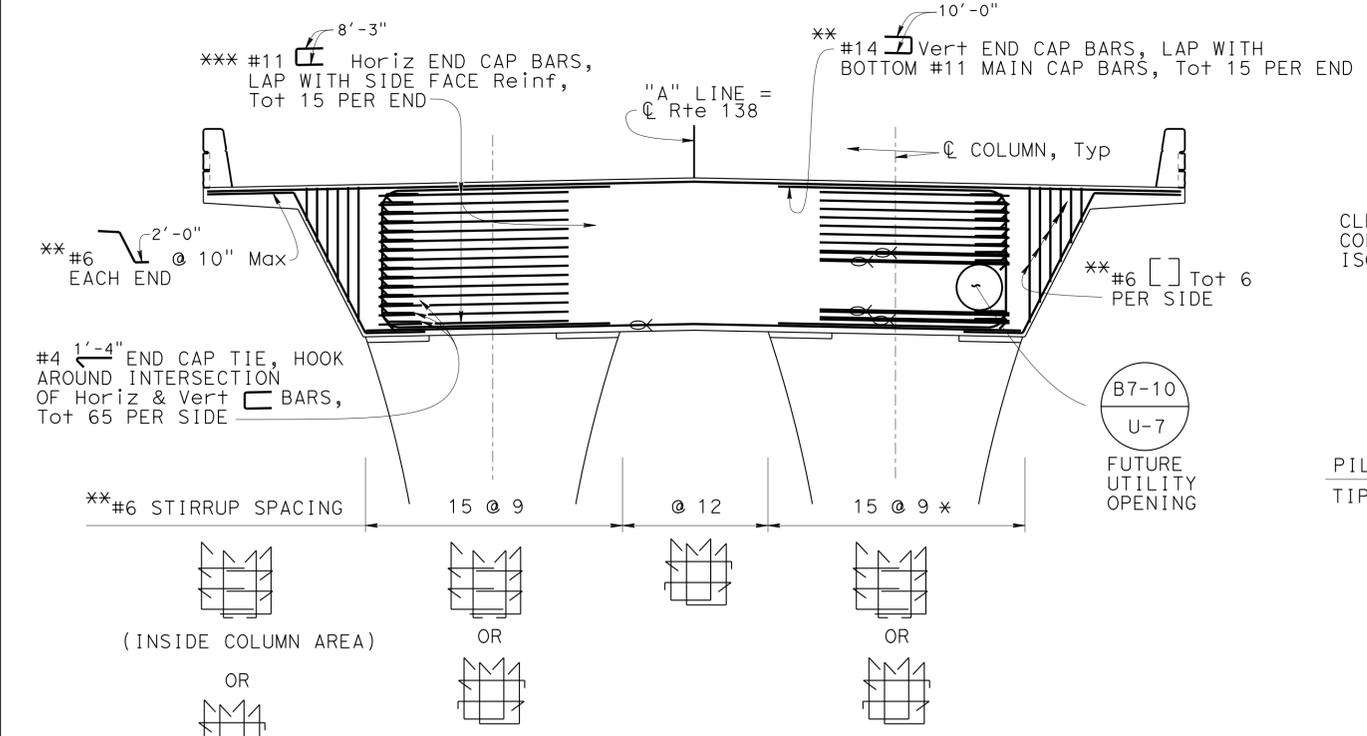
DOUBLE DRAIN CREEK BRIDGE
ABUTMENT DETAILS NO. 3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	193	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER				3-5-15 DATE	
9-11-15 PLANS APPROVAL DATE					
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.</small>					



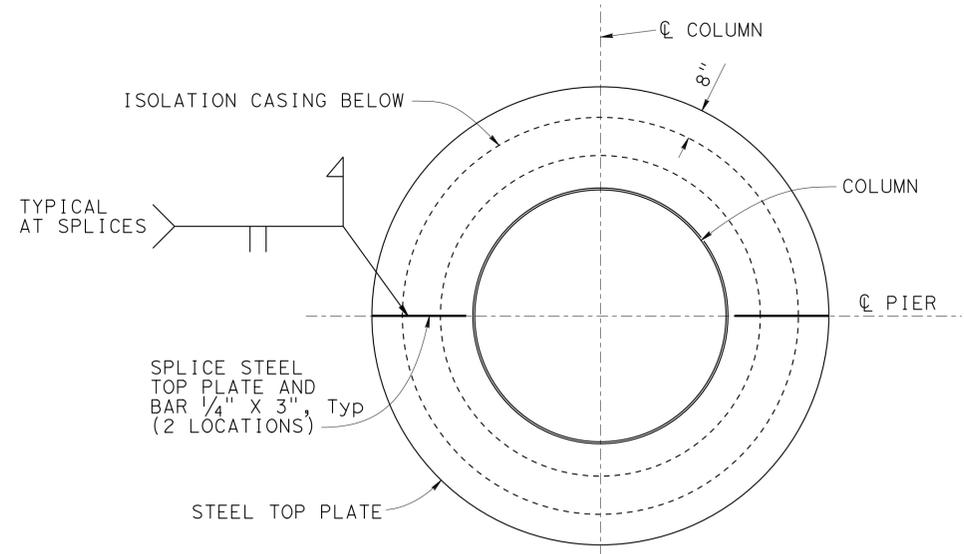
PLAN OF CAP

1/4" = 1'-0"



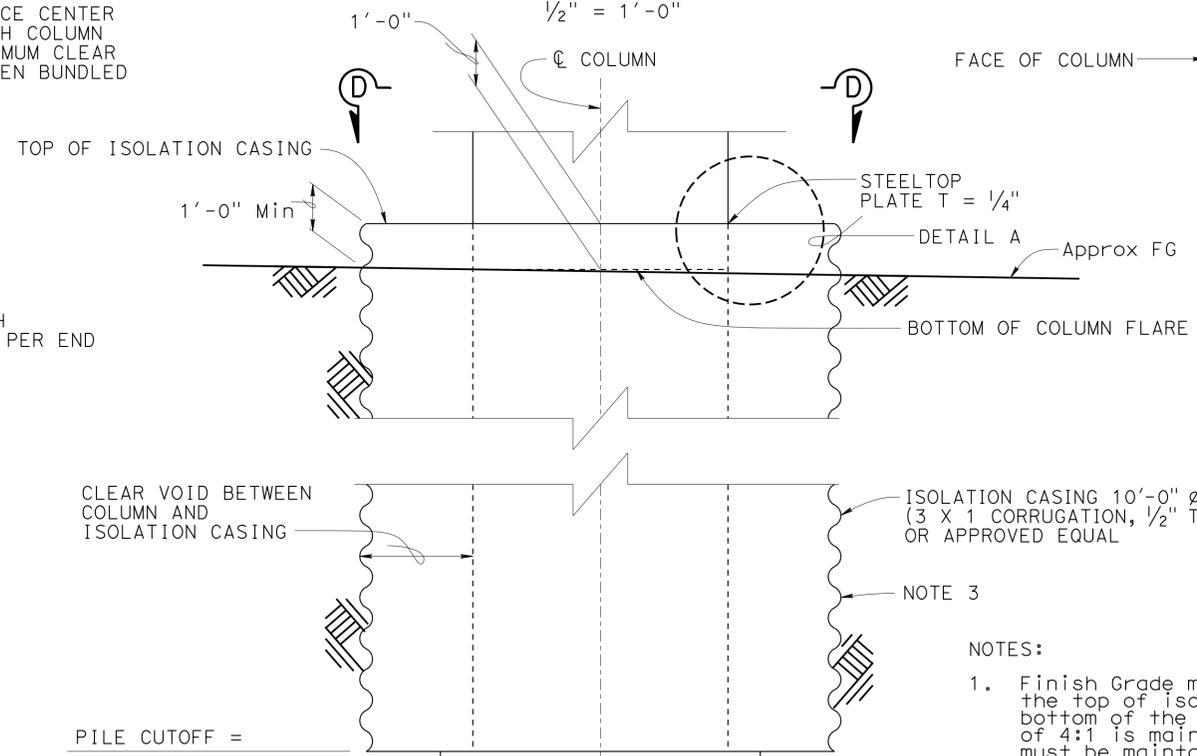
PART OF ELEVATION

1/4" = 1'-0"



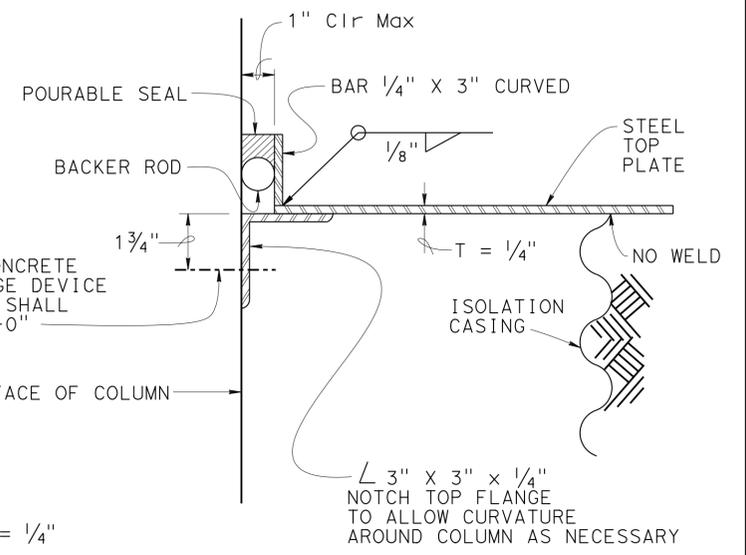
VIEW D-D

1/2" = 1'-0"



ISOLATION CASING

1/2" = 1'-0"



DETAIL A

No Scale

NOTES:

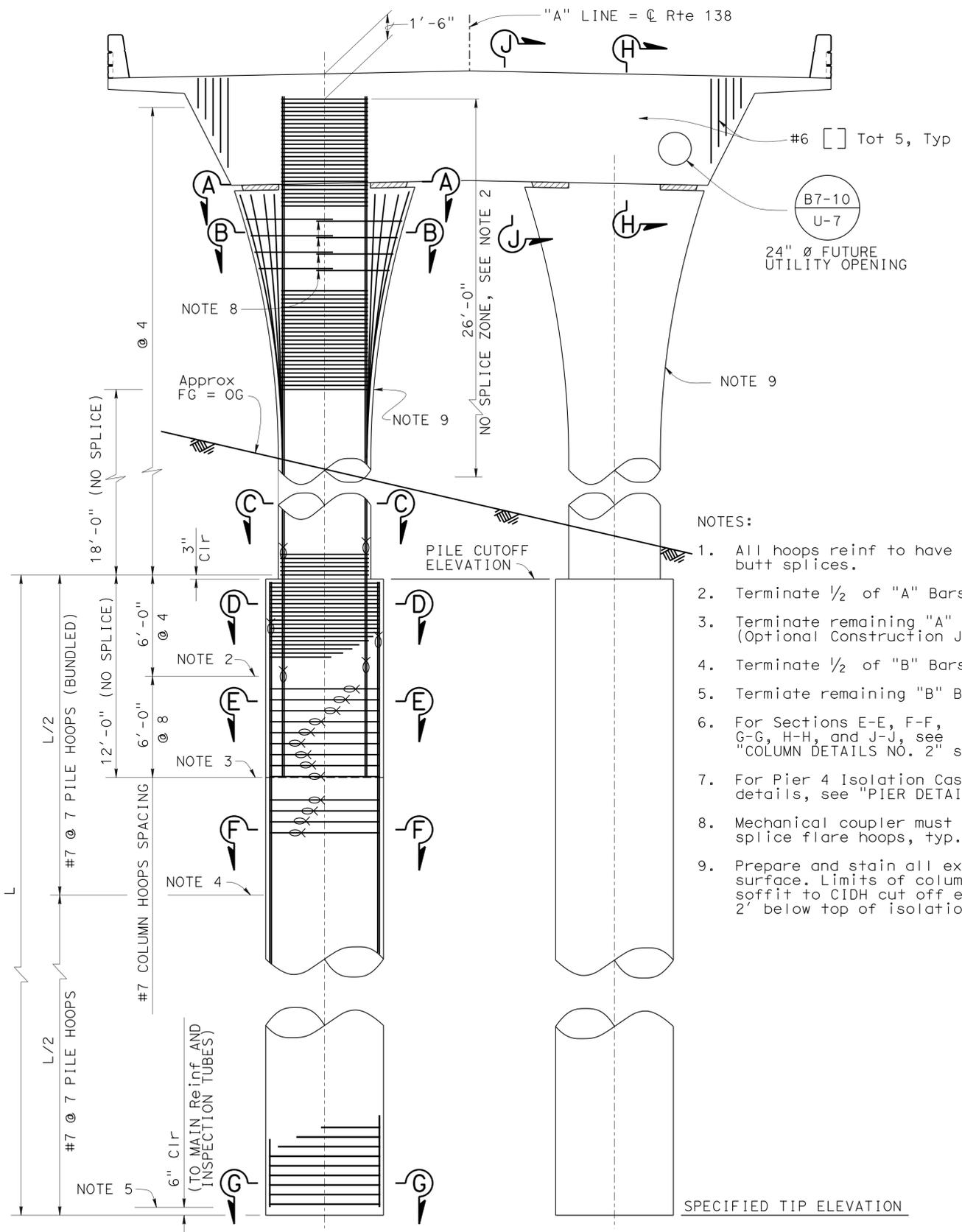
1. Finish Grade must be contoured such that the top of isolation casing is located at the bottom of the column flare, A maximum slope of 4:1 is maintained. A 16'-6" vertical clearance must be maintained under span 4.
2. T = Thickness.
3. After placement of isolation casing, place cement slurry to fill any void region outside the casing.

LEGEND:

- ∞ Denotes bundled bar
- * Stirrups which conflict with Future Utility opening to be bundled on both sides
- ** Epoxy Coated
- *** For bars that conflict with opening, place in bundles on adjacent sides

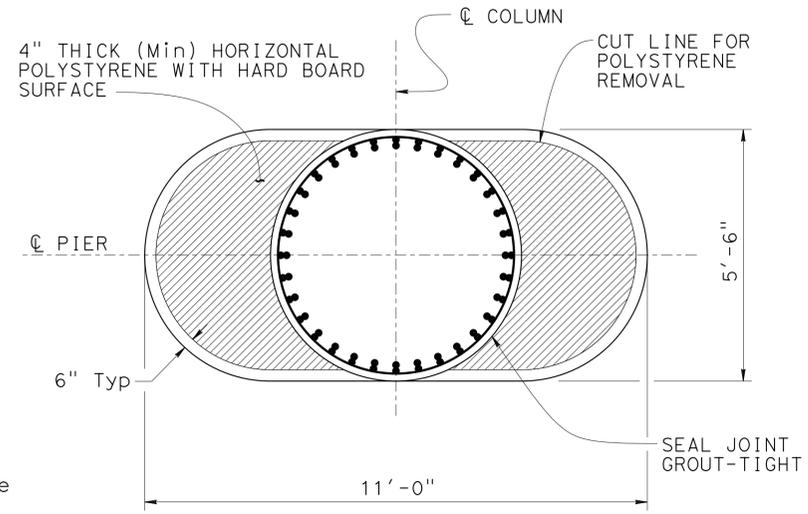
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)	DESIGN	BY P. Norboe	CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO.	54-1220	DOUBLE DRAIN CREEK BRIDGE PIERS DETAILS
	DETAILS	BY D. Elliott	CHECKED R. Candiotti			POST MILE	R18.1	
	QUANTITIES	BY P. Norboe	CHECKED R. Candiotti					

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	194	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER			3-5-15 DATE		
9-11-15 PLANS APPROVAL DATE					
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.</small>					

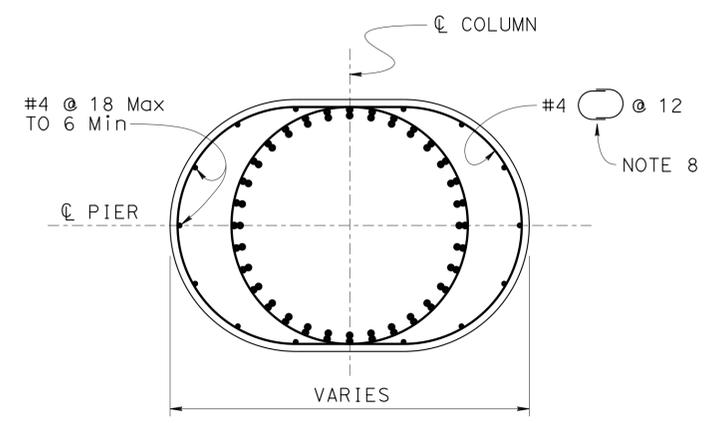


PART ELEVATION
1/4" = 1'-0"

LEGEND:
 Denotes bundled bar

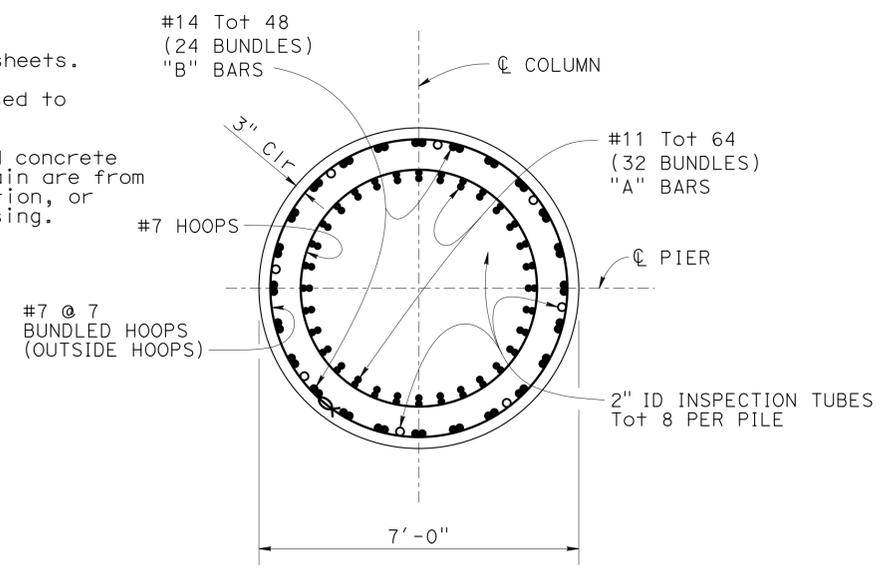


SECTION A-A
1/2" = 1'-0"

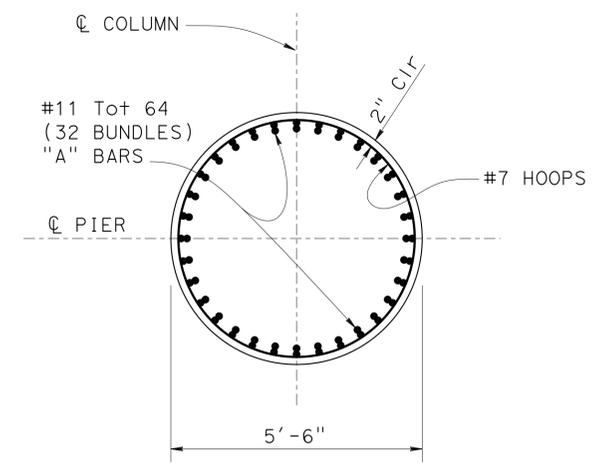


SECTION B-B
1/2" = 1'-0"

- NOTES:
- All hoops reinf to have ultimate butt splices.
 - Terminate 1/2 of "A" Bars.
 - Terminate remaining "A" Bars, (Optional Construction Joint)
 - Terminate 1/2 of "B" Bars.
 - Terminate remaining "B" Bars.
 - For Sections E-E, F-F, G-G, H-H, and J-J, see "COLUMN DETAILS NO. 2" sheet.
 - For Pier 4 Isolation Casing details, see "PIER DETAILS" sheets.
 - Mechanical coupler must be used to splice flare hoops, typ.
 - Prepare and stain all exposed concrete surface. Limits of column stain are from soffit to CIDH cut off elevation, or 2' below top of isolation casing.



