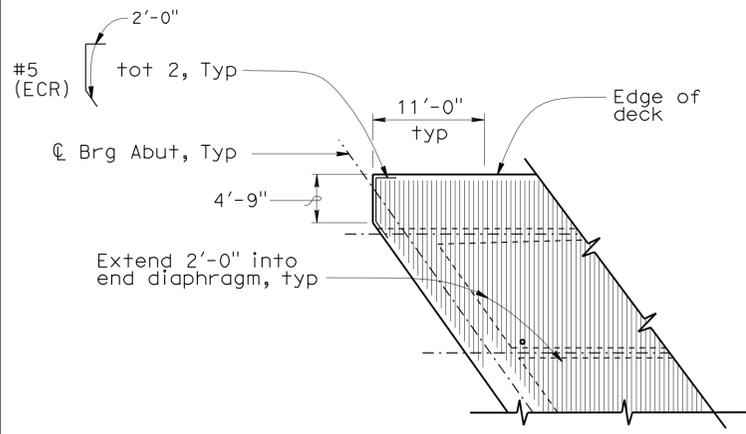
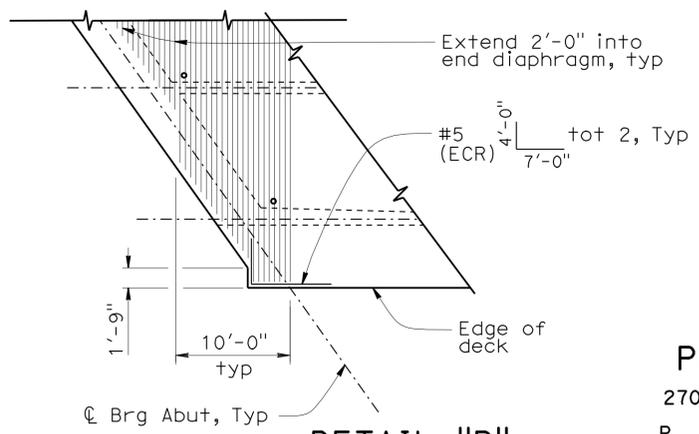


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	201	237

REGISTERED CIVIL ENGINEER DATE 12-17-09
 5-10-10 PLANS APPROVAL DATE
 Rodney Simmons No. 51174 Exp. 09-30-11
 CIVIL
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- NOTES:
- 1. Denotes girder stem width
 - * Denotes girder stem width at 1'-8"
 - ** Denotes girder stem width at 2'-6"



PRESTRESSING NOTES

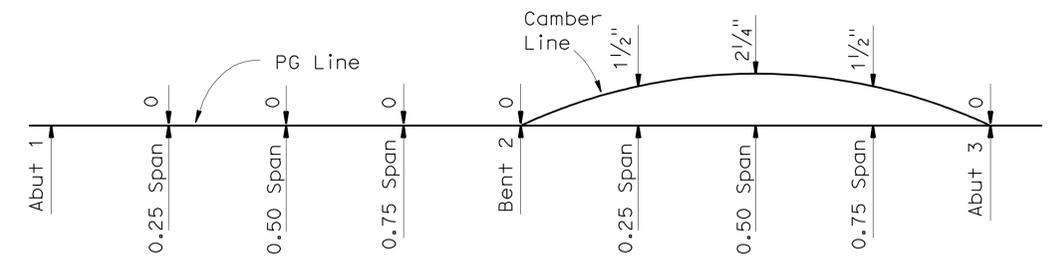
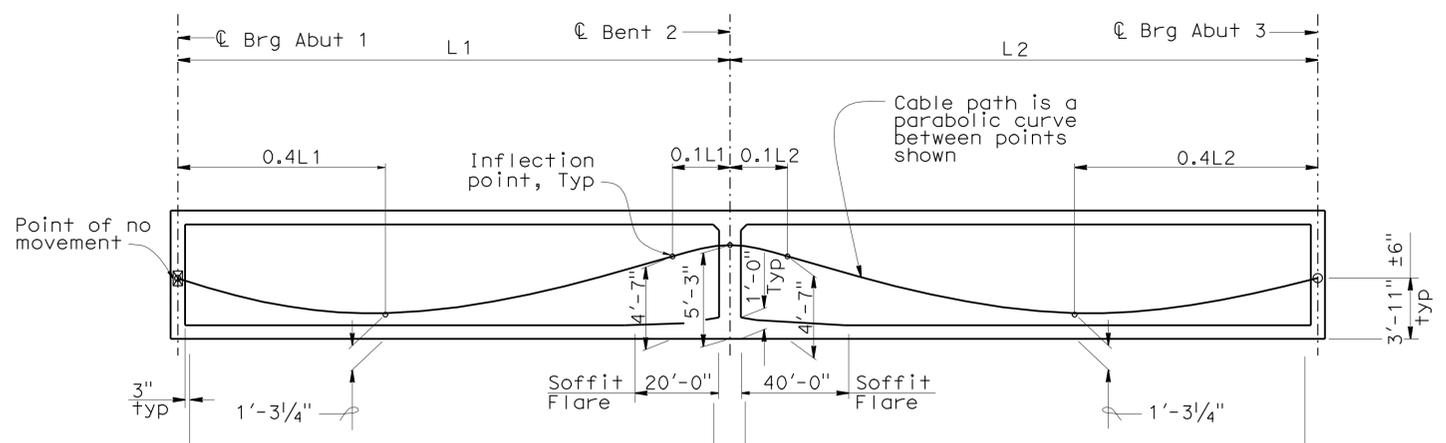
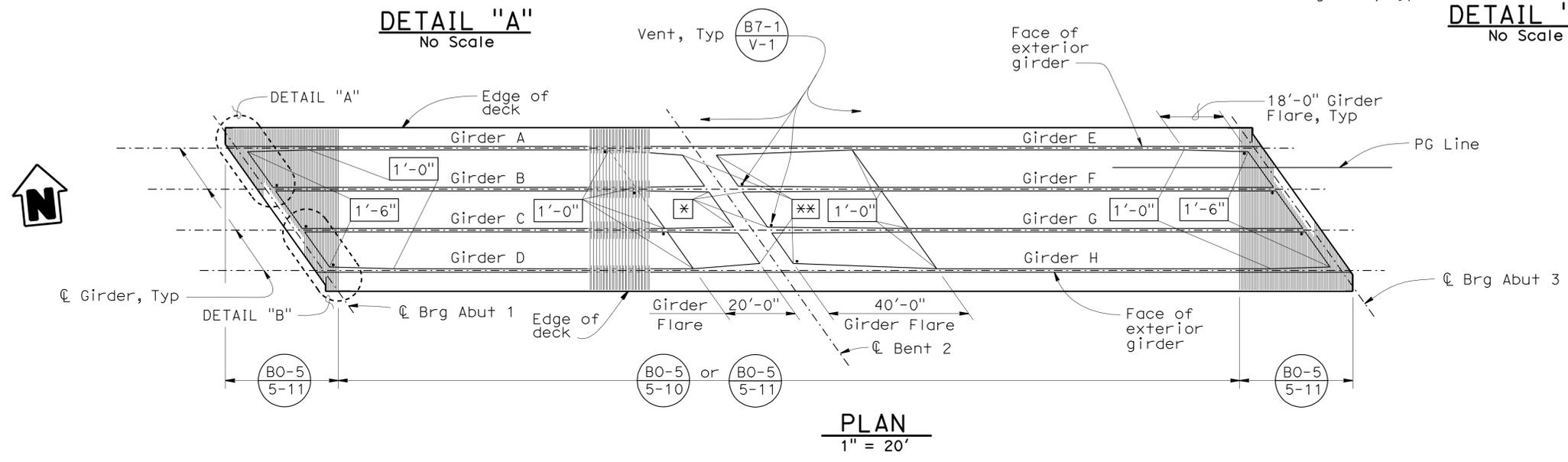
270 Ksi Low Relaxation Strand:
 $P_{jack} = 12700$ kips
 Anchor Set = $\frac{3}{8}$ in
 Total Number of Girders = 4
 $\mu = 0.15$ $K = 2 \times 10^{-4}$ K/ft

Long term losses assumed to be: 25 Ksi.

Concrete: $f'_c = 4000$ psi @ 28 days
 $f'_{ci} = 3500$ psi @ time of stressing

Contractor shall submit elongation calculations based on initial stress at $\lambda = 0.8725$ times jacking stress.

One end stressing shall be performed from long span only.



Camber values shown do not include allowance for falsework settlement

Girder A & D: #6	Stirrup Spacing	20 @ 6	20 @ 10	@ 18	50 @ 6	30 @ 4	50 @ 3	40 @ 5	50 @ 6	@ 18	50 @ 6	30 @ 5	Girder E & H: #6	Stirrup Spacing	
Girder B & C: #6	Stirrup Spacing	30 @ 6	@ 18	20 @ 12	20 @ 5	30 @ 4	35 @ 8	@ 18	30 @ 6	Girder F & G: #6					Stirrup Spacing

LONGITUDINAL SECTION (B7-1 S-3)
No Scale

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	DESIGN BY E. Hall CHECKED I. Cherniaglo	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO. 32-0070 POST MILE R4.51	PEACEFUL OAK ROAD UNDERCROSSING GIRDER LAYOUT					SHEET 12 OF 20
	DETAILS BY G. Leung / S. Ng CHECKED E. Hall		CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES					REVISION DATES: 6-2-09, 7-07-09, 8-03-09, 11-23-09, 12-01-09, 12-03-09, 12-15-09	
	QUANTITIES BY E. Hall CHECKED R. Simmons		FILE => 32-0070-m-long.dgn	USERNAME => hrlengard DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 06:10						

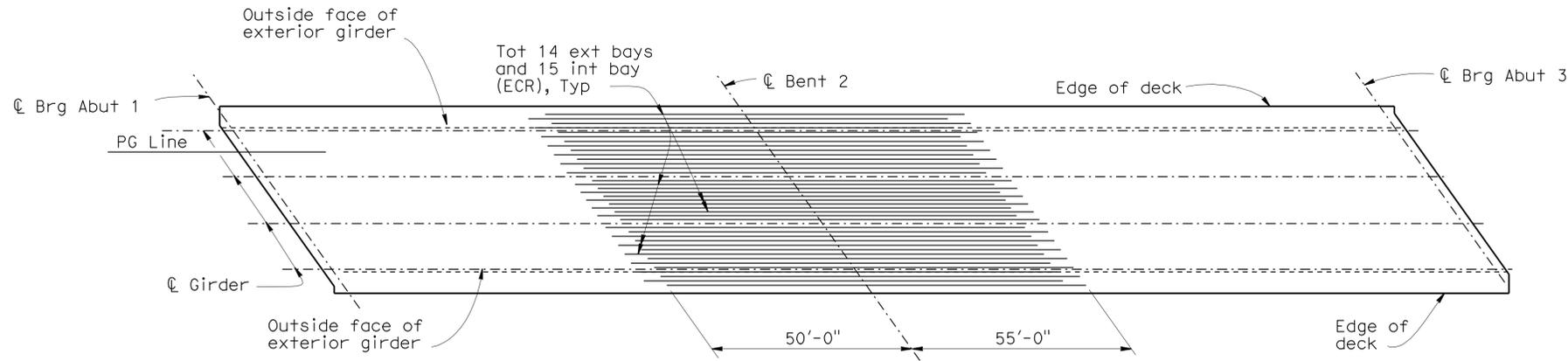
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	202	237

Rodney Simmons 12-17-09
REGISTERED CIVIL ENGINEER DATE

5-10-10
PLANS APPROVAL DATE

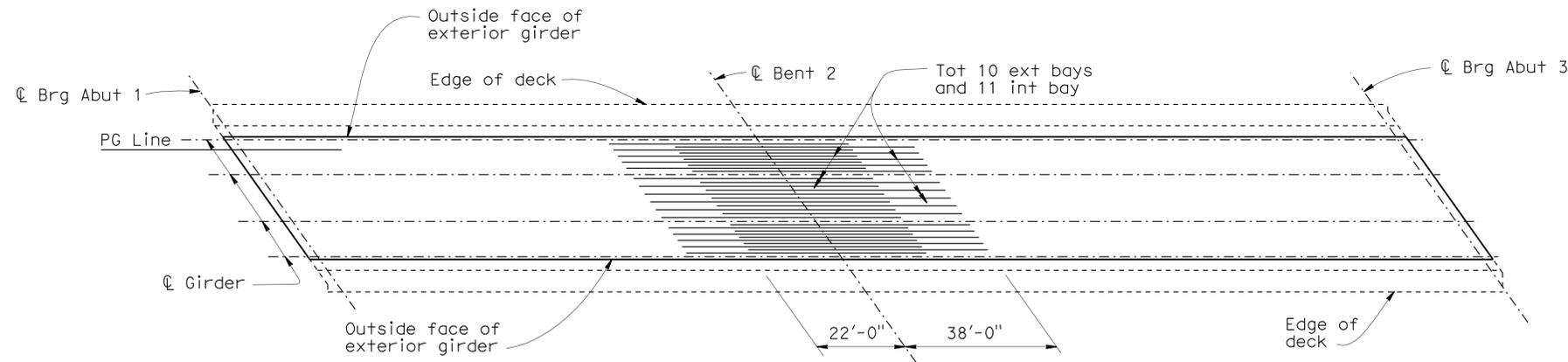
Rodney Simmons
No. 51174
Exp. 09-30-11
CIVIL
STATE OF CALIFORNIA

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TOP LONGITUDINAL REINFORCEMENT

1" = 20'



BOTTOM LONGITUDINAL REINFORCEMENT

1" = 20'

- Notes:**
1. All reinforcement #8 unless otherwise noted.
 2. For details not shown, see "Typical Section" sheet.
 3. All splices shall be service level.
- ECR = Epoxy Coated Reinforcement

DESIGN	BY E. Hall	CHECKED I. Cherniaglo
DETAILS	BY G. Leung / S. Ng	CHECKED E. Hall
QUANTITIES	BY E. Hall	CHECKED R. Simmons

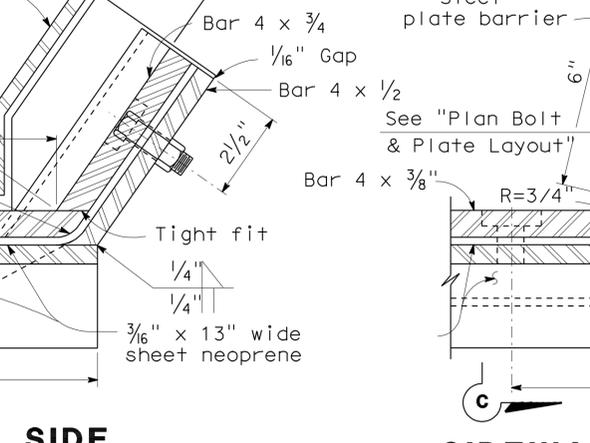
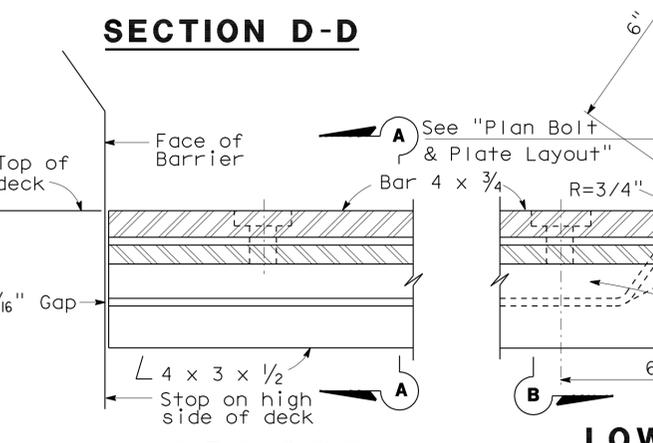
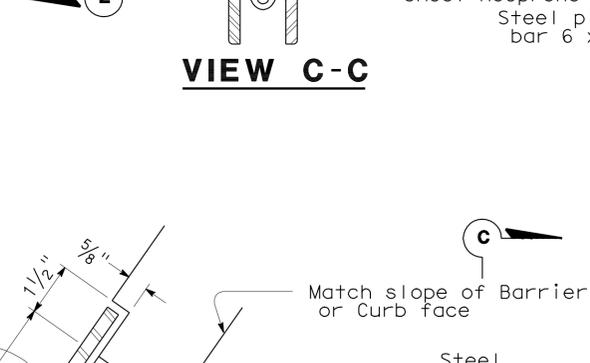
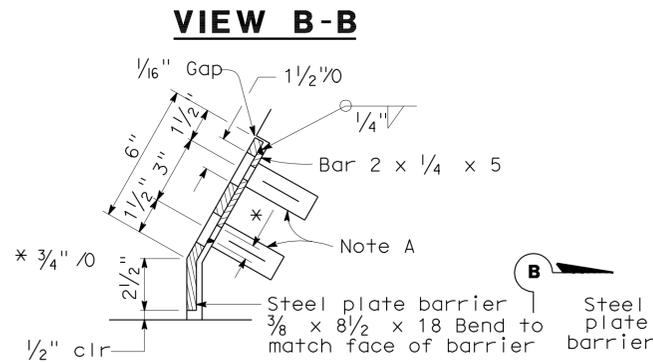
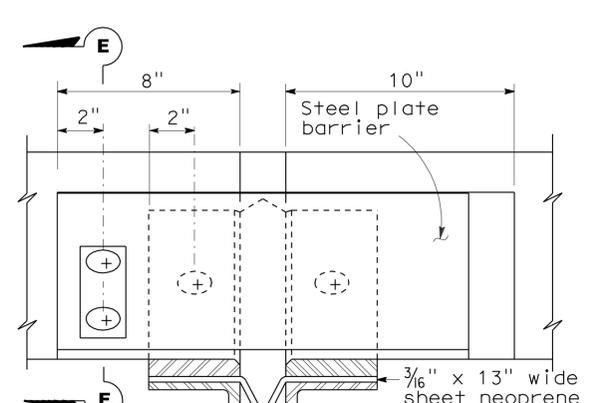
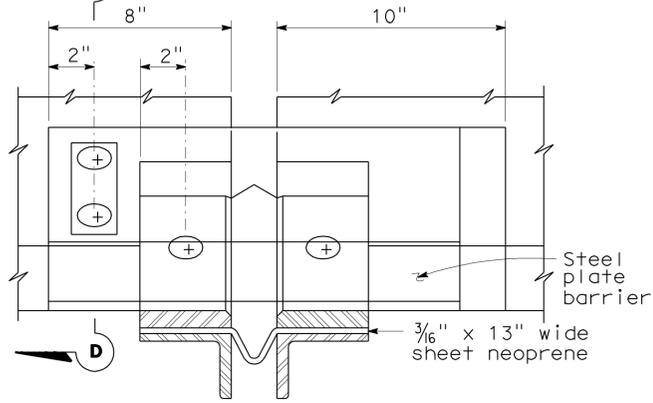
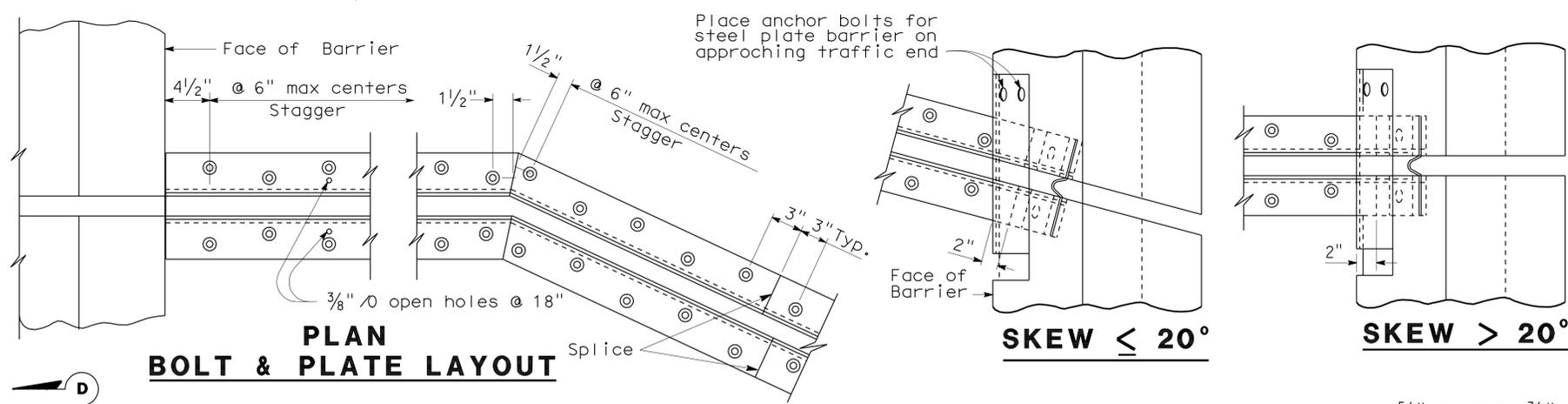
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO. 32-0070	PEACEFUL OAK ROAD UNDERCROSSING
POST MILE R4.51	
GIRDER REINFORCEMENT	