SECTION D-D
1/2" = 1'-0"



SECTION C-C
1/2" = 1'-0"

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

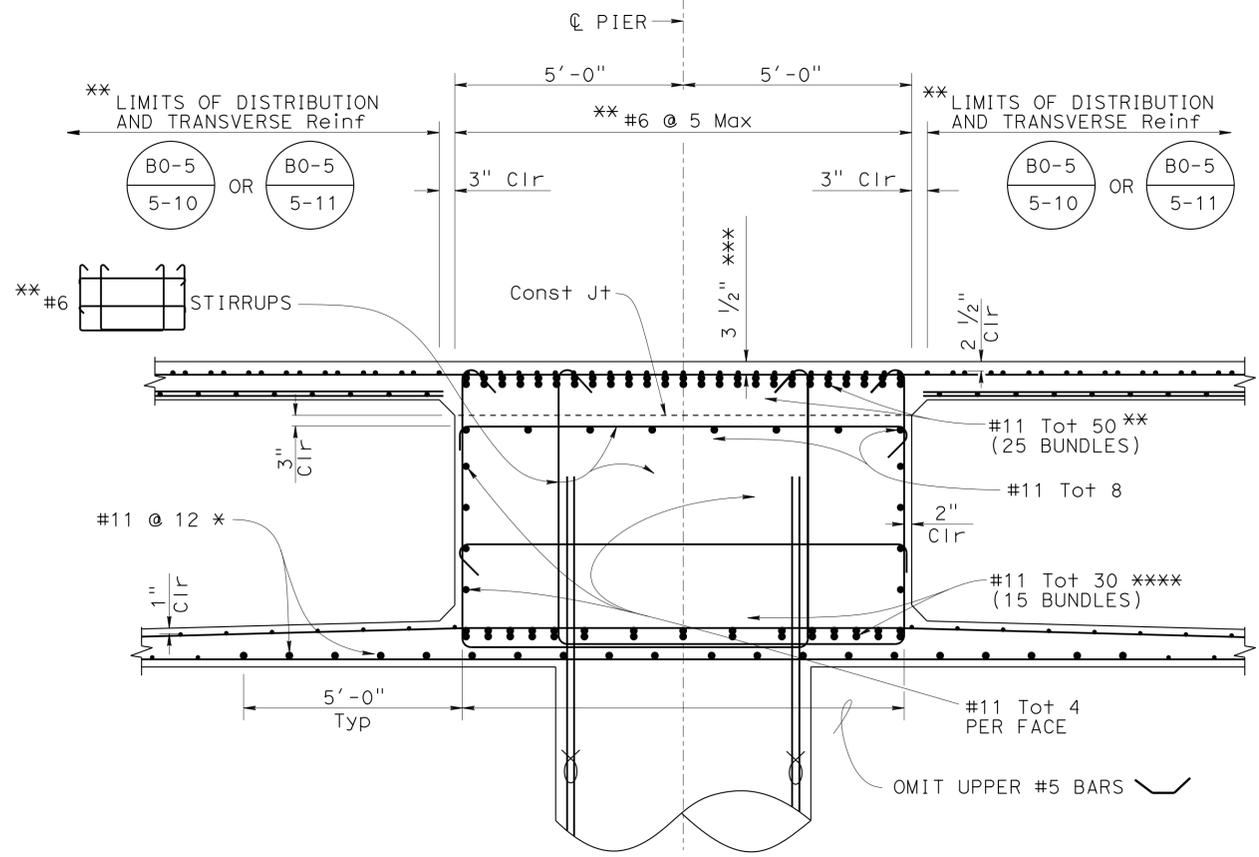
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
 STRUCTURE DESIGN
DESIGN BRANCH 9

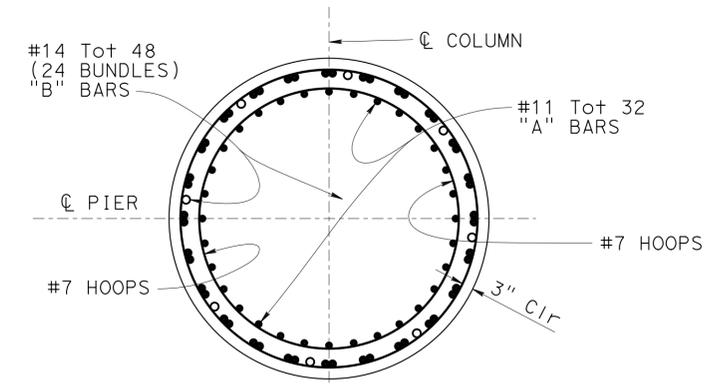
BRIDGE NO.	54-1220
POST MILE	R18.1

DOUBLE DRAIN CREEK BRIDGE
COLUMN DETAILS NO. 1

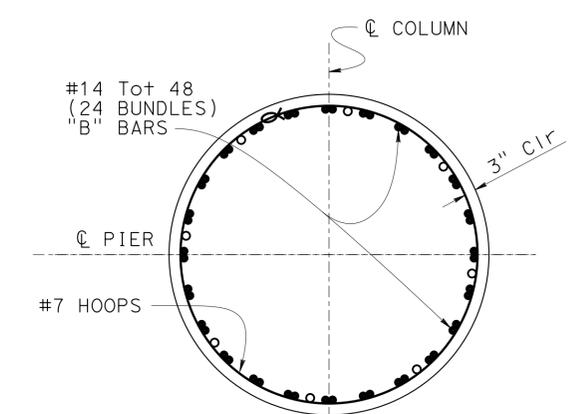
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	195	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER			3-5-15 DATE		
			9-11-15 PLANS APPROVAL DATE		
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.</small>					



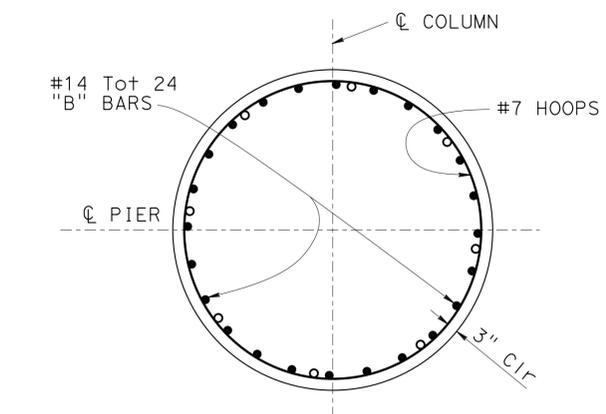
SECTION J-J
1/2" = 1'-0"



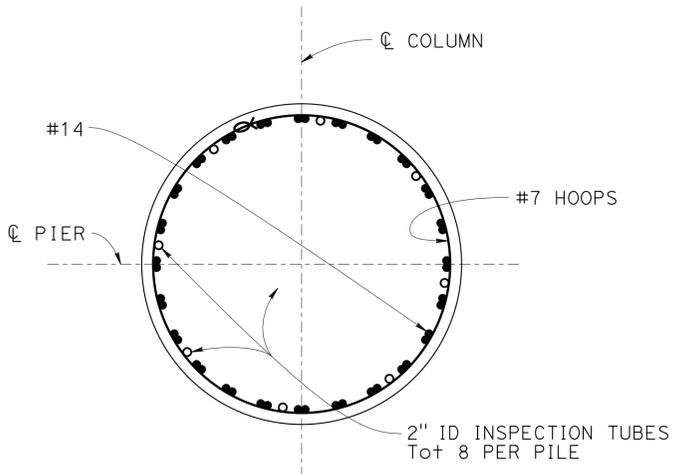
SECTION E-E
1/2" = 1'-0"



SECTION F-F
1/2" = 1'-0"

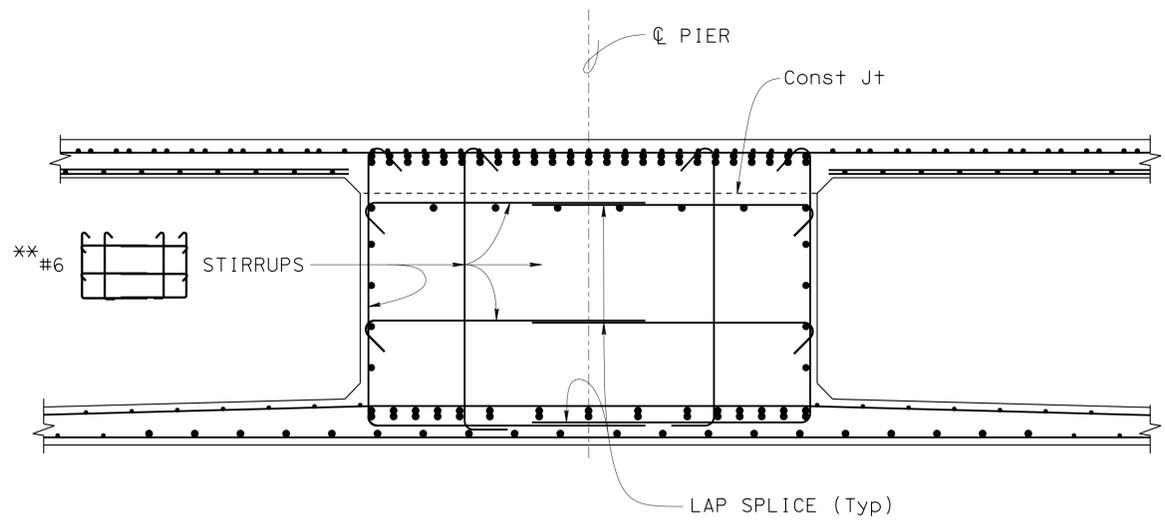


SECTION G-G
1/2" = 1'-0"