REVISION DATES
6-2-09 7-07-09 8-05-09 11-23-09 12-02-09 12-15-09

USERNAME => hrlengard DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 06:10



Joint Information		"a" Dimensions			
Location	Movement Rating (MR)	Skew	Winter	Spring & Fall	Summer
Abut 1	2.5"	35.5°	7/8"	1 1/2"	1 5/8"
Abut 3	2.5"	35.5°	3/8"	1 1/8"	1 1/2"



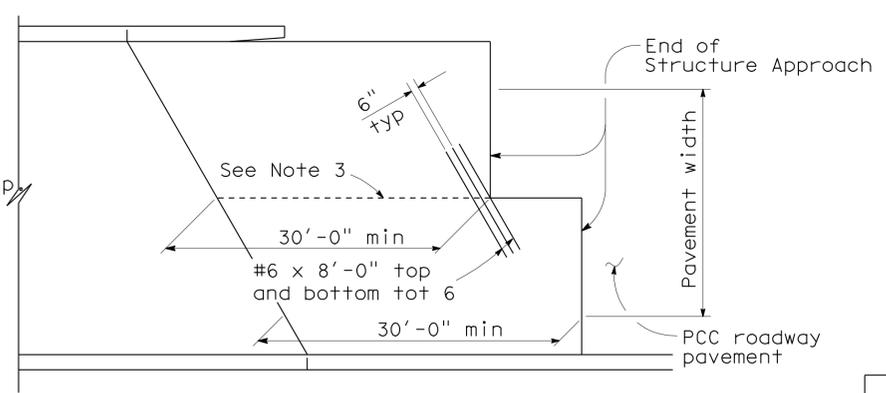
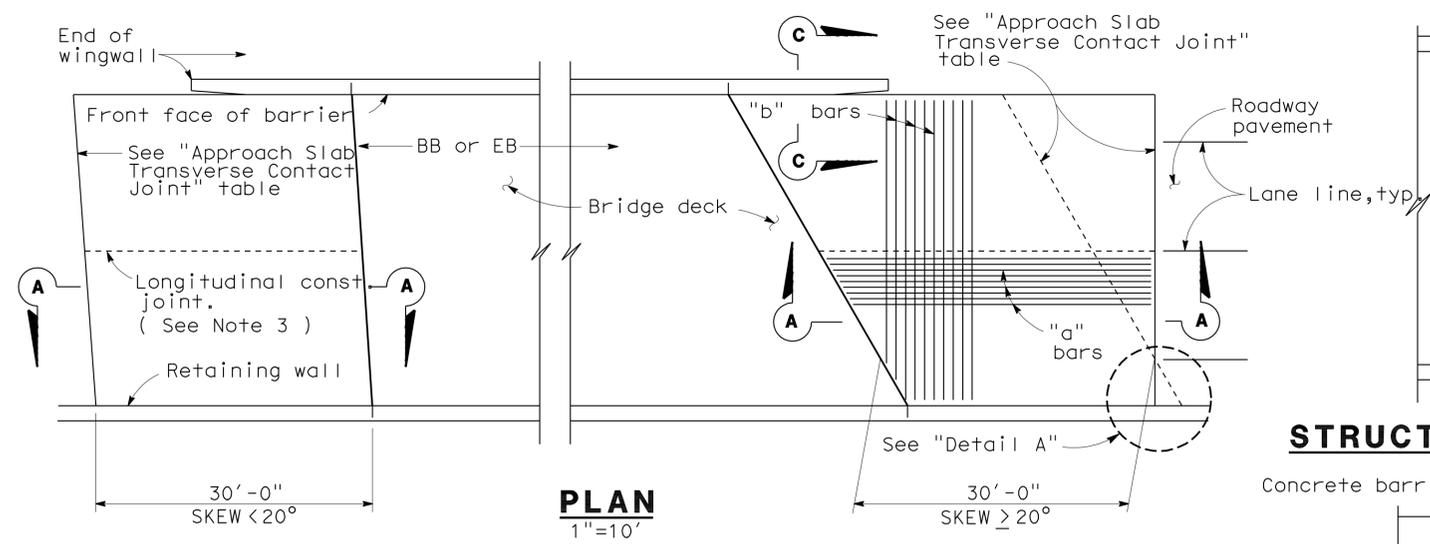
NOTES:
 Full penetration butt welds may be substituted for fillet welds on all anchor studs. Alternate types of anchor studs may be permitted subject to the approval by the Engineer. Joint seal assembly to be used in conjunction with closure pour. (See other sheets for limits). Closure pour shall not be placed until final deck surface is within the tolerances specified. Use joint at crown of roadway, at any change in traverse slope in deck and at changes in horizontal direction. Place other joints at or near lanes. All metal parts to be painted or galvanized after fabrication. Sheet neoprene shall be fabricated in one continuous piece or joints shall be vulcanized. Neoprene shall be fabricated to bend around corners. Holes in neoprene sheets shall be drilled or punched so that the neoprene is not distorted at the time of installation.

NOTE A
 Insert assembly or expansion anchorage for 5/8" x 1 3/4" A325 bolt.

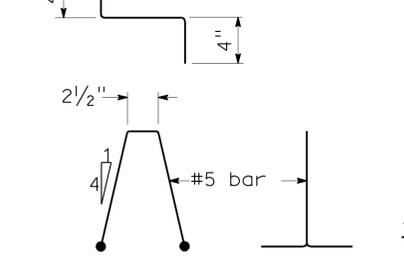
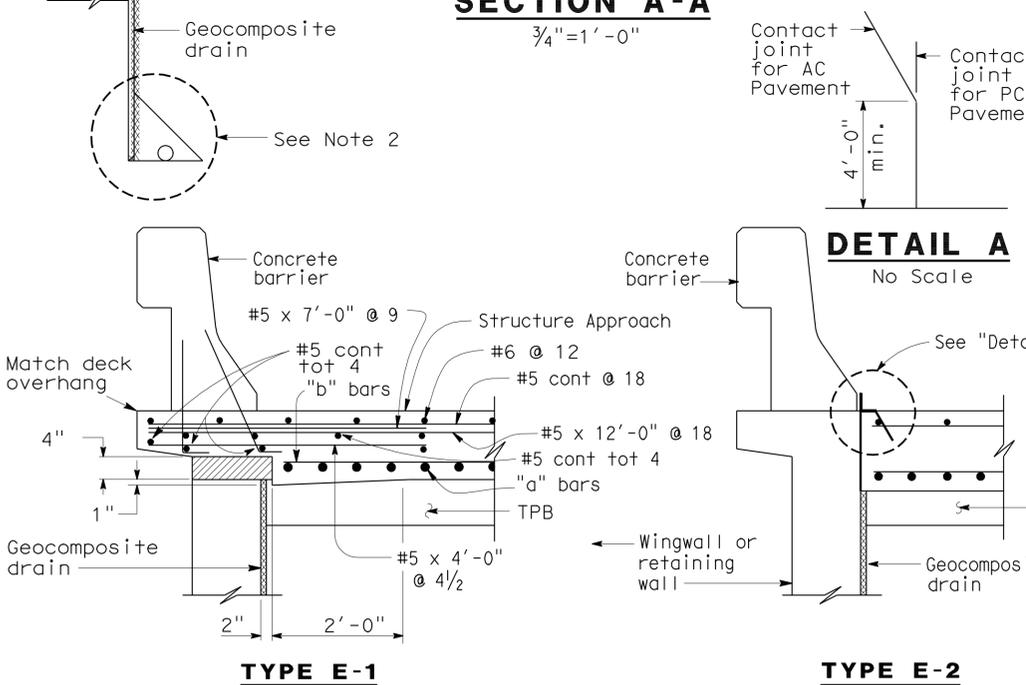
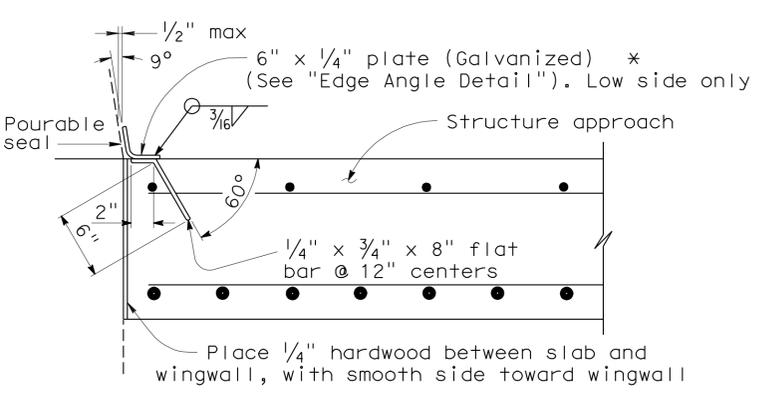
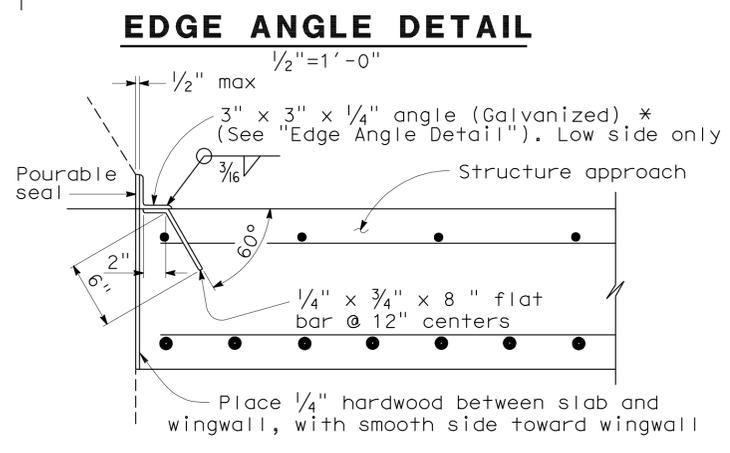
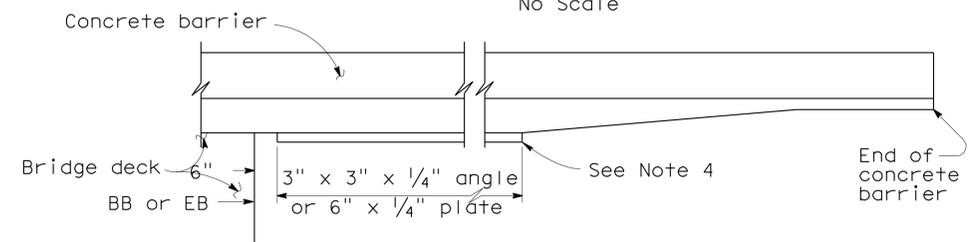
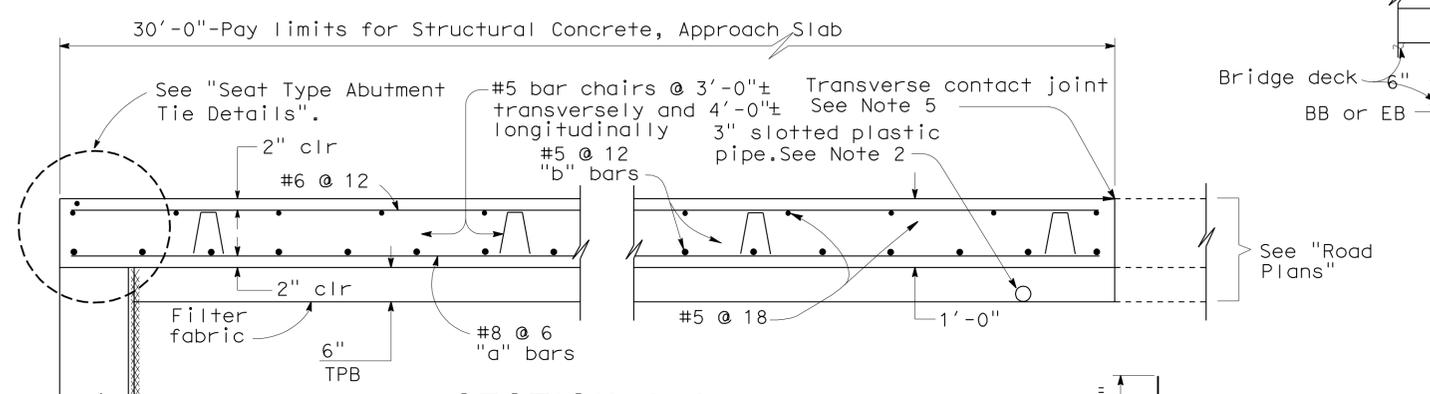
NOTE B
 Use the sidewalk detail at all sidewalk joints. Use the Barrier Detail at both sides if the roadway is crowned or if the difference in elevation between the ends of the seal is 0.5' or less.

FILE NO. xs8-010e	APPROVED BY T. DELIS RESPONSIBLE TECHNICAL SPECIALIST APPROVAL DATE 5-8-08	RELEASED BY ROBERTO LACALLE RESPONSIBLE OFFICE CHIEF RELEASE DATE 5-8-08
--------------------------	--	--

BRIDGE NO. 32-0070	PEACEFUL OAK ROAD UNDERCROSSING
POST MILE R4.51	JOINT SEAL ASSEMBLY (MAXIMUM MOVEMENT RATING = 4")

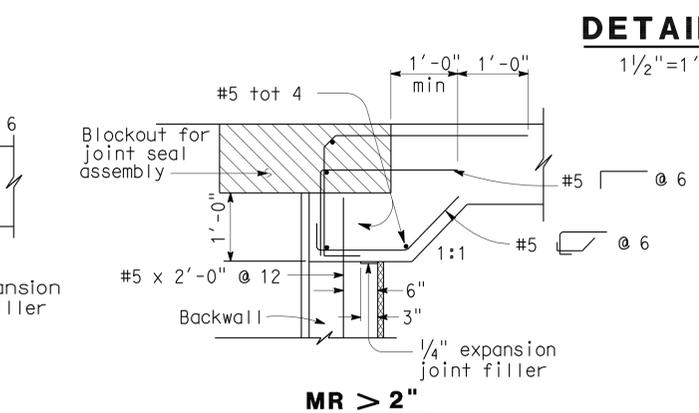
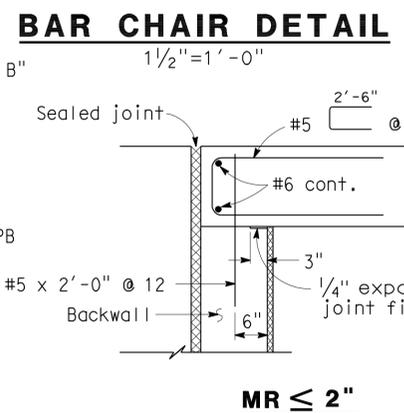


APPROACH SLAB TRANSVERSE CONTACT JOINT		
APPROACH SKEW	WITH AC ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
< 20°	Parallel to face of paving notch	Parallel to face of paving notch
20° - 45°	Parallel to face of P N use (Detail A)	Stagger lines 24' to 36' apart.
> 45°	Parallel to face of P N use (Detail A)	Stagger at each lane line.



***(TO BE USED WITH TYPE 25 OR TYPE 27 CONCRETE BARRIER)**

***(TO BE USED WITH TYPE 732 OR TYPE 736 CONCRETE BARRIER)**



SEAT TYPE ABUTMENT TIE DETAILS (SEE NOTE 1)
3/4"=1'-0"

- 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, shall 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 & roadway.
- Remove all polystyrene.
- All reinforcement to be Epoxy Coated.

STANDARD DRAWING				Added note
RELEASE DATE	DESIGN BY	CHECKED	RELEASED BY	
4/23/98	M. TRAFFALIS	E. THORKILDSEN		
FILE NO. xs3-120e	DETAILS BY R. YEE	CHECKED E. THORKILDSEN		
	SUBMITTED BY M. HA	DRAWING DATE 4/98	OFFICE CHIEF	

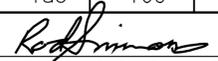
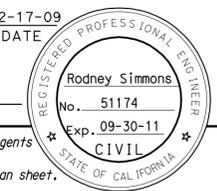
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

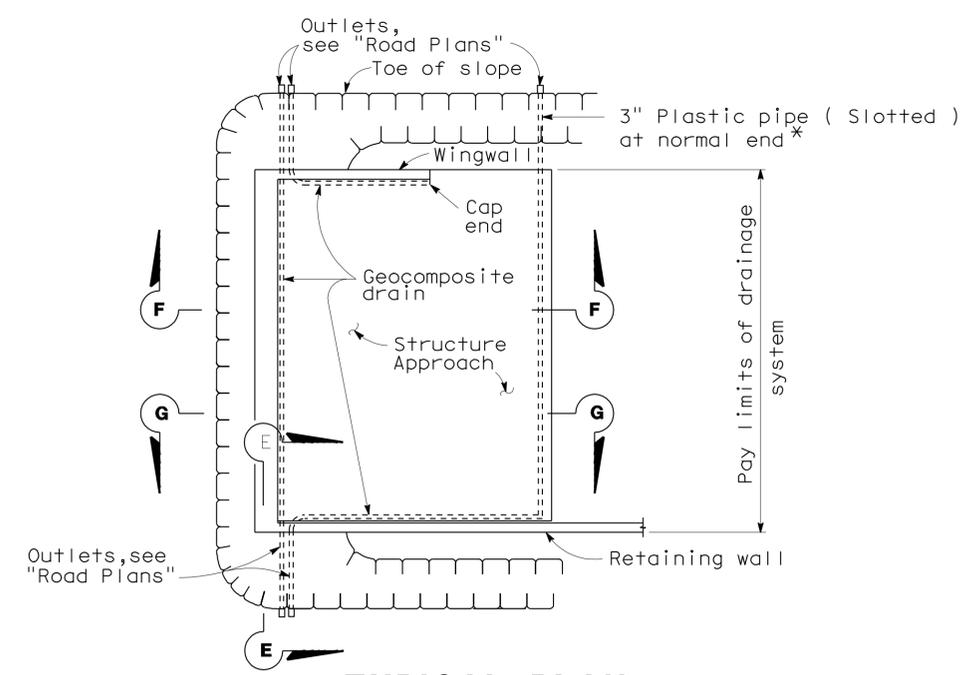
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO. 32-0070
MILE POST R4.51

PEACEFUL OAK ROAD UNDERCROSSING

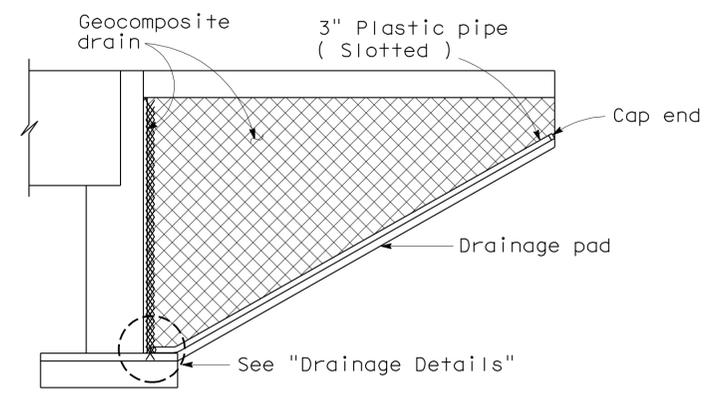
STRUCTURE APPROACH TYPE N(30S)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	205	237
 REGISTERED CIVIL ENGINEER DATE 12-17-09					
5-10-10 PLANS APPROVAL DATE					
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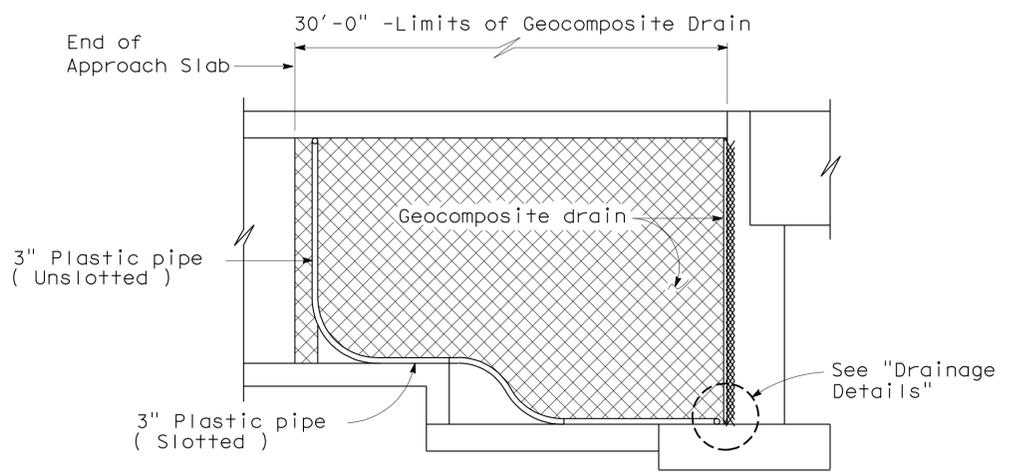


TYPICAL PLAN
1"=10'

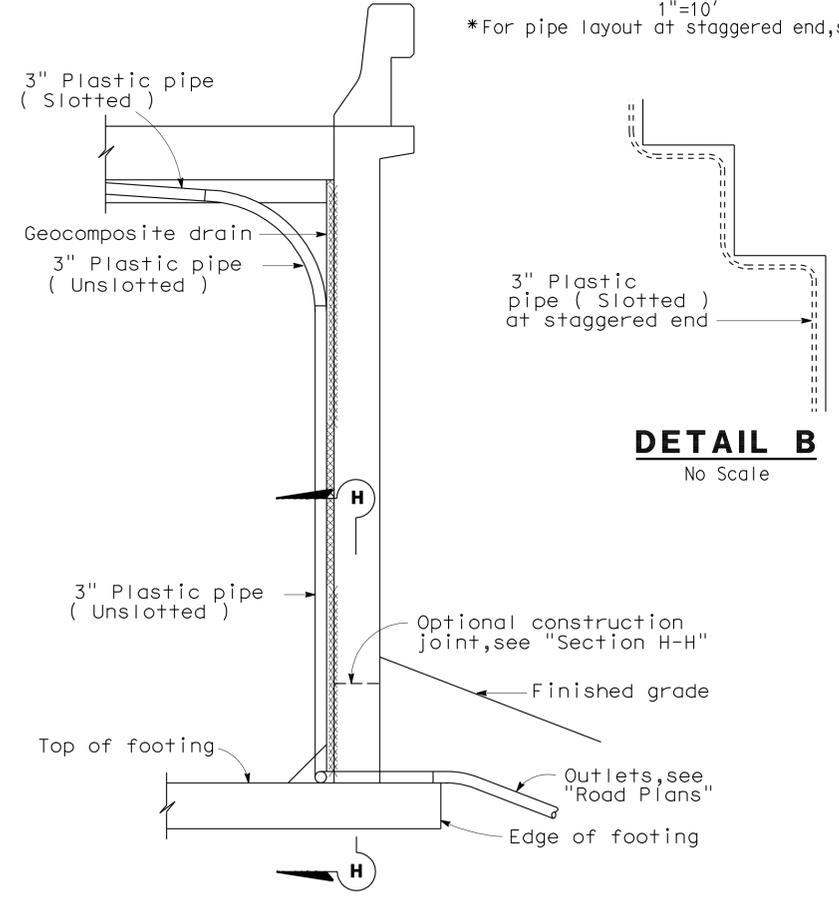
*For pipe layout at staggered end, see "Detail B".



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



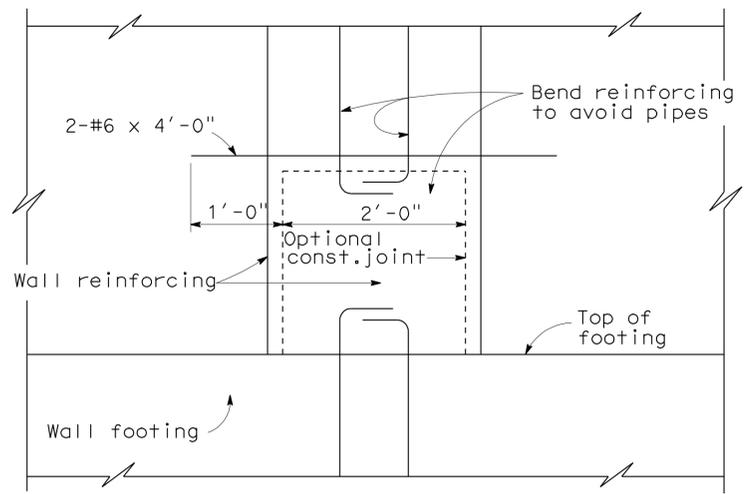
RETAINING WALL WINGWALL SECTION G-G
1/4"=1'-0"



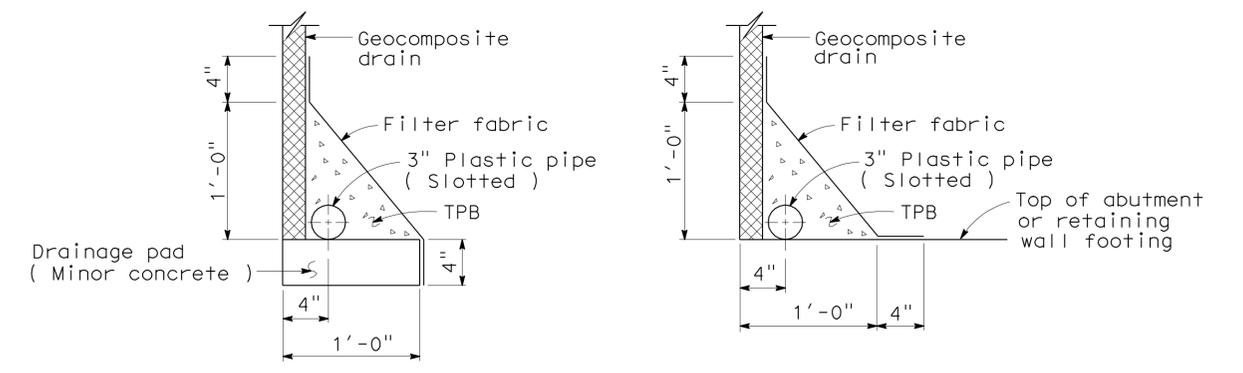
DETAIL B
No Scale

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
1/2"=1'-0"

STANDARD DRAWING			
RELEASE DATE 4/23/98	DESIGN BY <i>M. TRAFFALIS</i>	CHECKED <i>E. THORKILDSEN</i>	RELEASED BY <i>[Signature]</i>
FILE NO. xs3-110e	DETAILS BY <i>R. YEE</i>	CHECKED <i>E. THORKILDSEN</i>	OFFICE CHIEF
	SUBMITTED BY <i>M. HA</i>	DRAWING DATE 4/98	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

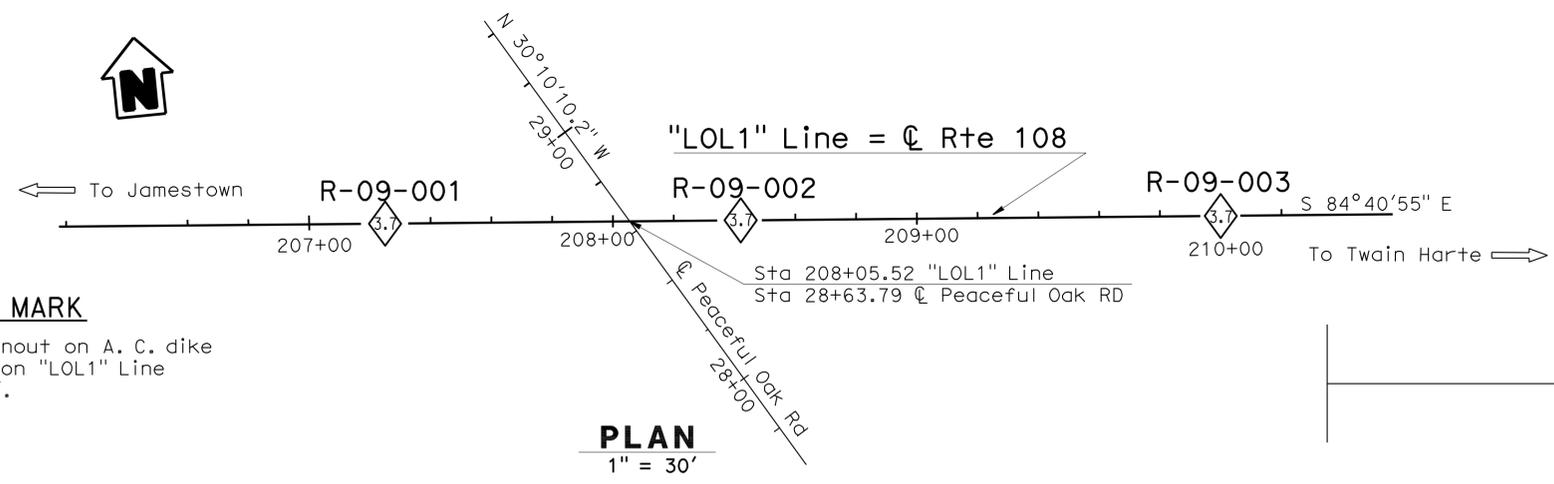
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO. 32-0070	PEACEFUL OAK ROAD UNDERCROSSING
MILE POST R4.51	
STRUCTURE APPROACH DRAINAGE DETAILS	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	206	237

Chris Koepke
 CERTIFIED ENGINEERING GEOLOGIST 9-08-09 DATE
 5-10-10 PLANS APPROVAL DATE
 REGISTERED PROFESSIONAL GEOLOGIST
 Christopher W. Koepke
 No. 2207
 Exp. 10-31-10
 CERTIFIED ENGINEERING GEOLOGIST
 STATE OF CALIFORNIA

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (June 2007).

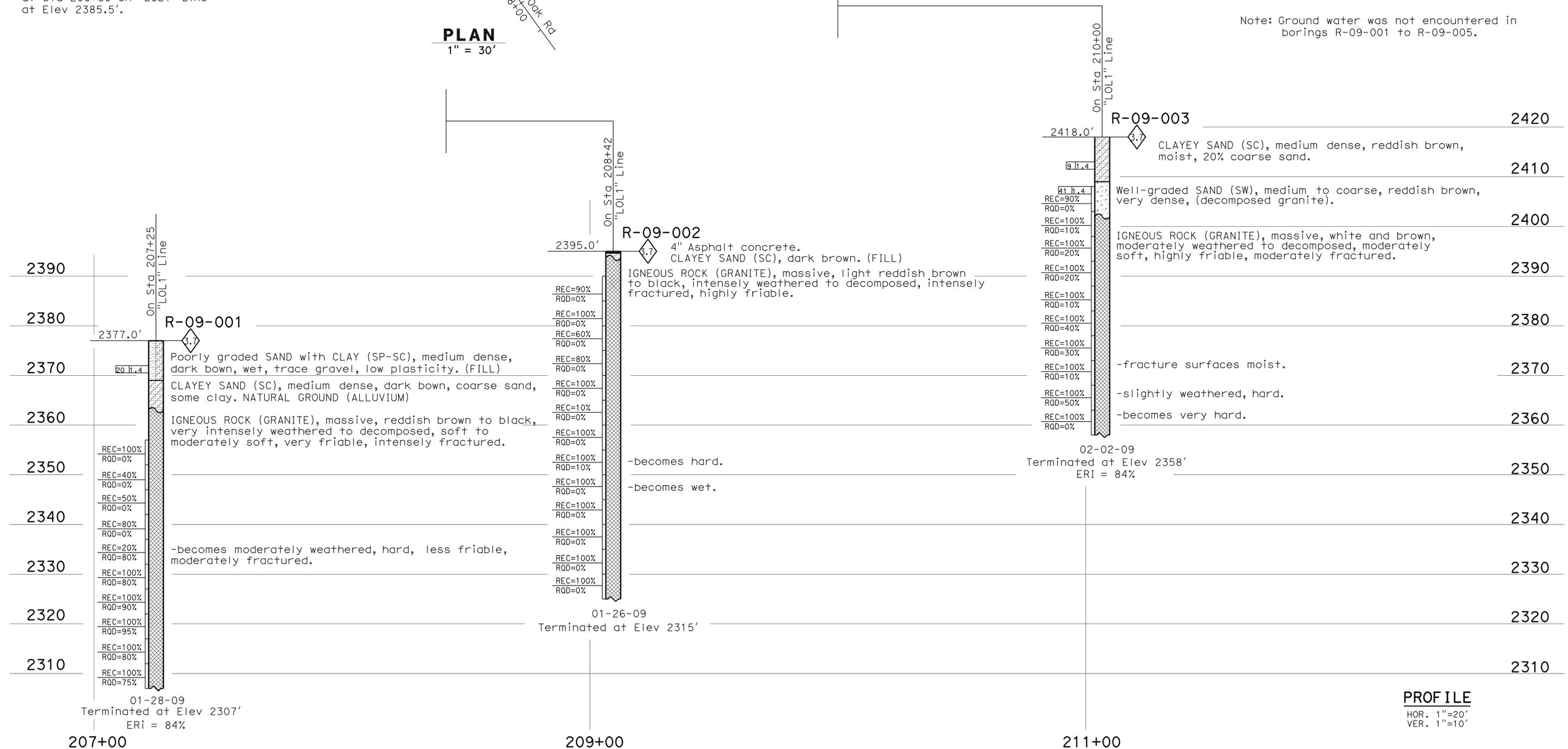


BENCH MARK

Set nail in turnout on A. C. dike at Sta 208+50 on "LOL1" Line at Elev 2385.5'.

PLAN
1" = 30'

Note: Ground water was not encountered in borings R-09-001 to R-09-005.



PROFILE

HOR. 1"=20'
VER. 1"=10'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.		PEACEFUL OAK ROAD UNDERCROSSING	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 7/09		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		32-0070		LOG OF TEST BORINGS 1 OF 4	
NAME: Q. Huang		CHECKED BY: C. Zhen		C. Koepke		DESIGN BRANCH 17		R4.51			
06S CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU 06 228 EA 340421		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES		SHEET 17 OF 20	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	207	237

Christopher W. Koepke
 CERTIFIED ENGINEERING GEOLOGIST
 DATE: 9-08-09
 No. 2207
 Exp. 10-31-10
 REGISTERED PROFESSIONAL GEOLOGIST
 STATE OF CALIFORNIA

5-10-10
PLANS APPROVAL DATE

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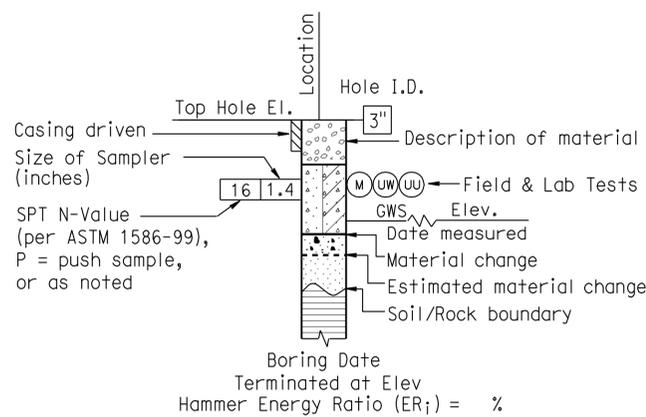
CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

CONSISTENCY OF COHESIVE SOILS				
Description	Unconfined Compressive Strength (tsf)	Pocket Penetrometer Measurement (tsf)	Torvane Measurement (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 to 0.50	0.25 to 0.50	0.12 to 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 to 1.0	0.50 to 1.0	0.25 to 0.50	Penetrated several inches by thumb with moderate effort
Stiff	1 to 2	1 to 2	0.50 to 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2 to 4	2 to 4	1.0 to 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

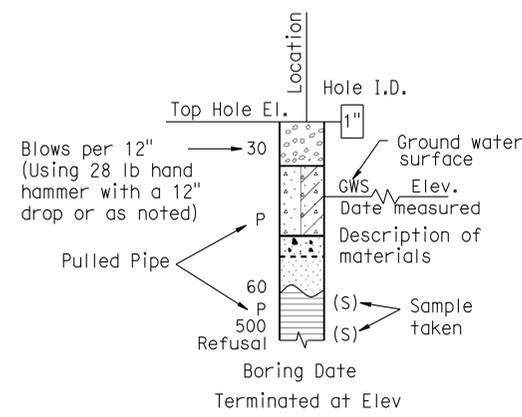
BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring
	R	Rotary drilled boring
	P	Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778-95)
	O	Other

Note: Size in inches.

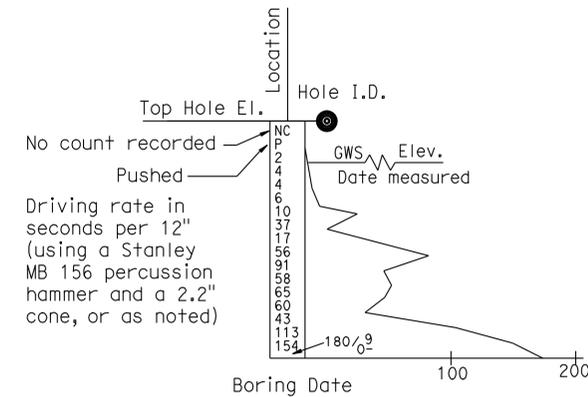
PLASTICITY OF FINE-GRAINED SOILS	
Description	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.