INSPECTION TUBE LAYOUT
1/2" = 1'-0"

- LEGEND:
- ⊗ Denotes bundled bar
 - * Replace #5 bars w/ #11 bars to 5'-0" each side of cap beam face. Do not hook into girder stems
 - ** Epoxy Coated
 - *** Clearance to main cap reinforcement
 - **** Place center 5 bundles through column cage with a minimum clear spacing of 3" between bundles
- NOTES:
- For locations of Section E-E, F-F, G-G, H-H, and J-J, see "COLUMN DETAILS NO. 1" sheet



SECTION H-H
1/2" = 1'-0"

FOR DETAILS NOT SHOWN, SEE "SECTION J-J"

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1220
POST MILE	R18.1

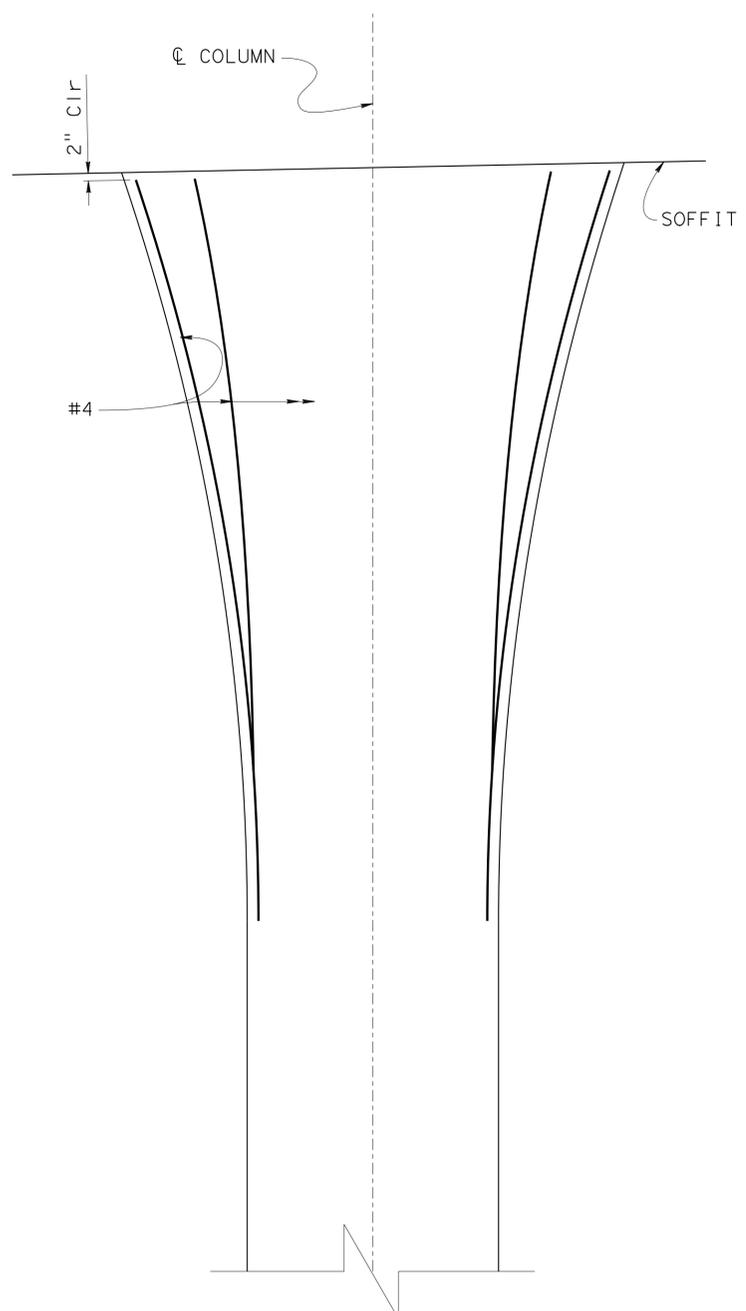
DOUBLE DRAIN CREEK BRIDGE
COLUMN DETAILS NO. 2

DATE PLOTTED => 16-NOV-2015 TIME PLOTTED => 10:10 USERNAME => s102458

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	196	212

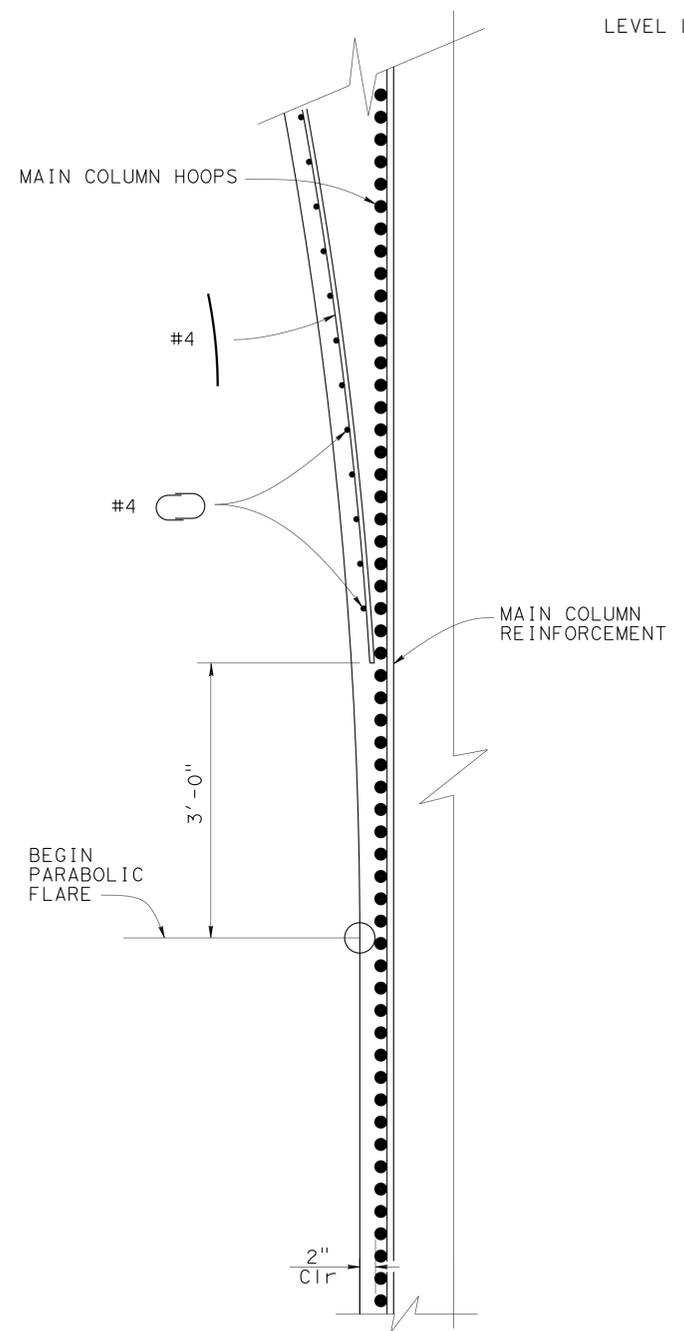
Peter W. Norboe
 REGISTERED CIVIL ENGINEER DATE 3-5-15
 9-11-15
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER
 Peter W. Norboe
 No. C57519
 Exp. 12-31-15
 CIVIL
 STATE OF CALIFORNIA