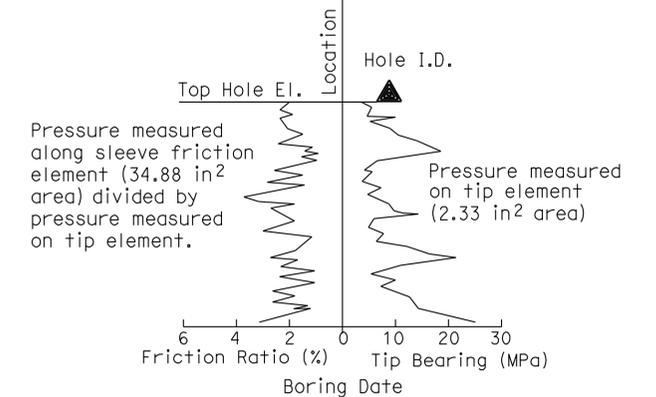
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) SOUNDING

Christopher W. Koepke
 CERTIFIED ENGINEERING GEOLOGIST
 DATE: 9-08-09
 5-10-10
 PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL GEOLOGIST
 Christopher W. Koepke
 No. 2207
 Exp. 10-31-10
 CERTIFIED ENGINEERING GEOLOGIST
 STATE OF CALIFORNIA

GROUP SYMBOLS AND NAMES			
Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
	Well-graded GRAVEL		Lean CLAY
	Well-graded GRAVEL with SAND		Lean CLAY with SAND
	Poorly graded GRAVEL		SANDY lean CLAY
	Poorly graded GRAVEL with SAND		GRAVELLY lean CLAY
	Well-graded GRAVEL with SILT		SILTY CLAY
	Well-graded GRAVEL with SILT and SAND		SILTY CLAY with SAND
	Well-graded GRAVEL with CLAY		SANDY SILTY CLAY
	Well-graded GRAVEL with CLAY and SAND		GRAVELLY SILTY CLAY
	Poorly graded GRAVEL with SILT		GRAVELLY SILTY CLAY with SAND
	Poorly graded GRAVEL with SILT and SAND		
	Poorly graded GRAVEL with CLAY		SILT
	Poorly graded GRAVEL with CLAY and SAND		SILT with SAND
	SILTY GRAVEL		SILT with GRAVEL
	SILTY GRAVEL with SAND		SANDY SILT
	CLAYEY GRAVEL		SANDY SILT with GRAVEL
	CLAYEY GRAVEL with SAND		GRAVELLY SILT
	SILTY, CLAYEY GRAVEL		GRAVELLY SILT with SAND
	SILTY, CLAYEY GRAVEL with SAND		
	Well-graded SAND		ORGANIC lean CLAY
	Well-graded SAND with GRAVEL		ORGANIC lean CLAY with SAND
	Poorly graded SAND		ORGANIC lean CLAY with GRAVEL
	Poorly graded SAND with GRAVEL		SANDY ORGANIC lean CLAY
	Well-graded SAND with SILT		SANDY ORGANIC lean CLAY with GRAVEL
	Well-graded SAND with SILT and GRAVEL		GRAVELLY ORGANIC lean CLAY
	Well-graded SAND with CLAY		GRAVELLY ORGANIC lean CLAY with SAND
	Well-graded SAND with CLAY and GRAVEL		
	Poorly graded SAND with SILT		ORGANIC SILT
	Poorly graded SAND with SILT and GRAVEL		ORGANIC SILT with SAND
	Poorly graded SAND with CLAY		ORGANIC SILT with GRAVEL
	Poorly graded SAND with CLAY and GRAVEL		SANDY ORGANIC SILT
	SILTY SAND		SANDY ORGANIC SILT with GRAVEL
	SILTY SAND with GRAVEL		GRAVELLY ORGANIC SILT
	CLAYEY SAND		GRAVELLY ORGANIC SILT with SAND
	CLAYEY SAND with GRAVEL		
	SILTY, CLAYEY SAND		Fat CLAY
	SILTY, CLAYEY SAND with GRAVEL		Fat CLAY with SAND
	PEAT		Fat CLAY with GRAVEL
			SANDY fat CLAY
	COBBLES		SANDY fat CLAY with GRAVEL
	COBBLES and BOULDERS		GRAVELLY fat CLAY
			GRAVELLY fat CLAY with SAND
			Elastic SILT
			Elastic SILT with SAND
			SANDY elastic SILT
			SANDY elastic SILT with GRAVEL
			GRAVELLY elastic SILT
			GRAVELLY elastic SILT with SAND
			ORGANIC fat CLAY
			ORGANIC fat CLAY with SAND
			ORGANIC fat CLAY with GRAVEL
			SANDY ORGANIC fat CLAY
			SANDY ORGANIC fat CLAY with GRAVEL
			GRAVELLY ORGANIC fat CLAY
			GRAVELLY ORGANIC fat CLAY with SAND
			ORGANIC elastic SILT
			ORGANIC elastic SILT with SAND
			SANDY ORGANIC elastic SILT
			SANDY ORGANIC elastic SILT with GRAVEL
			GRAVELLY ORGANIC elastic SILT
			GRAVELLY ORGANIC elastic SILT with SAND
			ORGANIC SOIL
			ORGANIC SOIL with SAND
			SANDY ORGANIC SOIL
			SANDY ORGANIC SOIL with GRAVEL
			GRAVELLY ORGANIC SOIL
			GRAVELLY ORGANIC SOIL with SAND

FIELD AND LABORATORY TESTING	
(C)	Consolidation (ASTM D 2435)
(CL)	Collapse Potential (ASTM D 5333)
(CP)	Compaction Curve (CTM 216)
(CR)	Corrosivity Testing (CTM 643, CTM 422, CTM 417)
(CU)	Consolidated Undrained Triaxial (ASTM D 4767)
(DS)	Direct Shear (ASTM D 3080)
(EI)	Expansion Index (ASTM D 4829)
(M)	Moisture Content (ASTM D 2216)
(OC)	Organic Content-% (ASTM D 2974)
(P)	Permeability (CTM 220)
(PA)	Particle Size Analysis (ASTM D 422)
(PI)	Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
(PL)	Point Load Index (ASTM D 5731)
(PM)	Pressure Meter
(PP)	Pocket Penetrometer
(R)	R-Value (CTM 301)
(SE)	Sand Equivalent (CTM 217)
(SG)	Specific Gravity (AASHTO T 100)
(SL)	Shrinkage Limit (ASTM D 427)
(SW)	Swell Potential (ASTM D 4546)
(TV)	Pocket Torvane
(UC)	Unconfined Compression-Soil (ASTM D 2166)
(UC)	Unconfined Compression-Rock (ASTM D 2938)
(UU)	Unconsolidated Undrained Triaxial (ASTM D 2850)
(UW)	Unit Weight (ASTM D 4767)
(VS)	Vane Shear (AASHTO T 223)

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N ₆₀ (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE	
Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS	
Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE		
Description	Size	
Boulder	> 12"	
Cobble	3" to 12"	
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

Christopher W. Koepke
 CERTIFIED ENGINEERING GEOLOGIST 9-08-09 DATE
 5-10-10 PLANS APPROVAL DATE
 REGISTERED PROFESSIONAL GEOLOGIST
 Christopher W. Koepke
 No. 2207
 Exp. 10-31-10
 CERTIFIED ENGINEERING GEOLOGIST
 STATE OF CALIFORNIA
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PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)

$$REC = \frac{\sum \text{Length of the recovered core pieces (inches)}}{\text{Total length of core run (inches)}} \times 100\%$$

$$RQD = \frac{\sum \text{Length of intact core pieces} \geq 4''}{\text{Total length of core run (inches)}} \times 100\%$$

RELATIVE STRENGTH OF INTACT ROCK

Term	Uniaxial Compressive Strength (PSI)
Extremely Strong	> 30,000
Very Strong	14,500 - 30,000
Strong	7,000 - 14,500
Medium Strong	3,500 - 7,000
Weak	700 - 3,500
Very Weak	150 - 700
Extremely Weak	< 150

BEDDING SPACING

Description	Thickness / Spacing
Massive	Greater than 10 ft
Very thickly bedded	3 to 10 ft
Thickly bedded	1 to 3 ft
Moderately bedded	3-5/8" to 1 ft
Thinly bedded	1-1/4" to 3-5/8"
Very thinly bedded	3/8" to 1-1/4"
Laminated	Less than 3/8"

LEGEND OF ROCK MATERIALS

- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

ROCK HARDNESS

Description	Criteria
Extremely Hard	Specimen cannot be scratched with a pocket knife or sharp pick; can only be chipped with repeated heavy hammer blows.
Very Hard	Specimen cannot be scratched with a pocket knife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Specimen can be scratched with a pocket knife or sharp pick with difficulty (heavy pressure). Heavy hammer blows required to break specimen.
Moderately Hard	Specimen can be scratched with pocket knife or sharp pick with light or moderate pressure. Core breaks with moderate hammer blows.
Moderately Soft	Specimen can be grooved 1/6" deep with a pocket knife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Specimen can be grooved or gouged easily by a pocket knife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Specimen can be readily indented, grooved or gouged with fingernail, or carved with a pocket knife. Breaks with light manual pressure.

WEATHERING DESCRIPTORS FOR INTACT ROCK

Description	Diagnostic features					General Characteristics
	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	
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change.	No solutioning.	Hammer rings when crystalline rocks are struck.
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.
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.
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.
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. Resistant minerals such as quartz may be present as "stringers" or "dikes."

Combination descriptors (such as "slightly weathered to fresh") are permissible where equal distribution of both weathering characteristics is present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, combination descriptors should not be used where significant, identifiable zones can be delineated. Only two adjacent descriptors may be combined. "Very intensely weathered" is the combination descriptor for "intensely weathered to decomposed."

FRACTURE DENSITY

Description	Observed Fracture Density
Unfractured	No fractures.
Very slightly fractured	Lengths greater than 3 feet.
Slightly fractured	Lengths from 1 to 3 feet with few lengths less than 1 foot or greater than 3 feet.
Moderately fractured	Lengths mostly in 4" to 1 foot range with most lengths about 8"
Intensely fractured	Lengths average from 1 to 4" with scattered fragmented intervals with lengths less than 4"
Very intensely fractured	Mostly chips and fragments with a few scattered short core lengths.

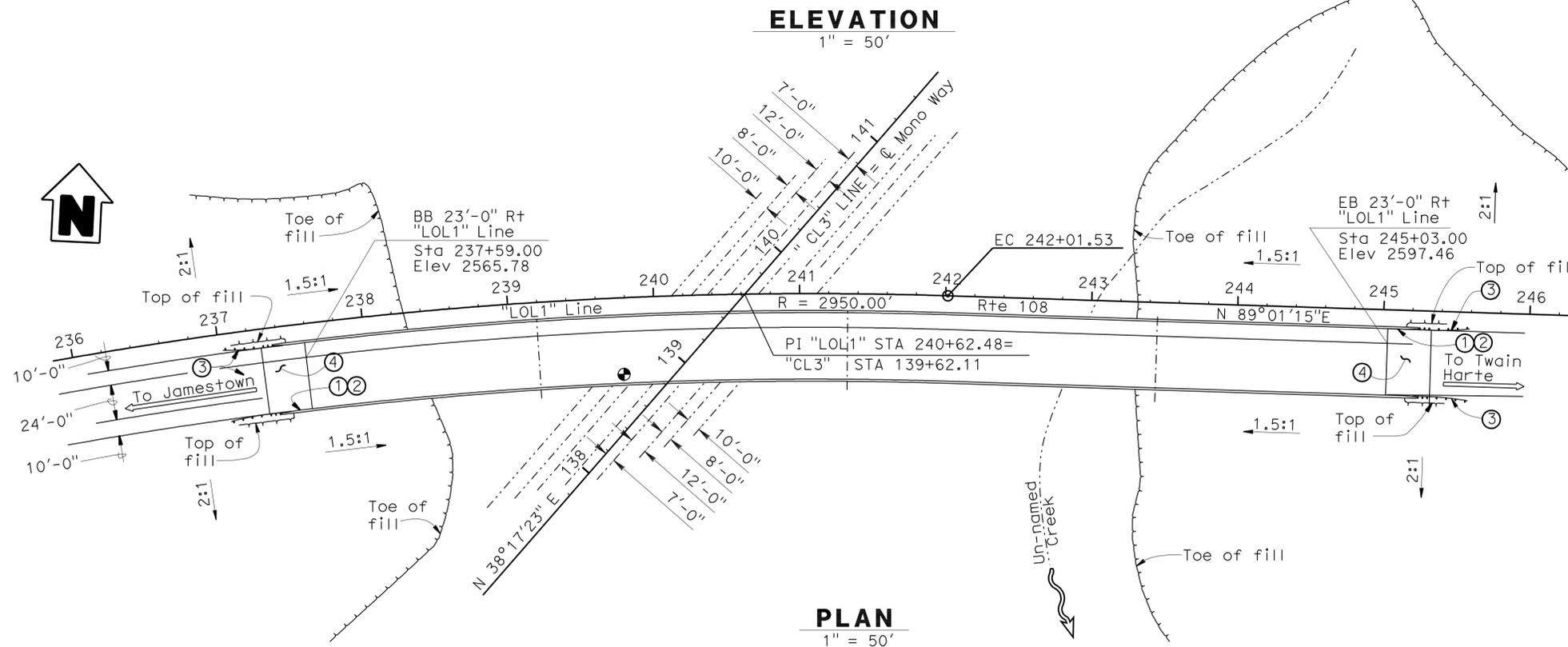
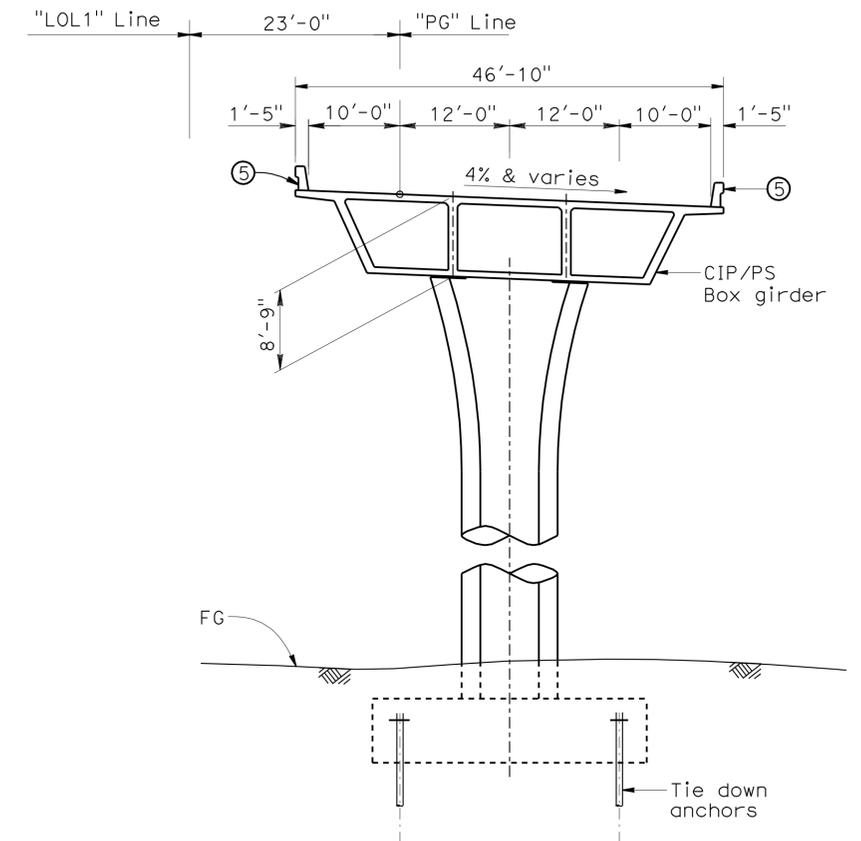
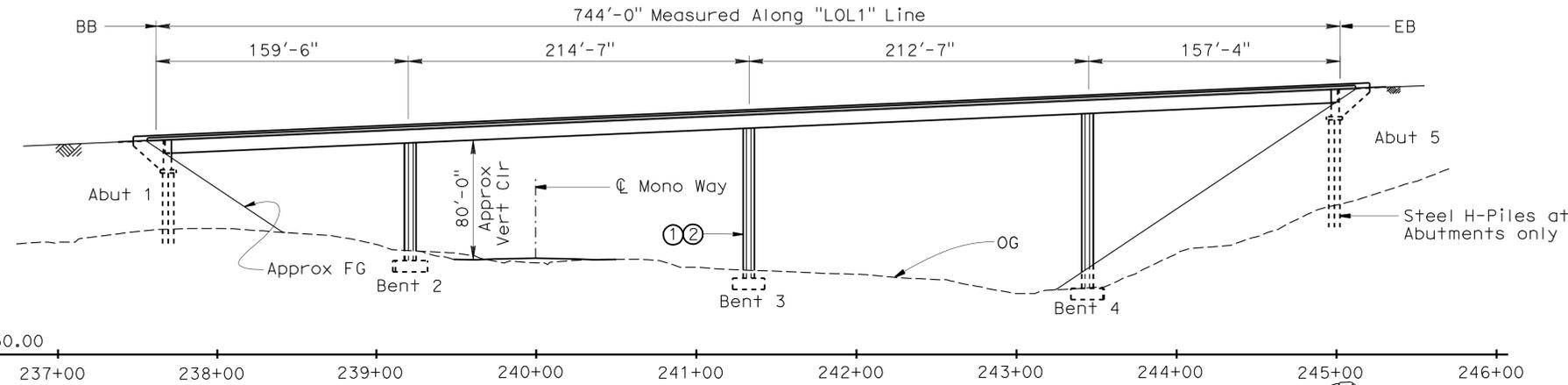
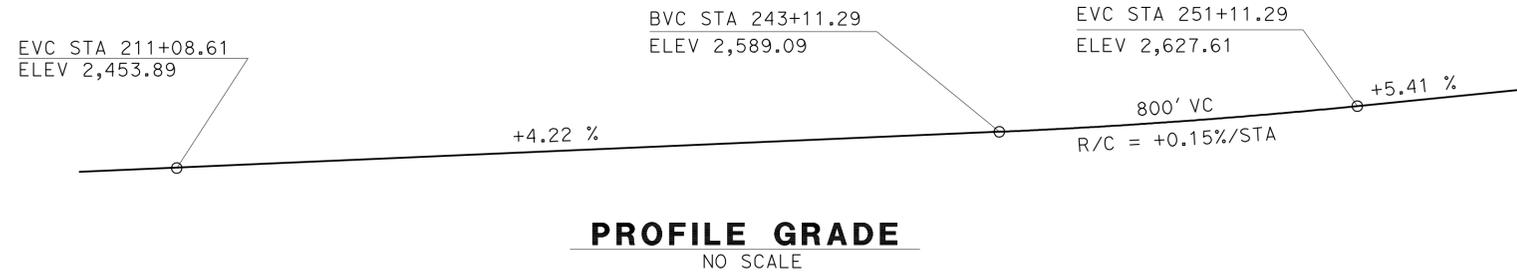
Combination descriptors (such as "Very intensely to intensely fractured") are used where equal distribution of both fracture density characteristics is present over a significant interval or exposure, or where characteristics are "in between" the descriptor definitions. Only two adjacent descriptors may be combined.