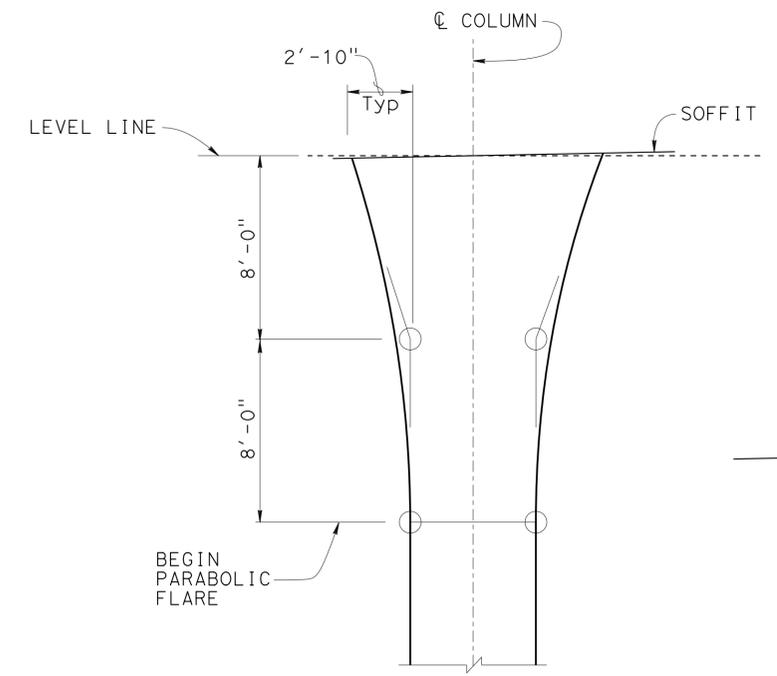


PART ELEVATION
 $\frac{1}{2}'' = 1'-0''$

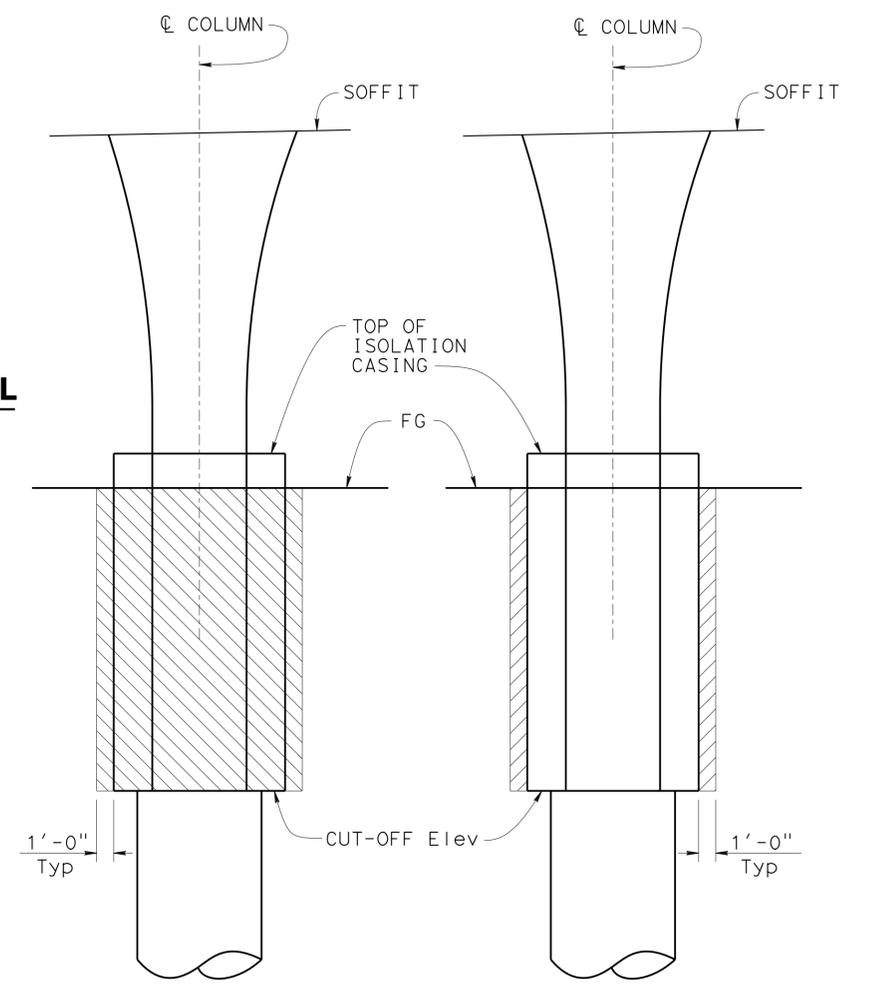
NOTE:
 Main Column Reinf not shown,
 see "COLUMN DETAILS NO. 1" sheet



HOOPS AND TIE DETAIL
 $1'' = 1'-0''$



COLUMN FLARE DETAIL
 $\frac{1}{4}'' = 1'-0''$



STRUCTURE EXCAVATION STRUCTURE BACKFILL

PIER 4 ISOLATION CASING EXCAVATION AND BACKFILL LIMITS
 NO SCALE

LEGEND:
 Denotes Structure Excavation
 Denotes Lean Concrete Backfill

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	DESIGN	BY P. Norboe	CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO.	DOUBLE DRAIN CREEK BRIDGE COLUMN DETAILS NO. 3
	DETAILS	BY D. Elliott	CHECKED R. Candiotti			54-1220	
	QUANTITIES	BY P. Norboe	CHECKED R. Candiotti			POST MILE R18.1	
PROJECT NUMBER & PHASE: 0800020191-1 CONTRACT NO.: 08-003004					UNIT: 3594		DISREGARD PRINTS BEARING EARLIER REVISION DATES
REVISION DATES: 2-5-13, 5-28-13, 9-11-13, 11-14-13							SHEET 13 OF 29

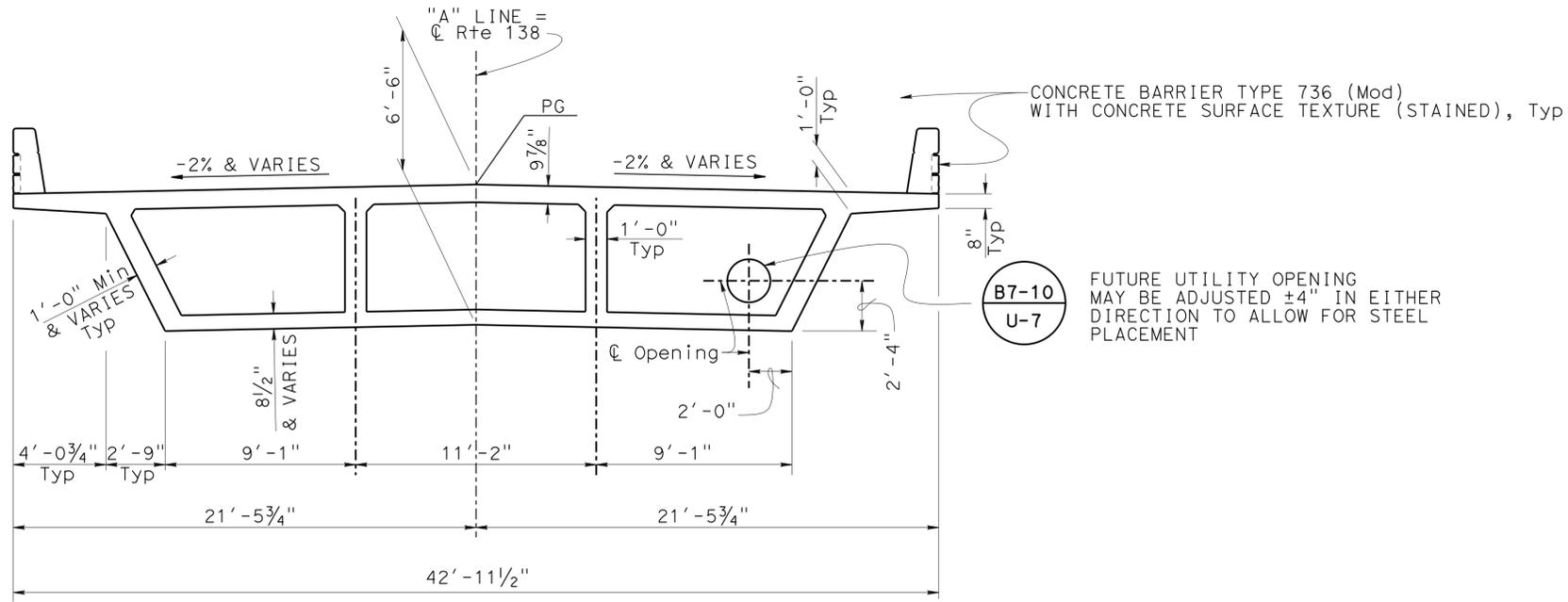
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	197	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER				3-5-15 DATE	
PLANS APPROVAL DATE				9-11-15	
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.</small>					

LEGEND:

** Epoxy Coated

NOTE:

- ① Prepare and stain all exposed concrete surface, excluding bridge deck.



TYPICAL SECTION

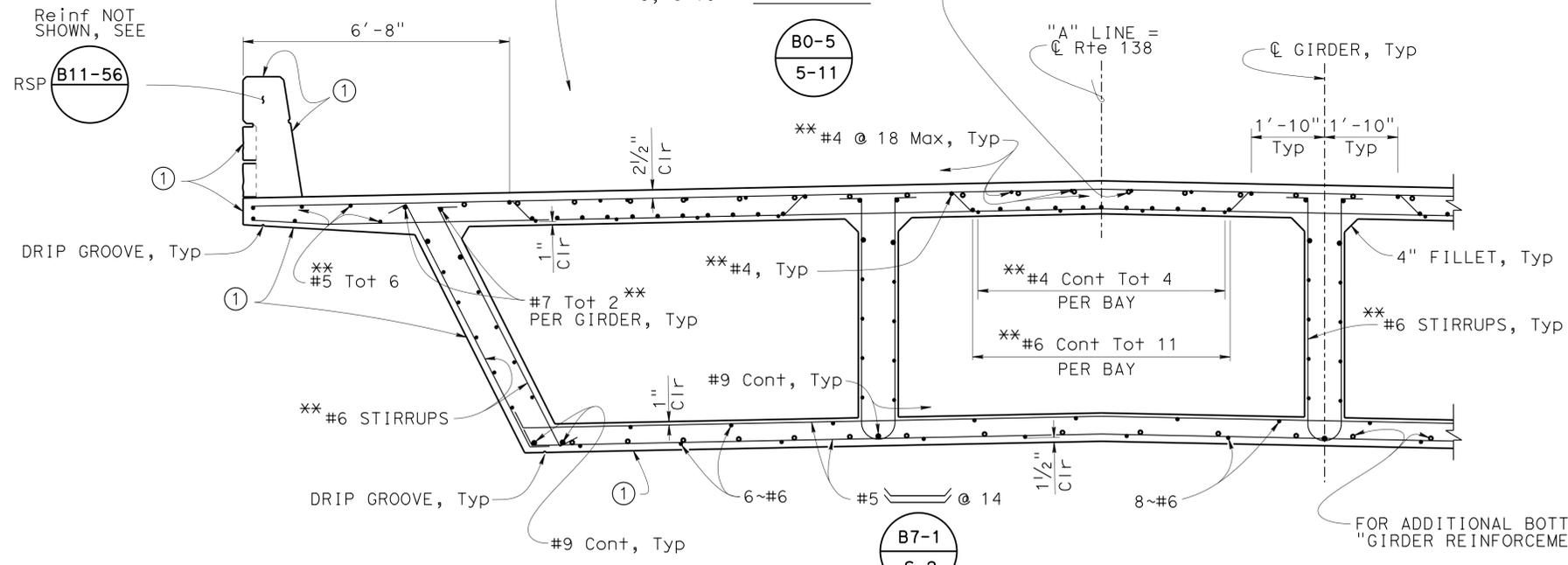
1/4" = 1'-0"

B0-5
5-10

** #6, S=10" OR ** #6, S=10"

B0-5
5-11

** FOR ADDITIONAL TOP REINFORCEMENT, SEE "GIRDER REINFORCEMENT" SHEET

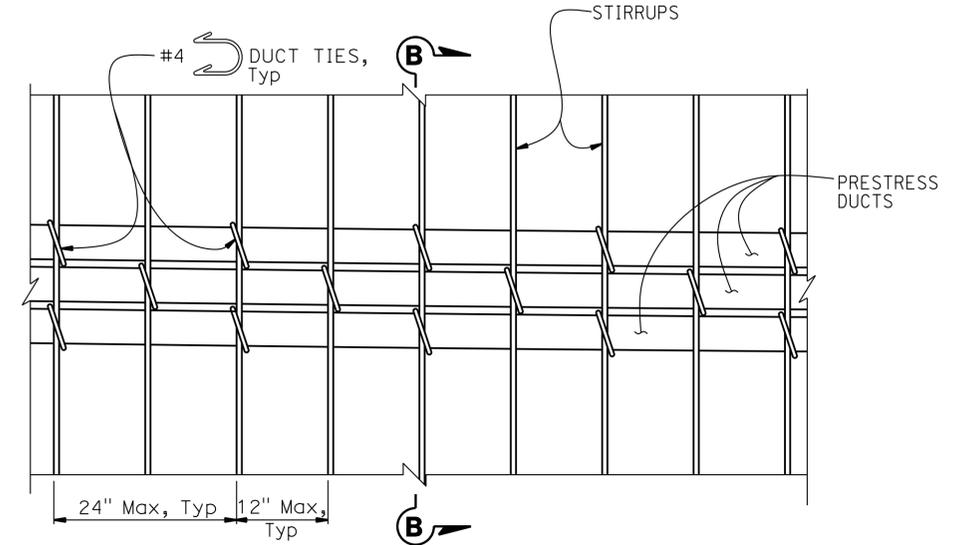


PART TYPICAL SECTION

1/2" = 1'-0"

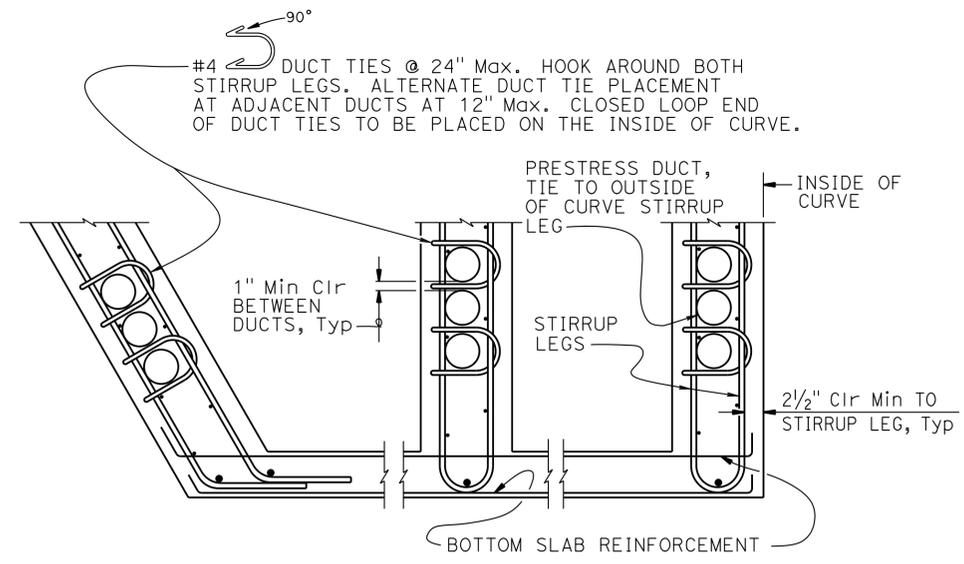
B7-1
S-2

B0-5 B7-1 B8-5 RSP



Note: Horizontal Girder Reinf not shown

GIRDER ELEVATION



SECTION B-B

DETAIL A

No Scale

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO. 54-1220
POST MILE R18.1

DOUBLE DRAIN CREEK BRIDGE
TYPICAL SECTION

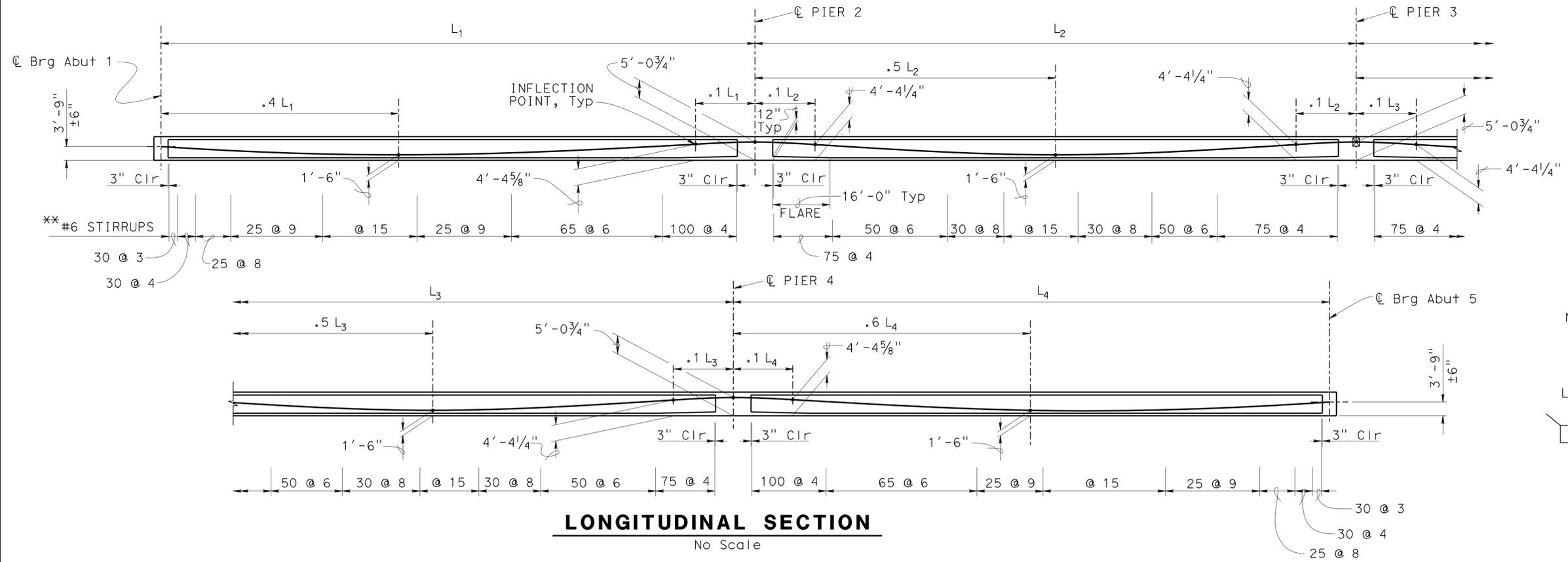
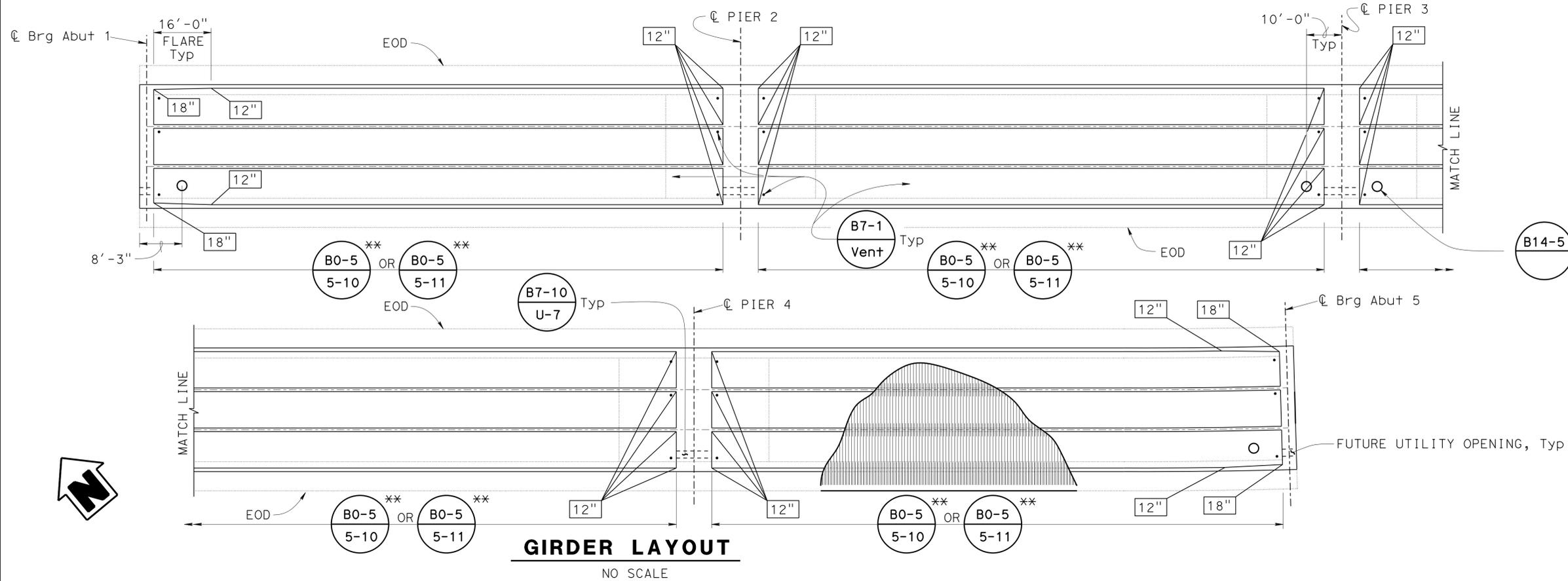
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	198	212