QUANTITIES

24" DRILLED HOLE (SOIL)	2,920	LF
24" DRILLED HOLE (ROCK SOCKET)	290	LF
STRUCTURE EXCAVATION (BRIDGE)	1,525	CY
STRUCTURE BACKFILL (BRIDGE)	815	CY
STEEL PILING (HP 14 X 73)	3,540	LF
PRESTRESSING CAST-IN-PLACE CONCRETE	LUMP	SUM
TIEDOWN ANCHOR	18	EA
STRUCTURAL CONCRETE, BRIDGE FOOTING	575	CY
STRUCTURAL CONCRETE, BRIDGE	4,050	CY
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	105	CY
PTFE SPHERICAL BEARING	6	EA
JOINT SEAL ASSEMBLY (MR 4 1/2")	45	LF
JOINT SEAL ASSEMBLY (MR 7")	45	LF
BAR REINFORCING STEEL (BRIDGE)	551,500	LB
BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	367,800	LB
HEADED BAR REINFORCEMENT	1,980	EA
CONCRETE BARRIER (TYPE 732)	1,570	LF

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	210	237

Red Simons
 REGISTERED CIVIL ENGINEER DATE 12-17-09
 5-10-10
 PLANS APPROVAL DATE
 Rodney Simmons
 No. 51174
 Exp. 09-30-11
 CIVIL
 STATE OF CALIFORNIA
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Notes:

- ① Paint "BRIDGE NO. 32-0071"
- ② Paint "MONO WAY UC"
- ③ Metal Beam Guard Rail, see "Road Plans"
- ④ Structure Approach Type N(30S)
- ⑤ Concrete Barrier Type 732
- ⊙ Minimum Vertical Clearance

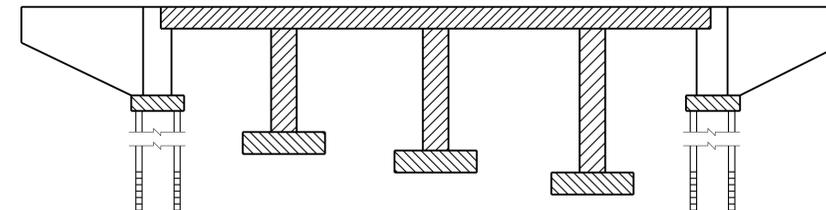
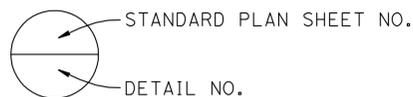
Ganapathy Murugesu DESIGN ENGINEER	DESIGN	BY Rod Simons	CHECKED Rene Coria	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO.	32-0071	MONO WAY UNDERCROSSING GENERAL PLAN	
	DETAILS	BY Susan Ng	CHECKED Rene Coria	LAYOUT	BY Rod Simons			CHECKED Rene Coria	POST MILE		R5.09
	QUANTITIES	BY Rene Coria	CHECKED Rod Simons	SPECIFICATIONS	BY Jennifer Holman			PLANS AND SPECS COMPARED X	CU 06 228 EA 340421		REVISION DATES
STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 10/25/05)											
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS											
FILE => 32-0071-a-gp.dgn											
STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.07-24-06)											

INDEX TO PLANS

SHEET NO.	SHEET TITLE
1	GENERAL PLAN
2	INDEX TO PLAN
3	DECK CONTOURS
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	BENT LAYOUT
11	BENT DETAILS NO. 1
12	BENT DETAILS NO. 2
13	BENT DETAILS NO. 3
14	BENT DETAILS NO. 4
15	TYPICAL SECTION
16	GIRDER LAYOUT NO. 1
17	GIRDER LAYOUT NO. 2
18	ADDITIONAL GIRDER REINFORCEMENT NO. 1
19	ADDITIONAL GIRDER REINFORCEMENT NO. 2
20	JOINT SEAL - ABUTMENT DETAILS (MOVEMENT RATING GREATER THAN 4")
21	PTFE/SPHERICAL EXPANSION BEARING DETAILS
22	STRUCTURE APPROACH TYPE N(30S)
23	STRUCTURE APPROACH DRAINAGE DETAILS
24	LOG OF TEST BORINGS 1 OF 5
25	LOG OF TEST BORINGS 2 OF 5
26	LOG OF TEST BORINGS 3 OF 5
27	LOG OF TEST BORINGS 4 OF 5
28	LOG OF TEST BORINGS 5 OF 5

STANDARD PLANS DATED MAY 2006

A10A	ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
A10B	ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
A10C	SYMBOLS (SHEET 1 OF 2)
A10D	SYMBOLS (SHEET 2 OF 2)
A62A	EXCAVATION AND BACKFILL - MISCELLANEOUS DETAILS
A62B	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL - BRIDGE SURCHARGE AND WALL
A62C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL - BRIDGE
B0-1	BRIDGE DETAILS
B0-3	BRIDGE DETAILS
B0-5	BRIDGE DETAILS
B0-13	BRIDGE DETAILS
B7-1	BOX GIRDER DETAILS
B8-5	CAST-IN-PLACE PRESTRESSED GIRDER DETAILS
B11-55	CONCRETE BARRIER TYPE 732

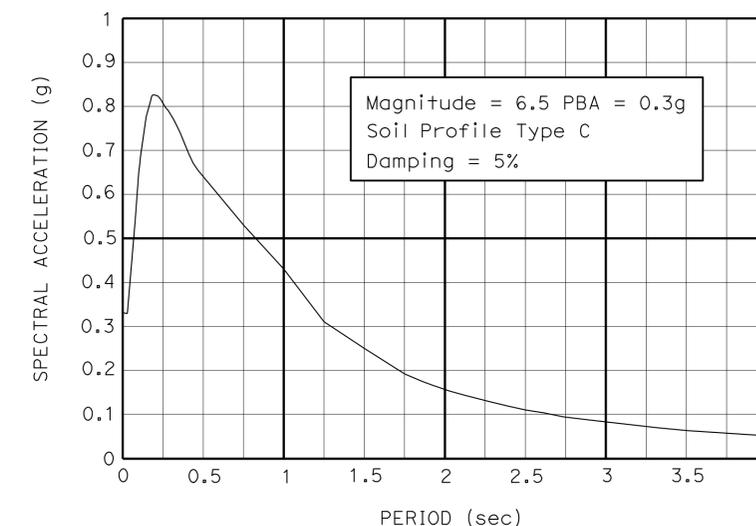


LEGEND

	Structural Concrete, Bridge
	Structural Concrete, Bridge Footing
	Structural Concrete, Bridge (4,000 psi at 28 days)
	Rock Socket

CONCRETE STRENGTH AND TYPE LIMITS

No Scale



ARS CURVE

No Scale

SUPPORT LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		DESIGN TIP ELEVATION (ft)	SPECIFIED TIP ELEVATION	NOMINAL DRIVING RESISTANCE REQUIRED (kip)	PILE LENGTH (d)
		COMP	TENSION				
ABUTMENT 1	HP 14 x 73	130	N/A	2496 (a)(b)	2496	N/A (c)	54.0
ABUTMENT 5	HP 14 x 73	130	N/A	2515 (a)(b)	2515	N/A (c)	68.0

Notes:

- (a) Design Tip Elevations are controlled by Compression.
- (b) The Design Tip Elevation includes a socket of 5 feet into competent granite/granodiorite/andesite bedrock.
- (c) Piles are to be drilled and socketed into bedrock.
- (d) Additional pile length provided to account for variability of rock surface elevation.

SUPPORT LOCATION	WORKING STRESS DESIGN (WSD)		LOAD AND RESISTANCE FACTOR DESIGN (LRFD)		
	PERMISSIBLE GROSS CONTACT STRESS (SETTLEMENT) (ksf)	ALLOWABLE GROSS BEARING CAPACITY (ksf)	SERVICE	STRENGTH	EXTREME
BENT 2	N/A	N/A	N/A (a)	77.6	N/A (b)
BENT 3	N/A	N/A	N/A (a)	47.2	N/A (b)
BENT 4	N/A	N/A	N/A (a)	28.7	N/A (b)

Notes:

- (a) Settlement calculated not to exceed 0.5 inch.
- (b) Extreme event conditions to be mitigated by the use of footing tiedowns.

GENERAL NOTES LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:

AASHTO LRFD Bridge Design Specifications, fourth edition with the California Amendments, preface date; December 2008 except that Concrete Barriers, and Wingwalls are designed using Bridge Design Specifications ('96 AASHTO w/Revisions by Caltrans)

SEISMIC DESIGN:

Caltrans Seismic Design Criteria (SDC), Version 1.4 dated June 2006

DEAD LOAD:

Includes 35 psf for future wearing surface.

LIVE LOADING:

HL93 and permit design load.

SEISMIC LOADING:

Site Specific Acceleration Response Spectra, see ARS Curve.

REINFORCED CONCRETE:

$f_y = 60$ ksi
 $f'_c = 3.6$ ksi
 $n = 8$

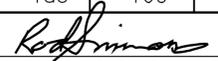
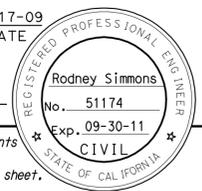
PRESTRESSED CONCRETE:

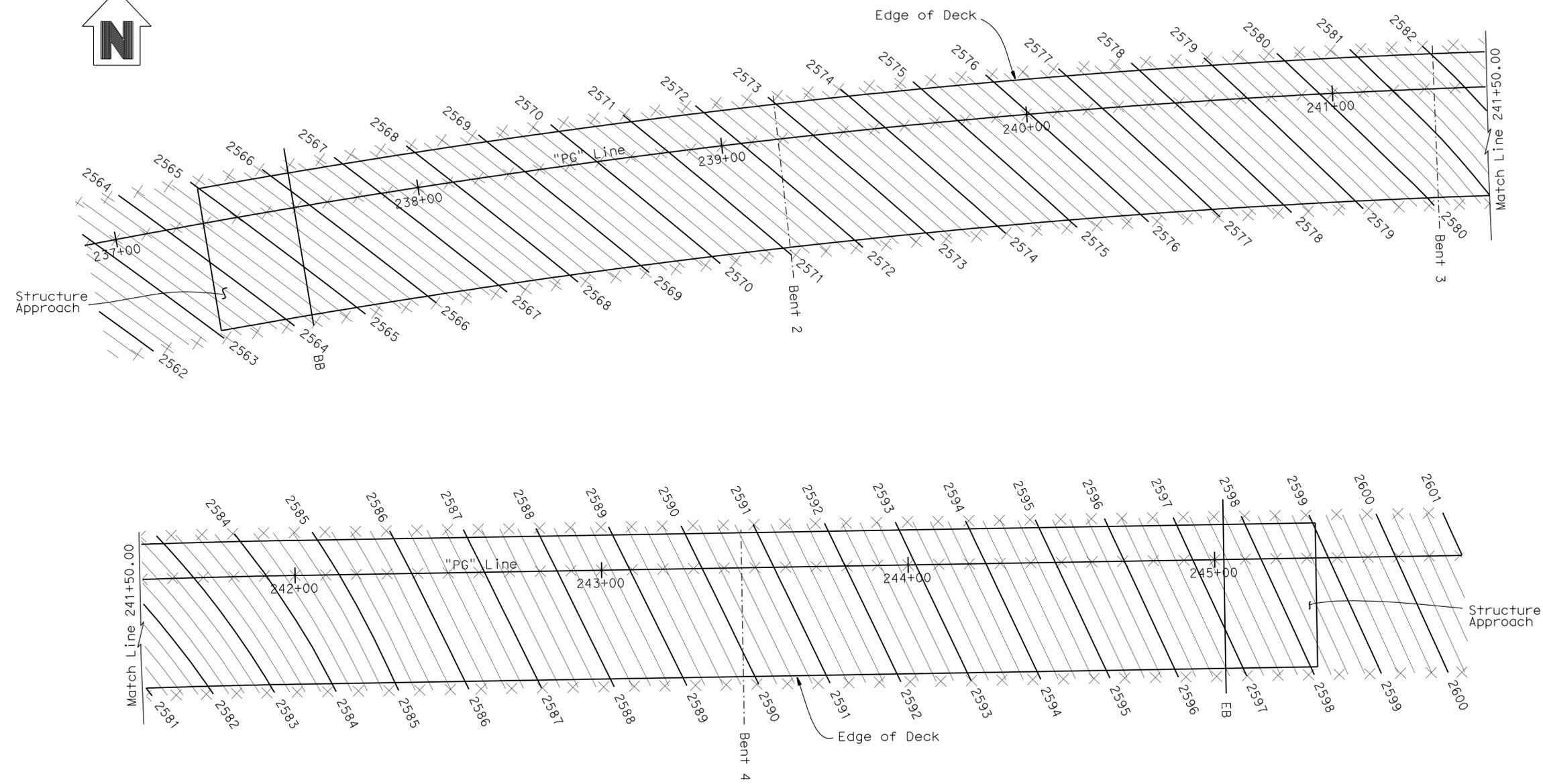
See "Prestressing Notes" on "Girder Layout NO. 1" sheet

NOTE:

THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN	BY	R. Coria	CHECKED	B. Addlespurger	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO.	32-0071	MONO WAY UNDERCROSSING INDEX TO PLANS		
	DETAILS	BY	F. Mendoza	CHECKED			R. Coria	POST MILE		R5.09	
	QUANTITIES	BY	Rene Coria	CHECKED			Rod Simmons	REVISION DATES		7-30-09 9-08-09 9-09-09 10-19-09 11-23-09 12-15-09	
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)					ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES	SHEET	2	OF	28

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	212	237
 REGISTERED CIVIL ENGINEER DATE 12-17-09					
PLANS APPROVAL DATE 5-10-10			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.		



- Note:
1. X = 10' intervals along station line
 2. Contours do not include camber
 3. Contour interval = 0.25'

PLAN
1" = 20'

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	DESIGN	BY R. Coria	CHECKED B. Addlespurger	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO.	MONO WAY UNDERCROSSING				
	DETAILS	BY G. Leung	CHECKED R. Coria			32-0071	DECK CONTOURS				
	QUANTITIES	BY R. Coria	CHECKED R. Simmons			POST MILE	REVISION DATES				
						R5.09	7-30-09	9-01-09	10-14-09	12-01-09	SHEET 3 OF 28
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS					CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES				FILE => 32-0071-d-dc.dgn	

USERNAME => r11engard DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 06:28

CURVE DATA

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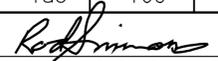
Notes:

- All Dia. of tree on construction class
- Elec Line, Tele Line, Sewer Line Per Dist. Map

LEGEND:

-  Indicates Bottom of Footing Elevation
-  Steel H Piles (Not all shown)
-  Tie down Anchors

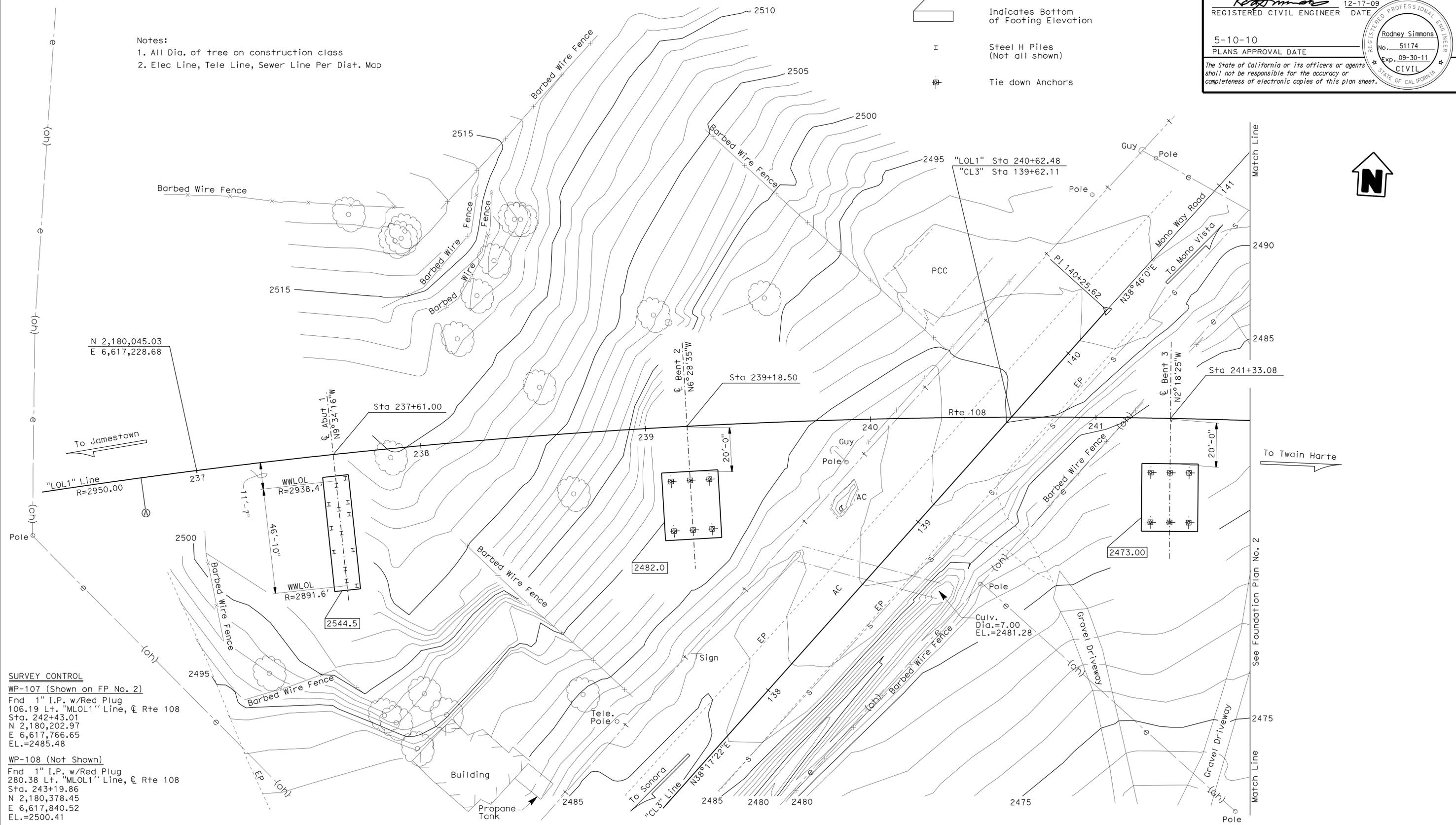
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10	Tuo	108	R4.0/R6.0	213	237


 12-17-09
 REGISTERED CIVIL ENGINEER DATE

5-10-10
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 Rodney Simmons
 No. 51174
 Exp. 09-30-11
 CIVIL
 STATE OF CALIFORNIA

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SURVEY CONTROL
 WP-107 (Shown on FP No. 2)
 Fnd 1" I.P. w/Red Plug
 106.19 Lt. "MLOL1" Line, C Rte 108
 Sta. 242+43.01
 N 2,180,202.97
 E 6,617,766.65
 EL.=2485.48

WP-108 (Not Shown)
 Fnd 1" I.P. w/Red Plug
 280.38 Lt. "MLOL1" Line, C Rte 108
 Sta. 243+19.86
 N 2,180,378.45
 E 6,617,840.52
 EL.=2500.41