Peter W. Norboe 3-5-15
REGISTERED CIVIL ENGINEER DATE

9-11-15
PLANS APPROVAL DATE

Peter W. Norboe
No. C57519
Exp. 12-31-15
CIVIL
STATE OF CALIFORNIA

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- NOTES:
1. For Prestressing Notes, see "GIRDER REINFORCEMENT" Sheet.
- LEGEND:
 Indicates girder stem width in inches
 Denotes theoretical point of no movement for two end stressing
** Epoxy Coated

DESIGN BY P. Norboe	CHECKED R. Candiotti	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 9	BRIDGE NO. 54-1220	DOUBLE DRAIN CREEK BRIDGE	
DETAILS BY D. Elliott	CHECKED R. Candiotti			POST MILE R18.1		GIRDER LAYOUT
QUANTITIES BY P. Norboe	CHECKED R. Candiotti					

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3 UNIT: 3594 PROJECT NUMBER & PHASE: 0800020191-1 CONTRACT NO.: 08-003004 DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
9-18-13	15	29

FILE => 54-1220-1-girder layout-sheet.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	199	212

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PRESTRESSING NOTES

270 KSI Low Relaxation Strand:
 $P_{jack} = 14,000$ kips
Anchor Set = $\frac{3}{8}$ "
Friction curvature coefficient, $\mu = 15 \times 10^{-2}$ (1/rad)
Friction wobble coefficient, $K = 20 \times 10^{-5}$ (1/ft)
Assumed long term losses = 20 (ksi)
Total Number of Girders = 4

The final force ratio (larger divided by smaller) between any two girders must not exceed the ratio of 10 to 9

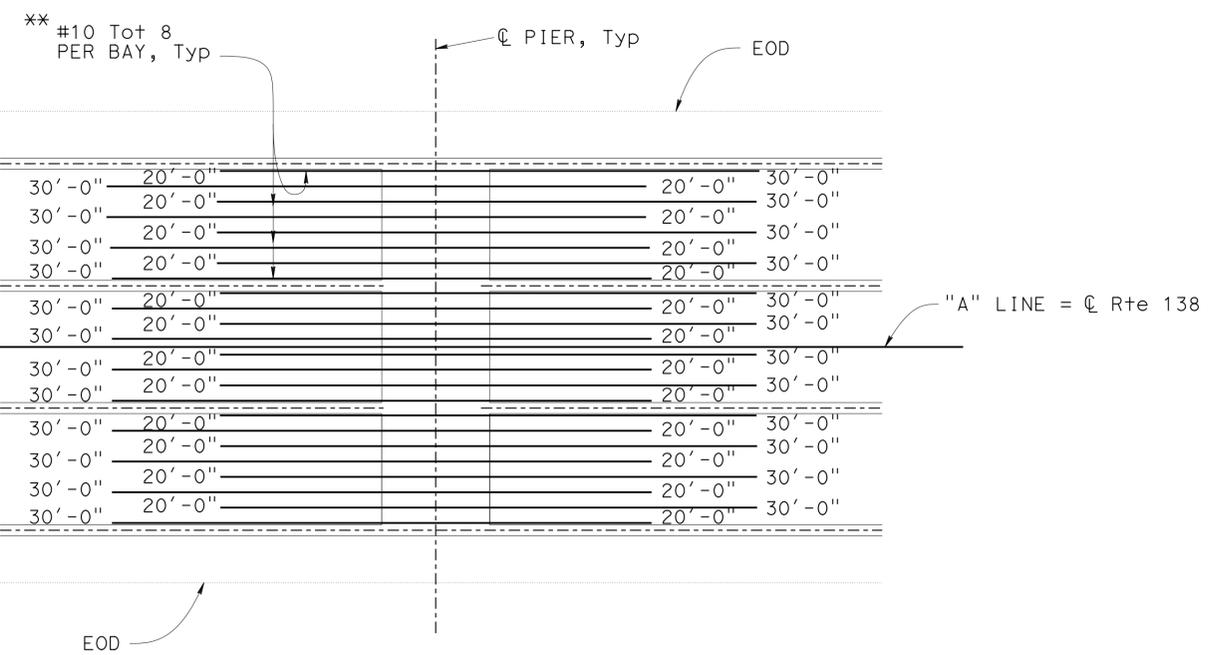
Concrete: $f'_c = 5,000$ psi @ 28 days
 $f'_{ci} = 3,600$ psi @ time of stressing

Contractor must submit elongation calculations based on initial stress at
 $\lambda = 0.846$ times jacking stress.

Two end stressing must be performed.

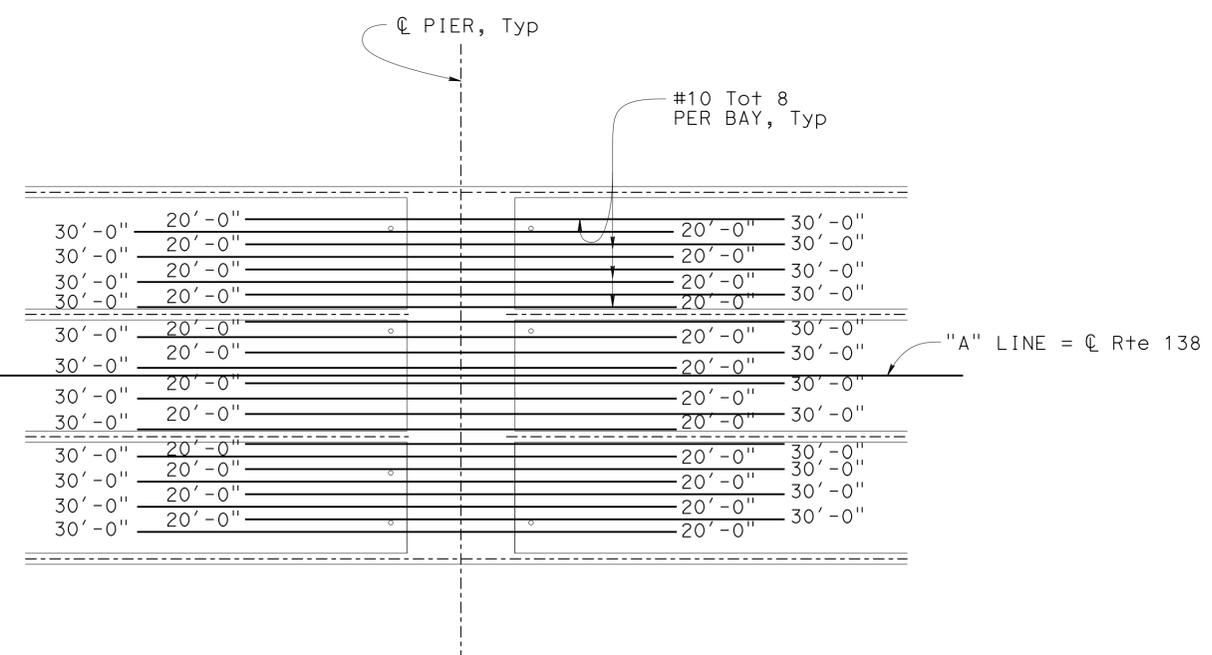
LEGEND:

** Epoxy Coated



TOP REINFORCEMENT

$\frac{1}{8}$ " = 1'-0"



BOTTOM REINFORCEMENT

$\frac{1}{8}$ " = 1'-0"

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

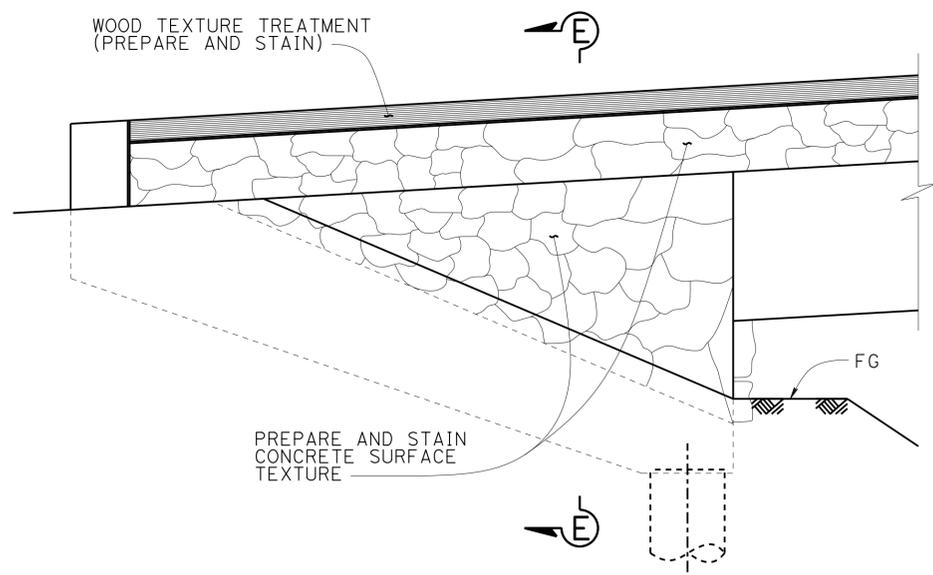
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1220
POST MILE	R18.1

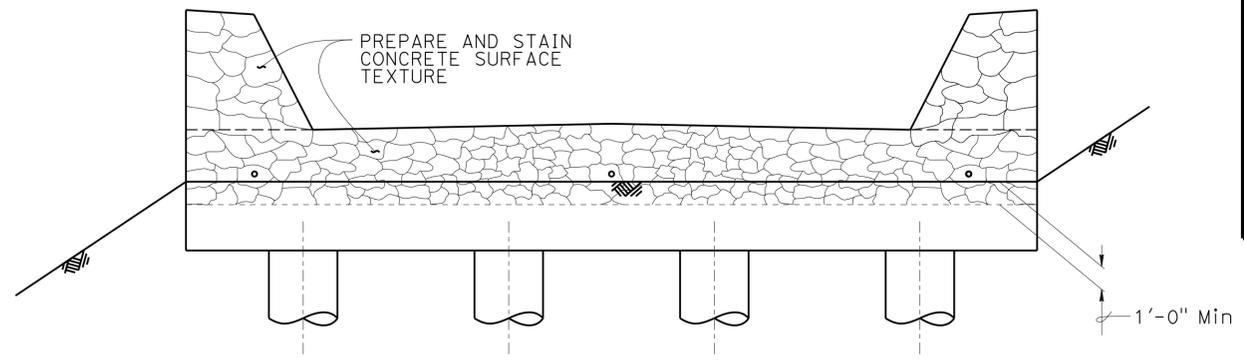
DOUBLE DRAIN CREEK BRIDGE GIRDER REINFORCEMENT

USERNAME => s102458 DATE PLOTTED => 16-NOV-2015 TIME PLOTTED => 10:11

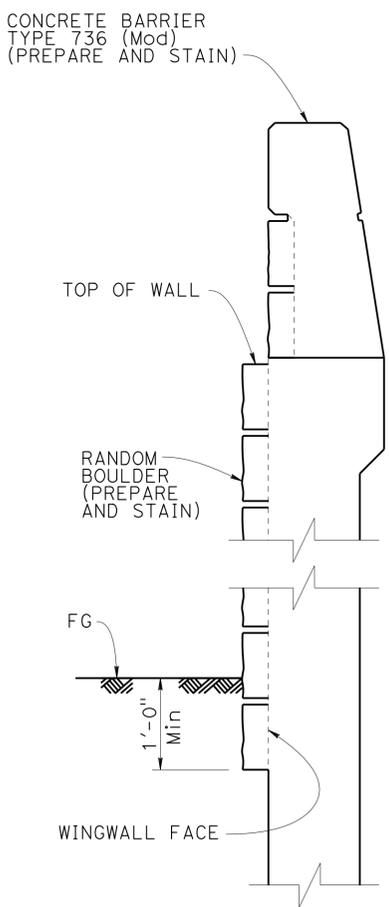
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd	138	R17.1/R19.2	200	212
<i>Peter W. Norboe</i> REGISTERED CIVIL ENGINEER				3-5-15 DATE	
PLANS APPROVAL DATE 9-11-15					
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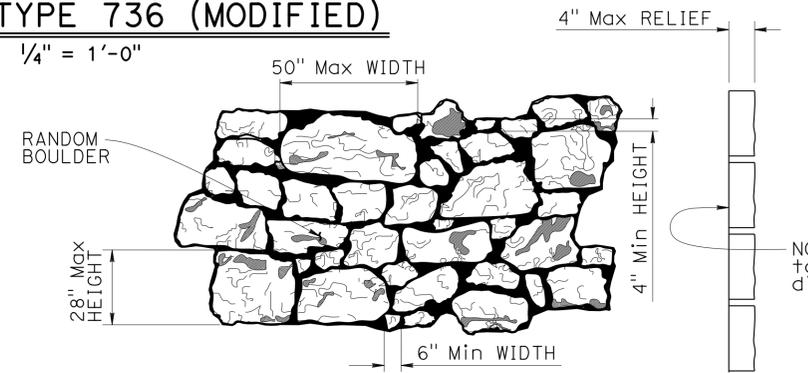
PLAN OF TYPE 736 (MODIFIED)
1/4" = 1'-0"



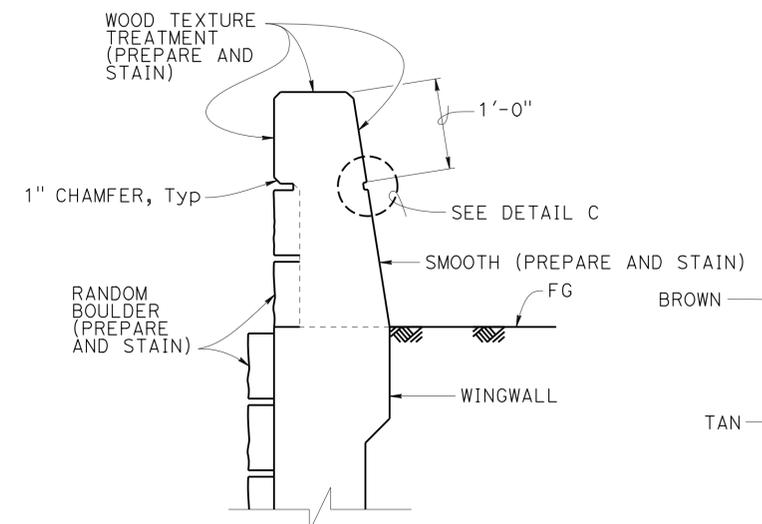
TYPICAL ABUTMENT ELEVATION
1/4" = 1'-0"



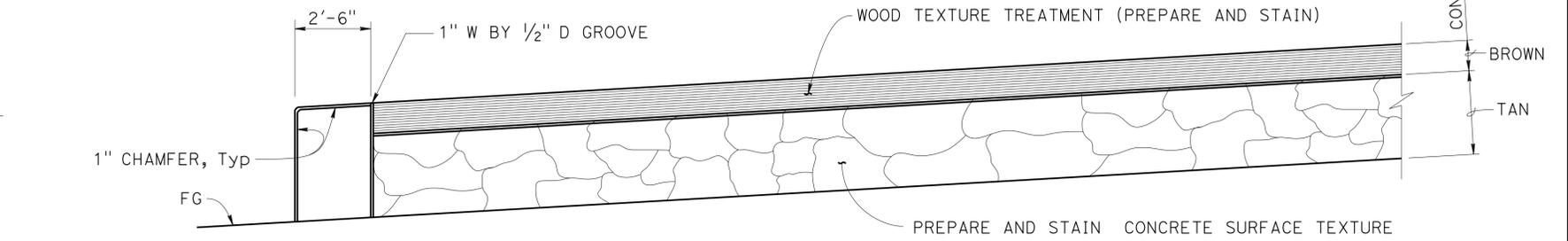
SECTION E-E
1" = 1'-0"



CONCRETE SURFACE TEXTURE
NO SCALE

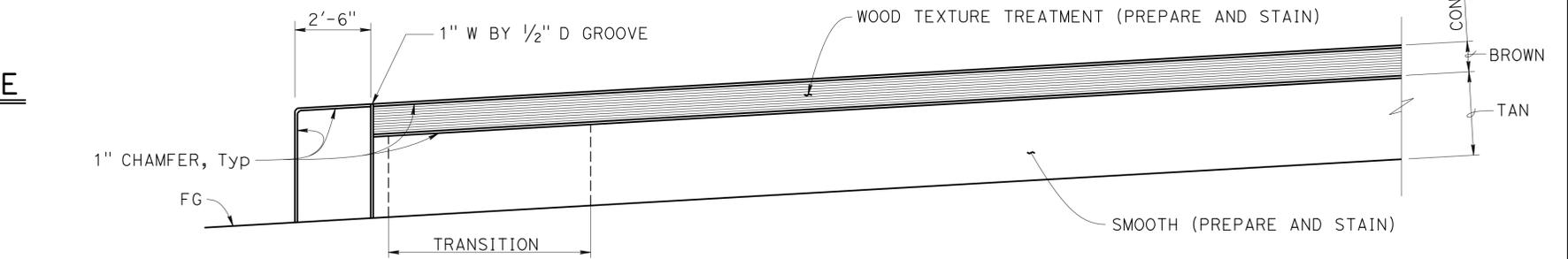


SECTION OF TYPE 736 (MODIFIED)
1" = 1'-0"

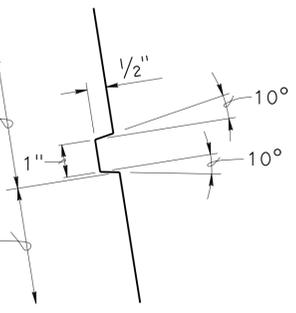


REAR ELEVATION OF TYPE 736 (MODIFIED)
3/8" = 1'-0"

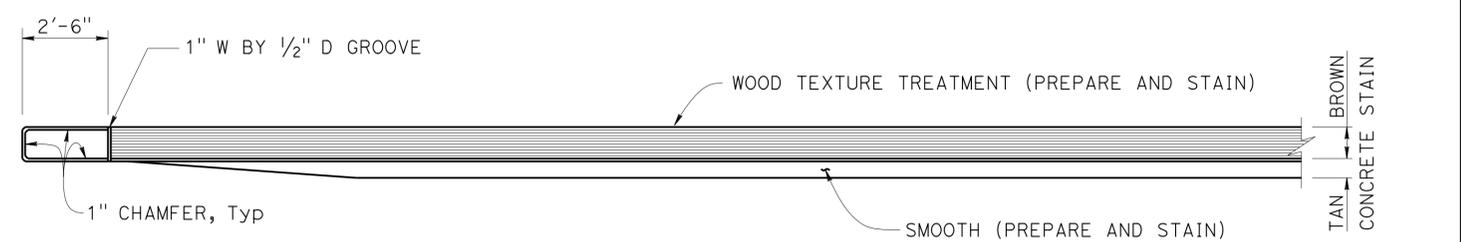
NOTE: Face of untreated surface to which bar clearances and plan dimensions are measured from



FRONT ELEVATION OF TYPE 736 (MODIFIED)
3/8" = 1'-0"



DETAIL C
NO SCALE



PLAN OF TYPE 736 (MODIFIED)
3/8" = 1'-0"

NOTE:
1. All exposed concrete surfaces on bridge must be Prepared and Stain, excluding bridge deck and approach slabs.

DESIGN	BY P. Norboe	CHECKED R. Candiotti
DETAILS	BY D. Elliott	CHECKED R. Candiotti
QUANTITIES	BY P. Norboe	CHECKED R. Candiotti

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 9

BRIDGE NO.	54-1220
POST MILE	R18.1

DOUBLE DRAIN CREEK BRIDGE
ARCHITECTURAL TREATMENT DETAILS