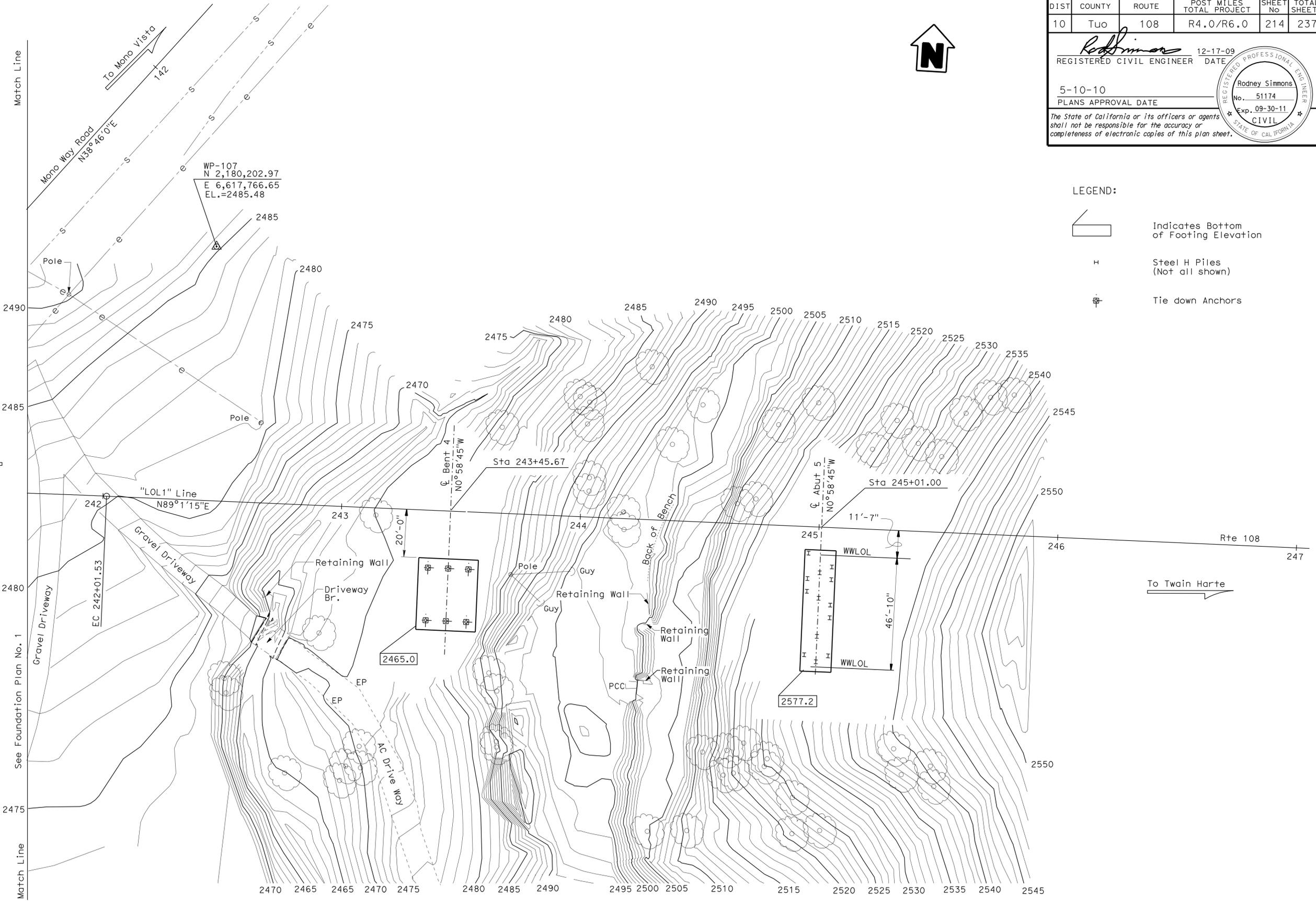
PRELIMINARY INVESTIGATION SECTION				DESIGN BY R. Coria	CHECKED B. Adlespurger	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO. 32-0071	MONO WAY UNDERCROSSING FOUNDATION PLAN NO. 1
SCALE VERT. DATUM NGVD 29	PHOTOGRAMMETRY AS OF: X	DETAILS BY G. Leung	CHECKED R. Coria	POST MILE R5.09					
1"=20' HORZ. DATUM NAD83-92(1991.35)	SURVEYED BY District	CHECKED BY Tom Gillett 3/2009	CHECKED R. Simmons	REVISION DATES					
ALIGNMENT TIES Dist. Traverse Sheet	DRAFTED BY Sharon Zheng 3/2009	CHECKED BY T.Zolnikova 3/2009	QUANTITIES BY R. Coria	7-30-09 9-08-09 10-20-09 11-08-09 11-23-09	SHEET 4 OF 28				

STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 10/25/05) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS CU 06 228 EA 340421 DISREGARD PRINTS BEARING EARLIER REVISION DATES

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	214	237

Rodney Simmons
 REGISTERED CIVIL ENGINEER DATE 12-17-09
 5-10-10
 PLANS APPROVAL DATE
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REGISTERED PROFESSIONAL ENGINEER
Rodney Simmons
No. 51174
Exp. 09-30-11
CIVIL
STATE OF CALIFORNIA



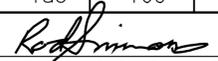
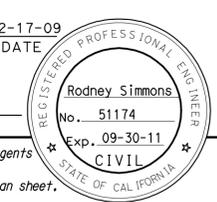
- Notes:
1. For "Curve Data Table" see "Foundation Plan No. 1"
 2. Elec Line, Tele Line, Sewer Line Per Dist. Map
 3. Dia. of tree on construction class

PRELIMINARY INVESTIGATION SECTION				DESIGN BY R. Coria	CHECKED B. Adlespurger	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO. 32-0071	MONO WAY UNDERCROSSING FOUNDATION PLAN NO. 2
SCALE 1"=20'	VERT. DATUM NGVD 29	PHOTOGRAMMETRY AS OF: X	DETAILS BY G. Leung	CHECKED R. Coria	POST MILE R5.09				
ALIGNMENT TIES Dist. Traverse Sheet	DRAFTED BY Sharon Zheng 3/2009	CHECKED BY Tom Gillett 3/2009	QUANTITIES BY R. Coria	CHECKED R. Simmons	REVISION DATES				

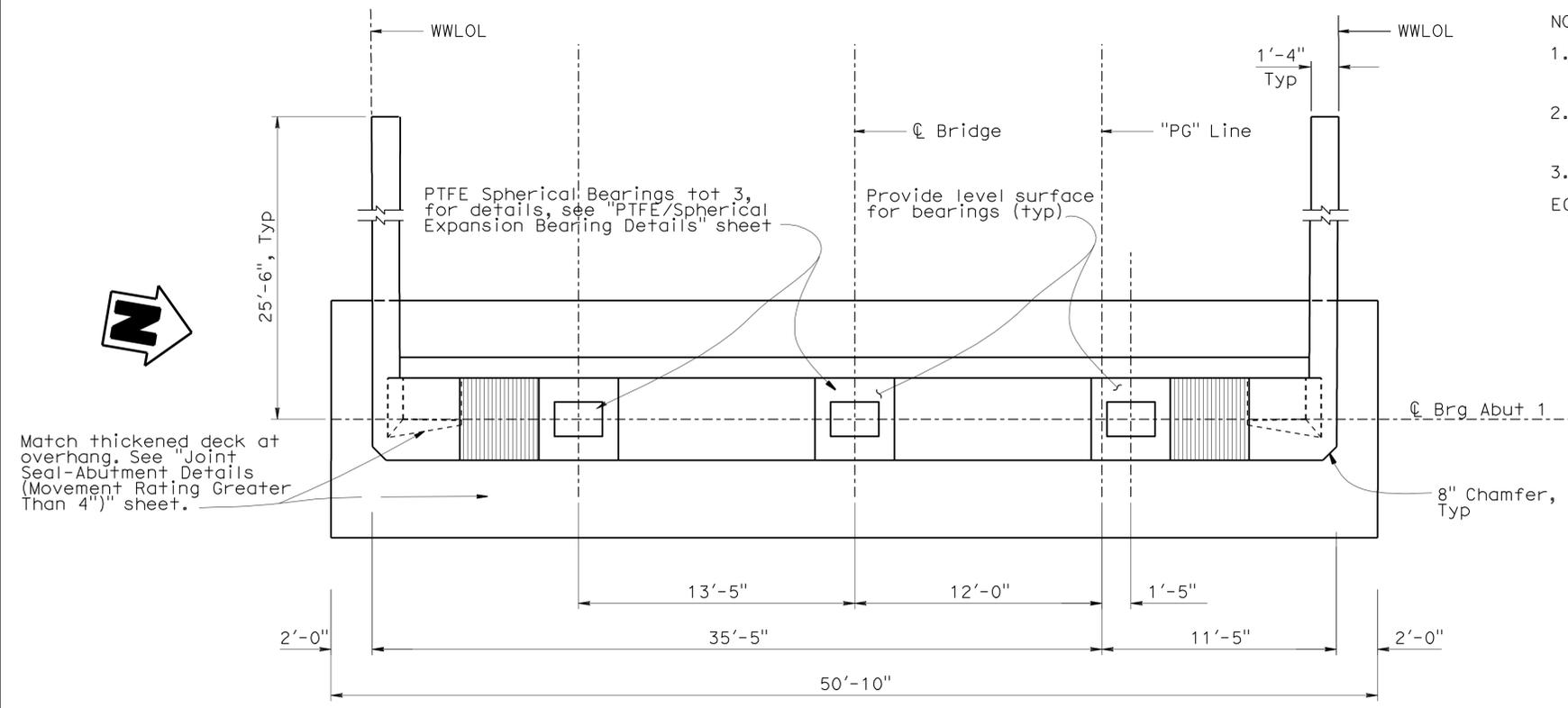
STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 10/25/05) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3 CU 06 228 EA 340421 DISREGARD PRINTS BEARING EARLIER REVISION DATES

7-30-09	9-08-09	10-20-09	11-23-09						
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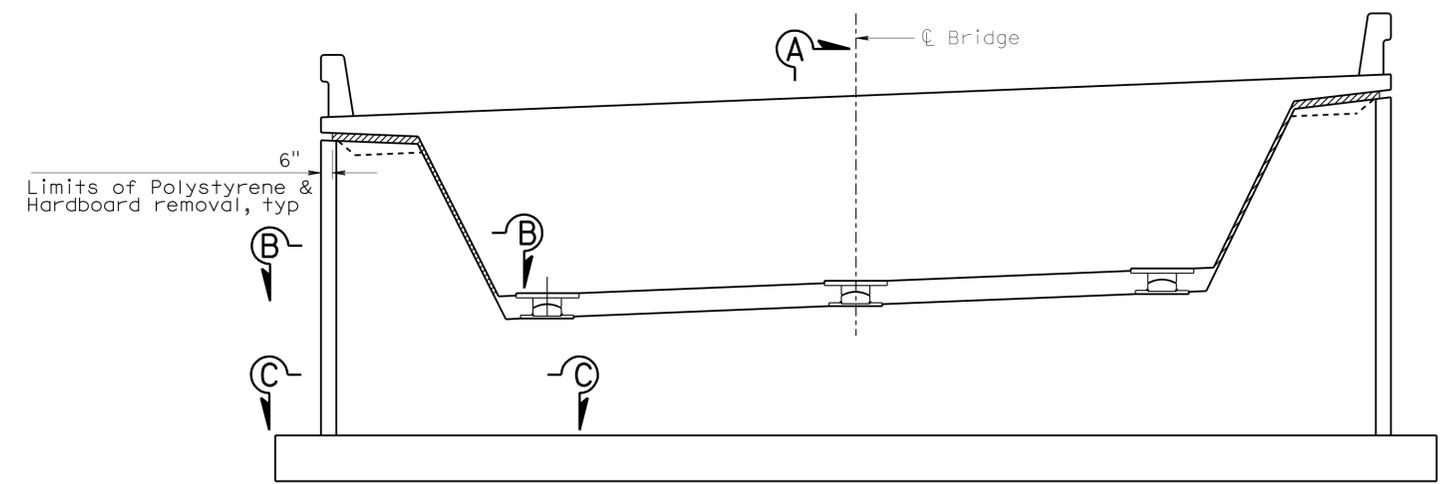
FILE => 32-0071-e-fp2.dgn SHEET 5 OF 28

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	215	237
 REGISTERED CIVIL ENGINEER DATE 12-17-09					
5-10-10 PLANS APPROVAL DATE					
<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>					

- NOTES:
- For Sections B-B and C-C see "Abutment Details No. 1" sheet.
 - For dimension "a", see "Joint Seal - Abutment Details (Movement Rating Greater Than 4")" sheet.
 - Abut 1 shown, Abut 5 similar
- ECR = Epoxy Coated Reinforcement

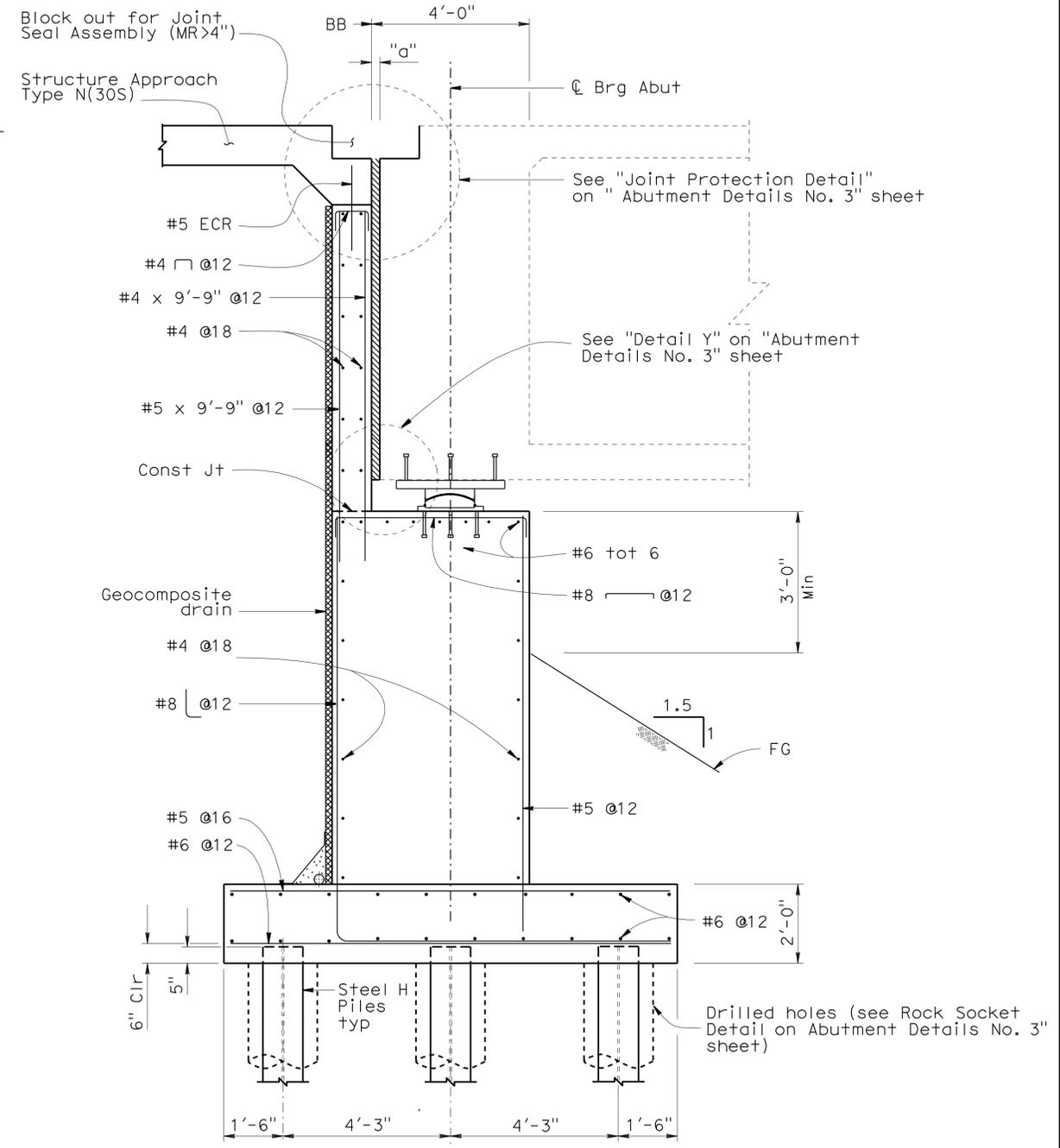


PLAN
1/4" = 1'-0"



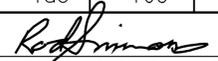
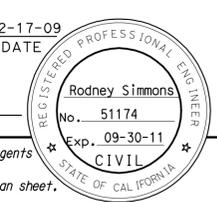
ELEVATION Steel H Piles not shown
1/4" = 1'-0"

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.



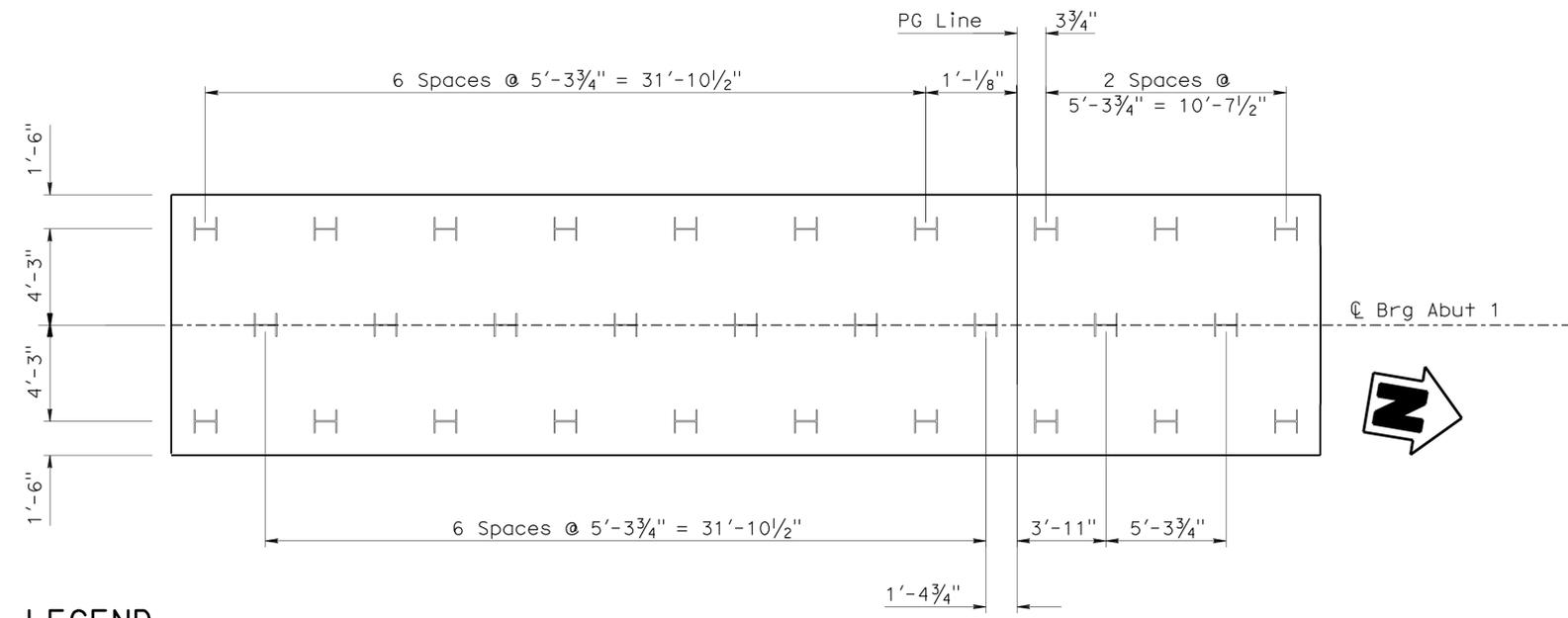
SECTION A-A
1/2" = 1'-0"

DESIGN BY R. Coria CHECKED B. Addlespurger DETAILS BY F. Mendoza CHECKED R. Coria QUANTITIES BY R. Coria CHECKED R. Simmons	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO. 32-0071	MONO WAY UNDERCROSSING ABUTMENT LAYOUT	SHEET 6 OF 28
			POST MILE R5.09		
			REVISION DATES: 7-30-09 9-08-09 10-21-09 11-24-09 12-01-09		
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3	CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES	FILE => 32-0071-f-abt_1of1.dgn	USERNAME => hrlengard DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 06:28	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
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 REGISTERED CIVIL ENGINEER DATE 12-17-09					
5-10-10 PLANS APPROVAL DATE					
<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>					

NOTES:

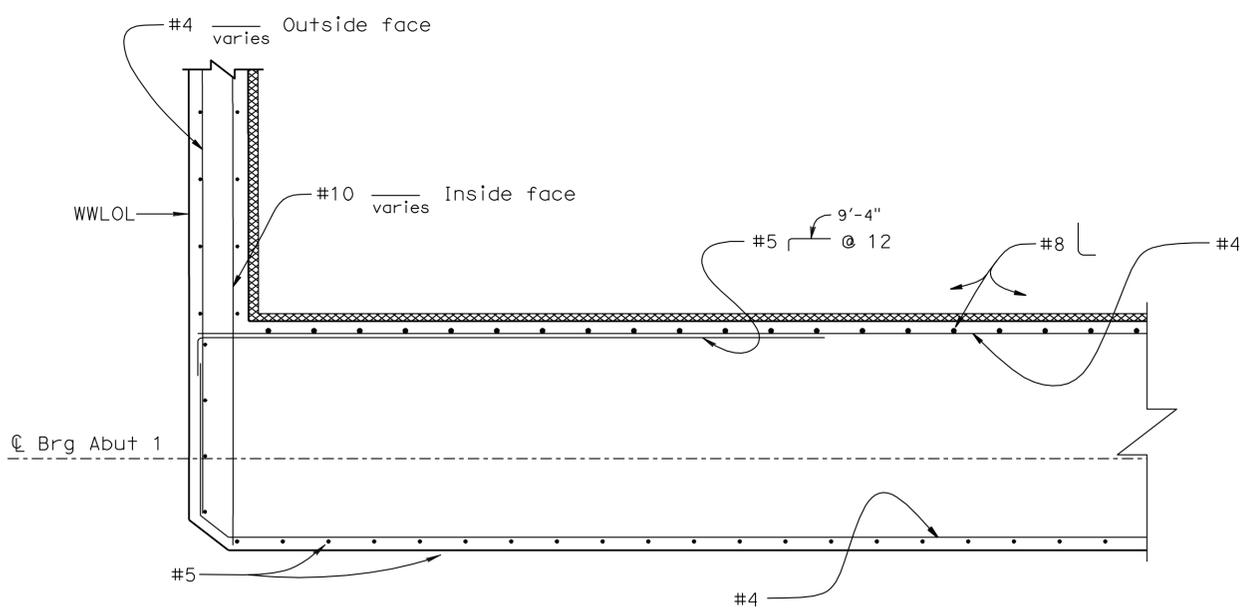
1. Abutment 1 shown, Abut 5 similar.
2. Orient pile axes as shown.
3. See "Rock Socket" detail on "Abutment Details No. 3" sheet.
(ECR) = Epoxy Coated Rebar



LEGEND

H Denotes vertical steel-H pile

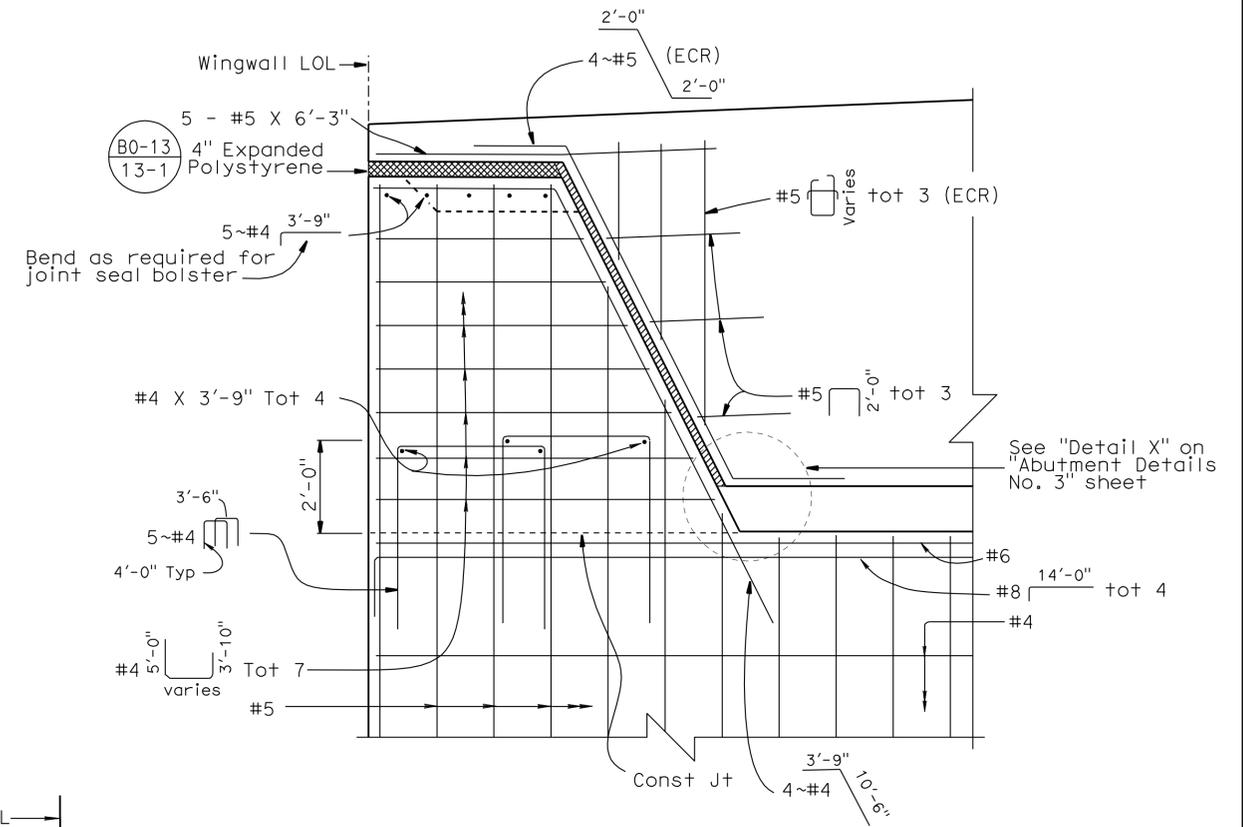
ABUT PILE LAYOUT
1/4" = 1'-0"



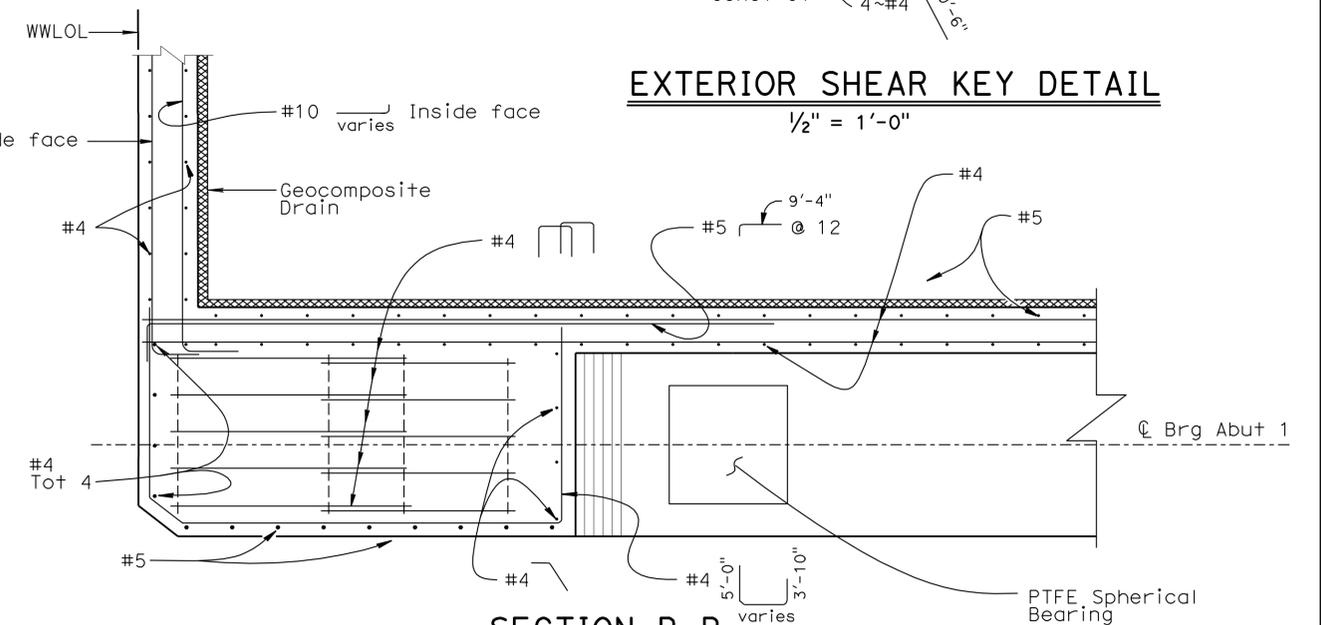
Note: For details and reinf not shown, see Section B-B.

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

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.



EXTERIOR SHEAR KEY DETAIL
1/2" = 1'-0"



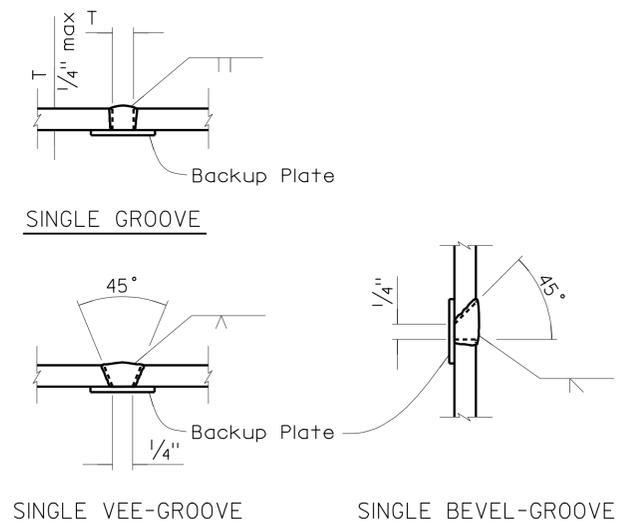
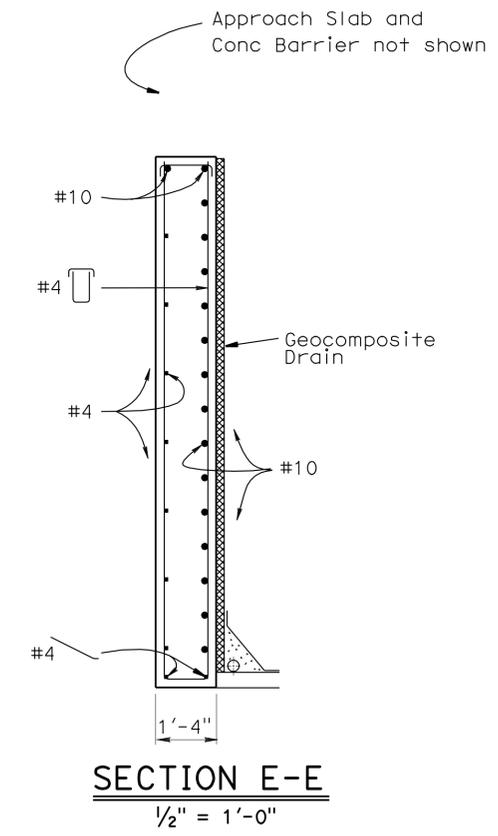
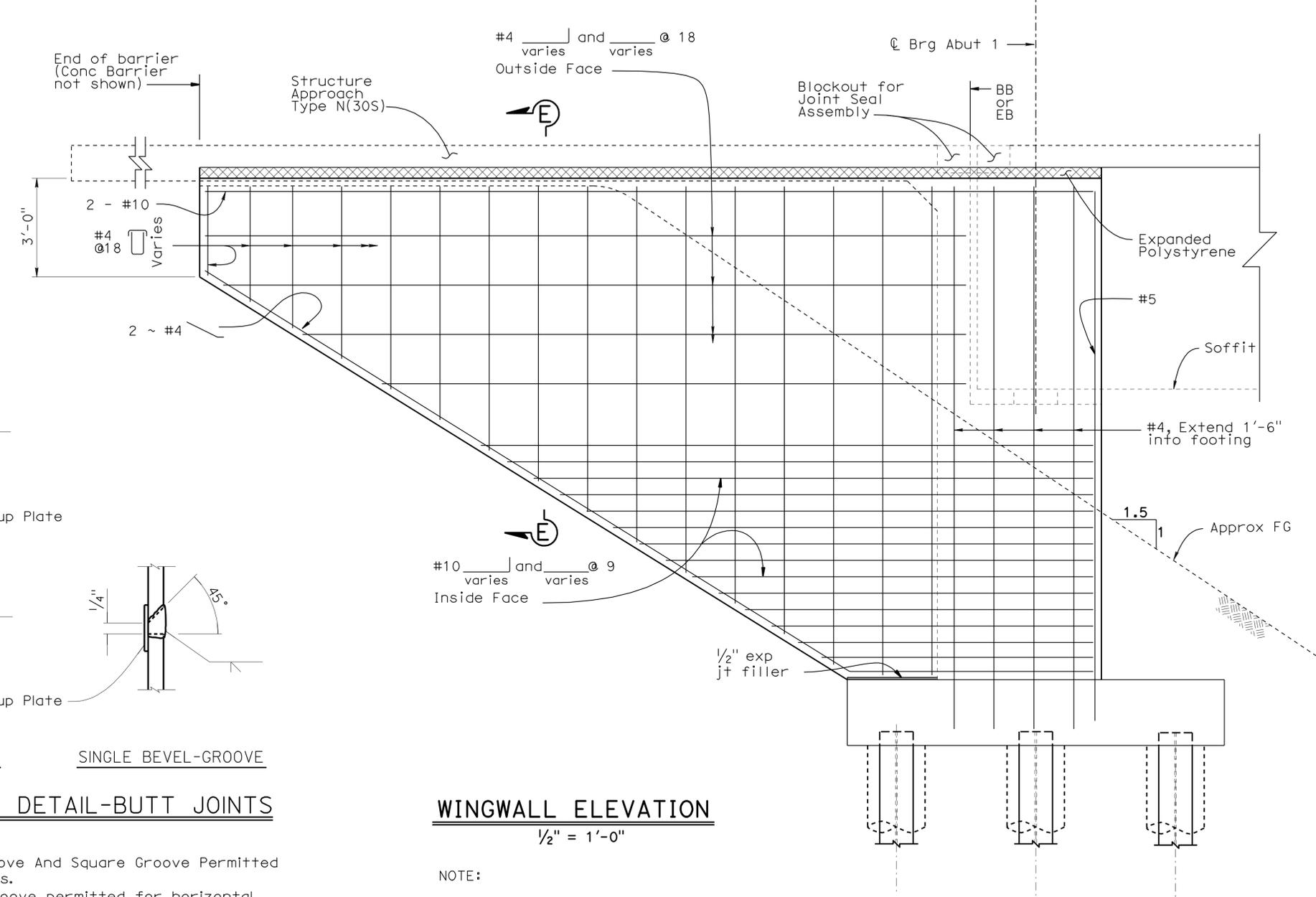
SECTION B-B
1/2" = 1'-0"

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	DESIGN	BY R. Coria	CHECKED B. Addlespurger	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO.	32-0071	MONO WAY UNDERCROSSING ABUTMENT DETAILS NO. 1
	DETAILS	BY F. Mendoza	CHECKED R. Coria			POST MILE	R5.09	
	QUANTITIES	BY R. Coria	CHECKED R. Simmons			REVISION DATES		
			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES	7-30-09 9-08-09 10-26-09 11-30-09 12-15-09	SHEET 7 OF 28

USERNAME => hrlengard DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 06:29

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	217	237

REGISTERED CIVIL ENGINEER DATE 12-17-09
 PLANS APPROVAL DATE 5-10-10
 No. 51174
 Exp. 09-30-11
 CIVIL
 STATE OF CALIFORNIA



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

WINGWALL ELEVATION

1/2" = 1'-0"
 NOTE:
 Abutment 1 right shown, others similar

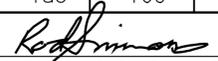
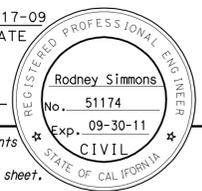
NOTE:
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

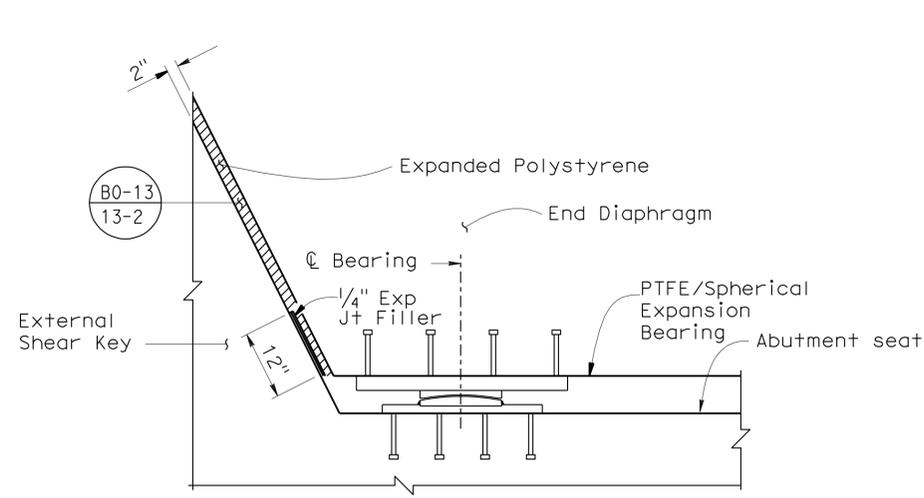
DESIGN	BY R. Coria	CHECKED B. Addlespurger
DETAILS	BY F. Mendoza	CHECKED R. Coria
QUANTITIES	BY R. Coria	CHECKED R. Simmons

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF ENGINEERING SERVICES
 STRUCTURE DESIGN
 DESIGN BRANCH 17

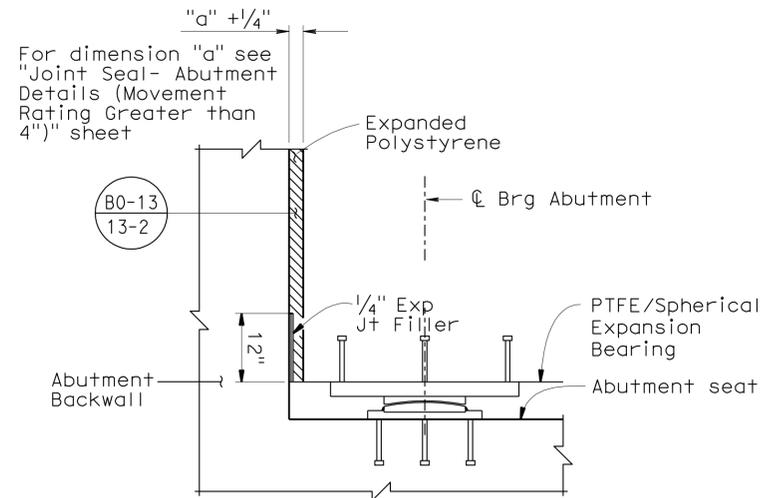
BRIDGE NO.	32-0071	MONO WAY UNDERCROSSING ABUTMENT DETAILS NO. 2
POST MILE	R5.09	
REVISION DATES	7-30-09 9-08-09 10-21-09 11-24-09 12-15-09	

USERNAME => hrlengard DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 06:29

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	218	237
 REGISTERED CIVIL ENGINEER DATE 12-17-09					
5-10-10 PLANS APPROVAL DATE					
<i>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.</i>					



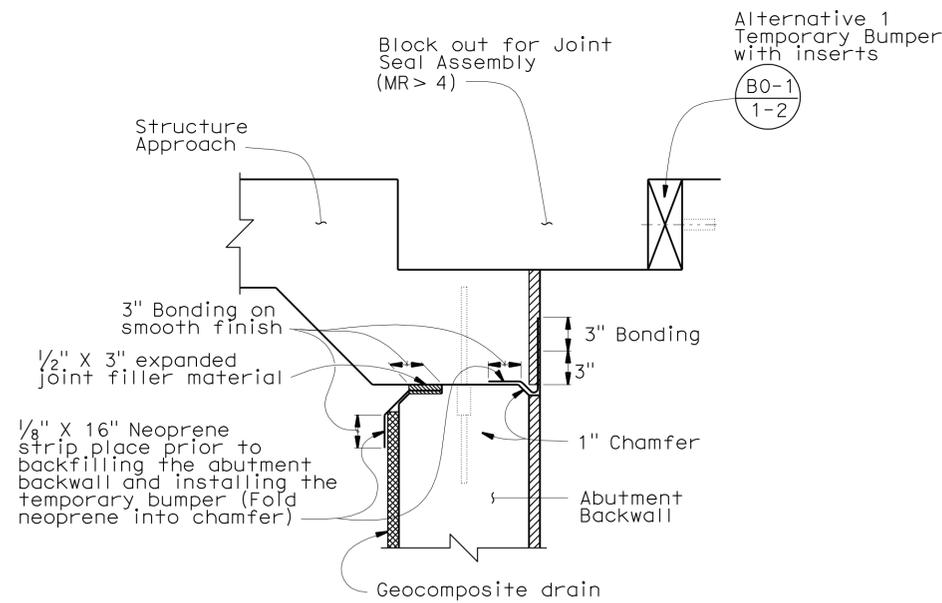
DETAIL X
3/4"-1'-0"



DETAIL Y
3/4"-1'-0"

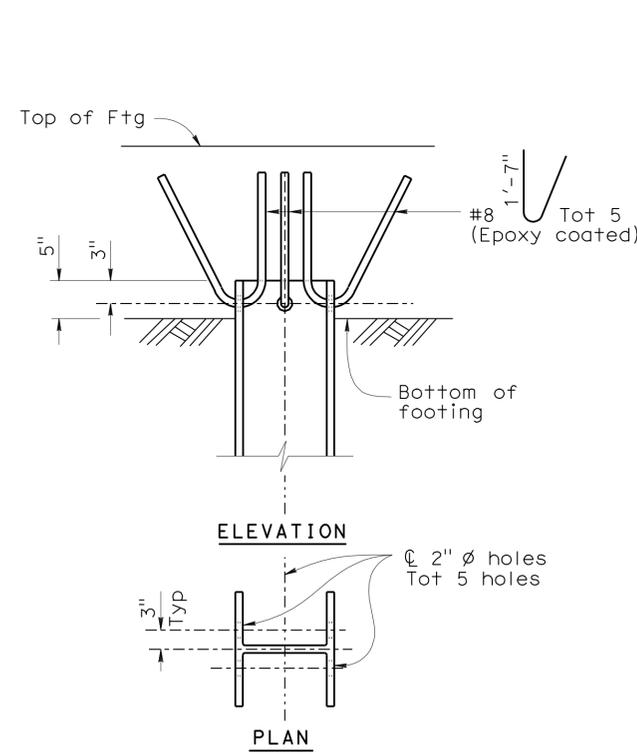
NOTES:

- For location of "DETAIL X" see "Abutment Details No. 1" sheet.
- For location of "DETAIL Y" see "Abutment Layout" sheet and "END DIAPHRAGM SECTION" on "Girder Layout No. 2" sheet.

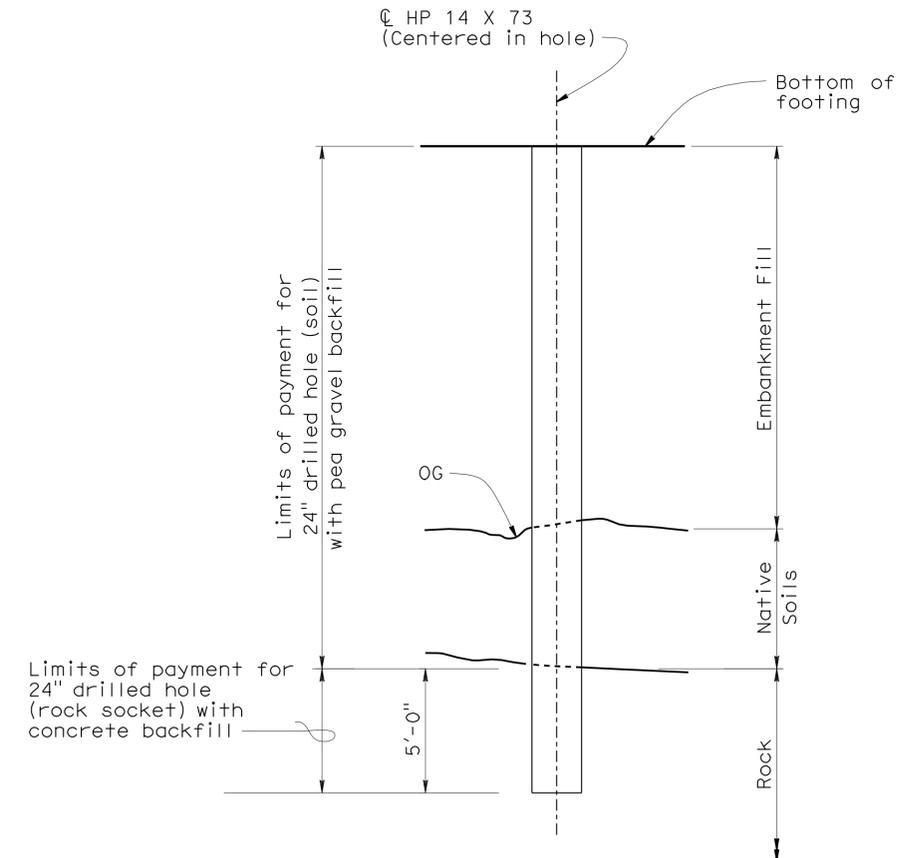


JOINT PROTECTION DETAIL
3/4"-1'-0"

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.



PILE ANCHOR DETAIL
NO SCALE



LIMITS OF PAYMENT FOR DRILLED HOLE (SOIL) & (ROCK SOCKET)
NO SCALE

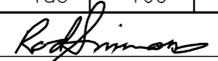
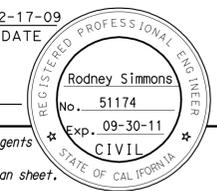
DESIGN	BY R. Coria	CHECKED B. Addlespurger
DETAILS	BY F. Mendoza	CHECKED R. Coria
QUANTITIES	BY R. Coria	CHECKED R. Simons

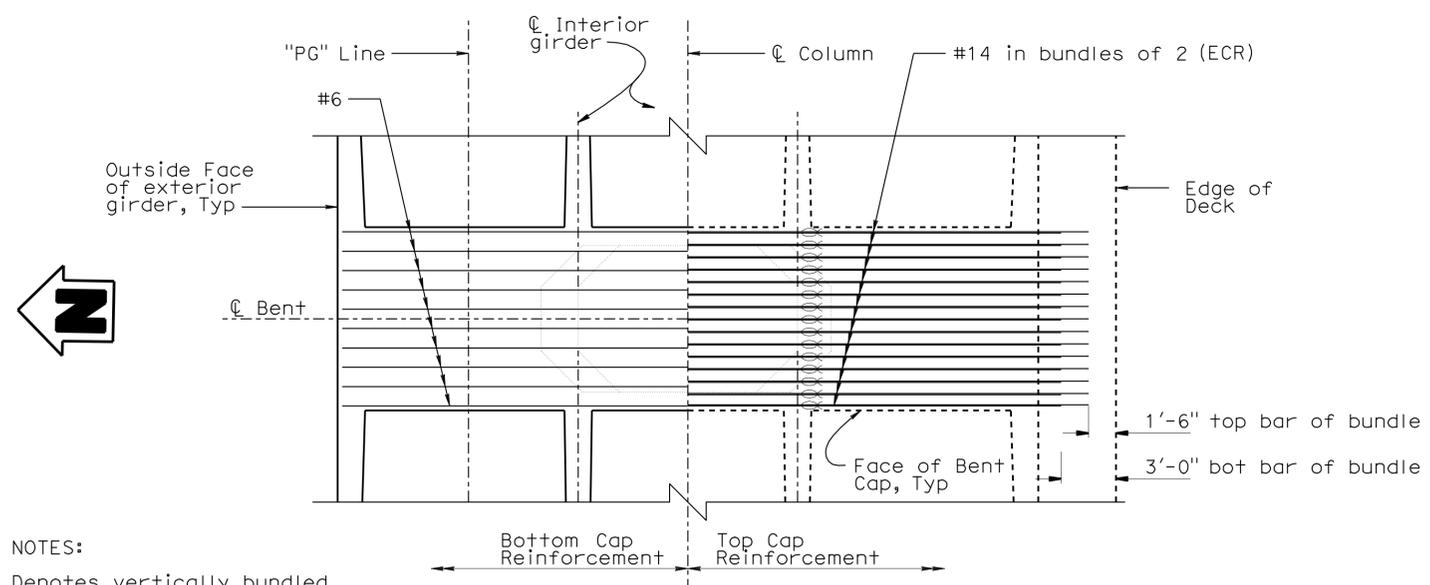
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO.	32-0071
POST MILE	R5.09

MONO WAY UNDERCROSSING
ABUTMENT DETAILS NO. 3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	219	237
 REGISTERED CIVIL ENGINEER DATE 12-17-09					
5-10-10 PLANS APPROVAL DATE					
<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>					



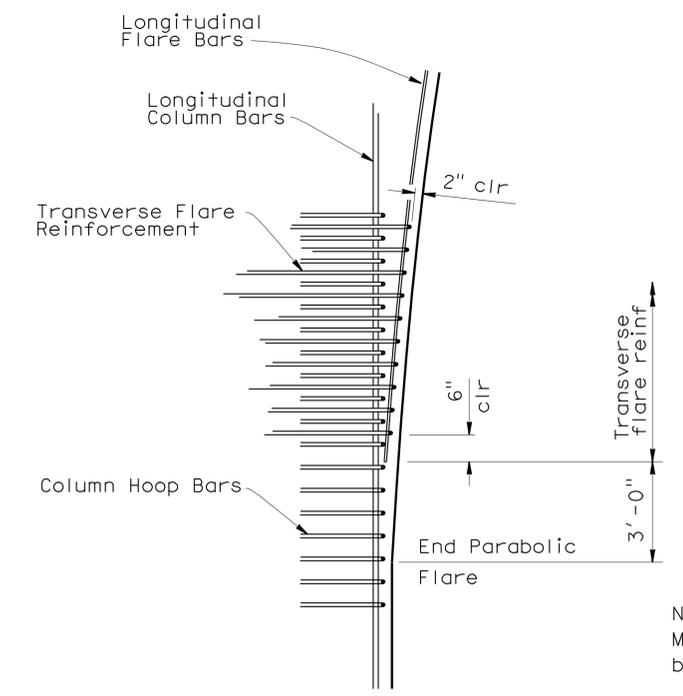
PLAN
1" = 5'

NOTES:
 Denotes vertically bundled reinforcement.
 Bent 2 shown, Bents 3 and 4 similar

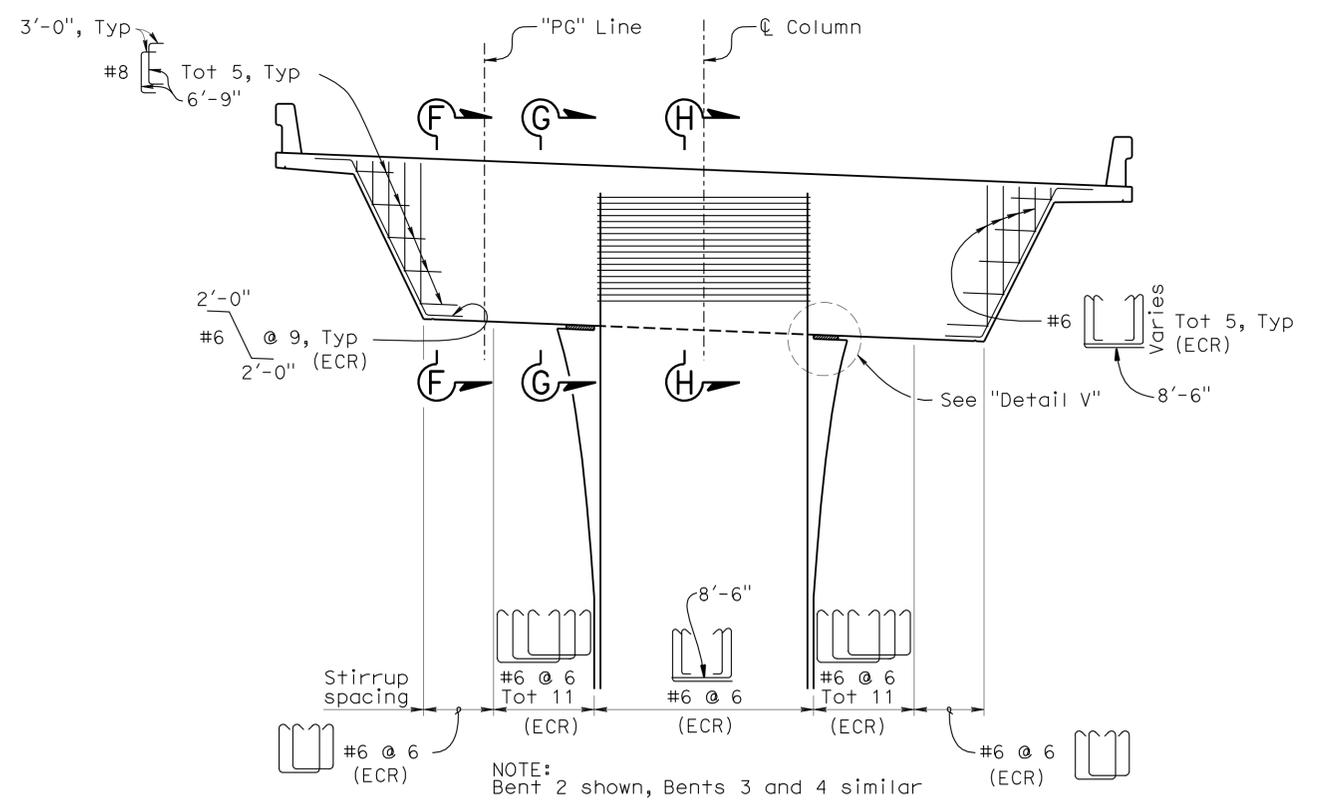
NOTES:
 1. For Section F-F, G-G and H-H see "Bent Details NO. 2" sheet.
 (ECR) = Epoxy Coated Rebar

COLUMN FLARE HOOP AND TIE DETAILS

No Scale



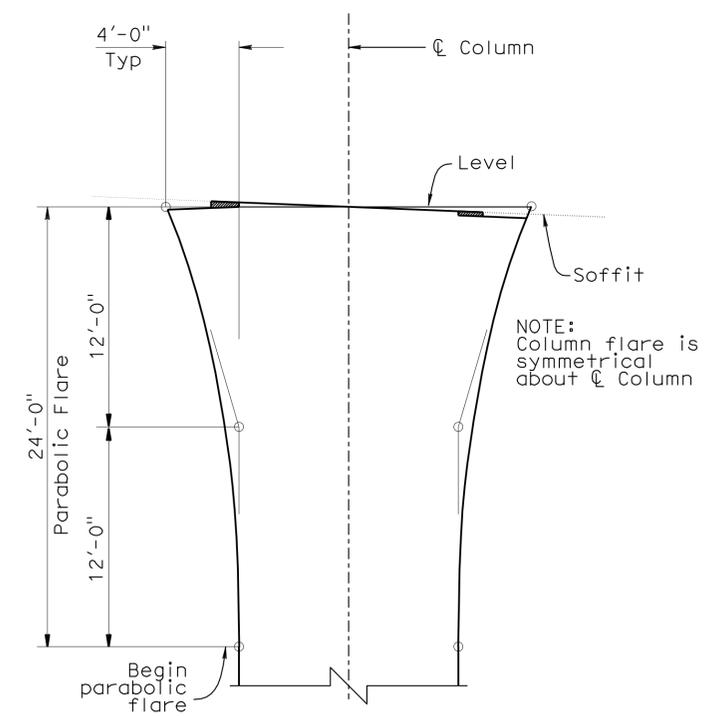
Note:
 Minimum spacing between Longitudinal Flare bars is 6". Cut bars as necessary.



ELEVATION
1" = 5'

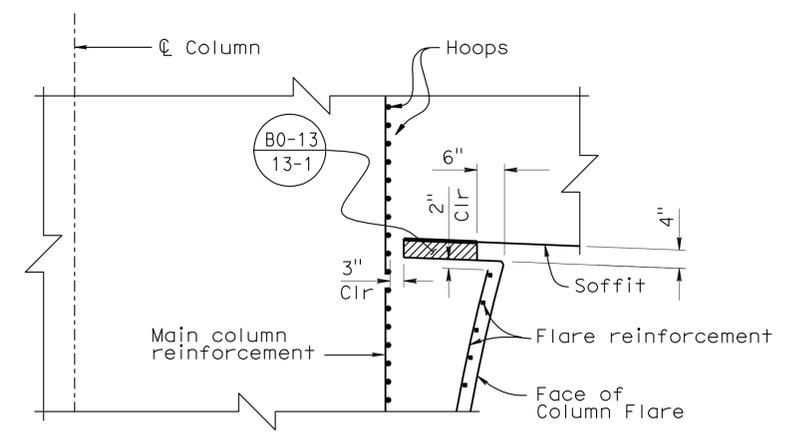
NOTE:
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

NOTE:
 Bent 2 shown, Bents 3 and 4 similar



FLARE GEOMETRY
1" = 5'

NOTE:
 Column flare is symmetrical about Column



DETAIL V
No Scale

DESIGN	BY R. Coria	CHECKED B. Addlespurger
DETAILS	BY F. Mendoza	CHECKED R. Coria
QUANTITIES	BY R. Coria	CHECKED R. Simmons

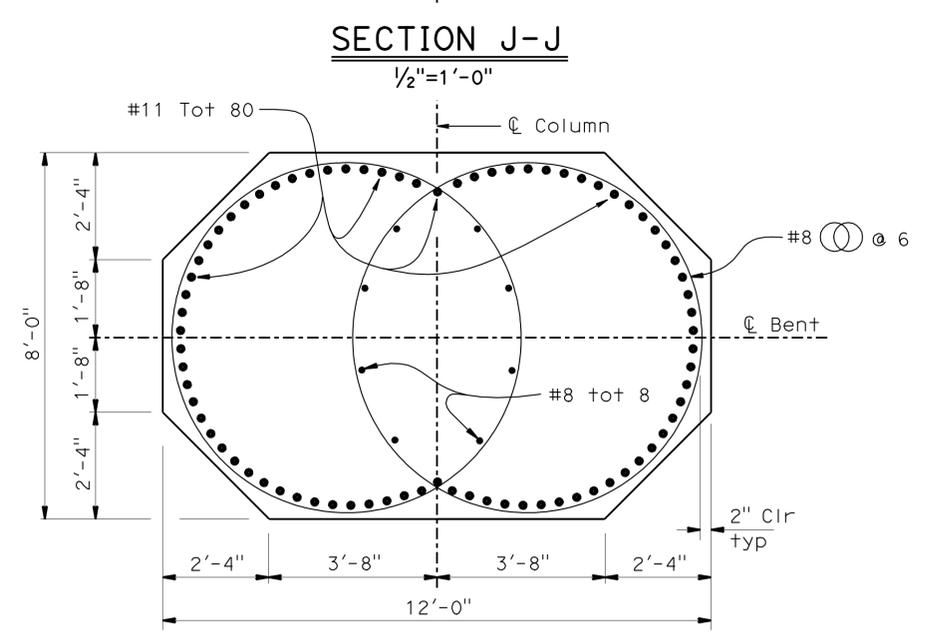
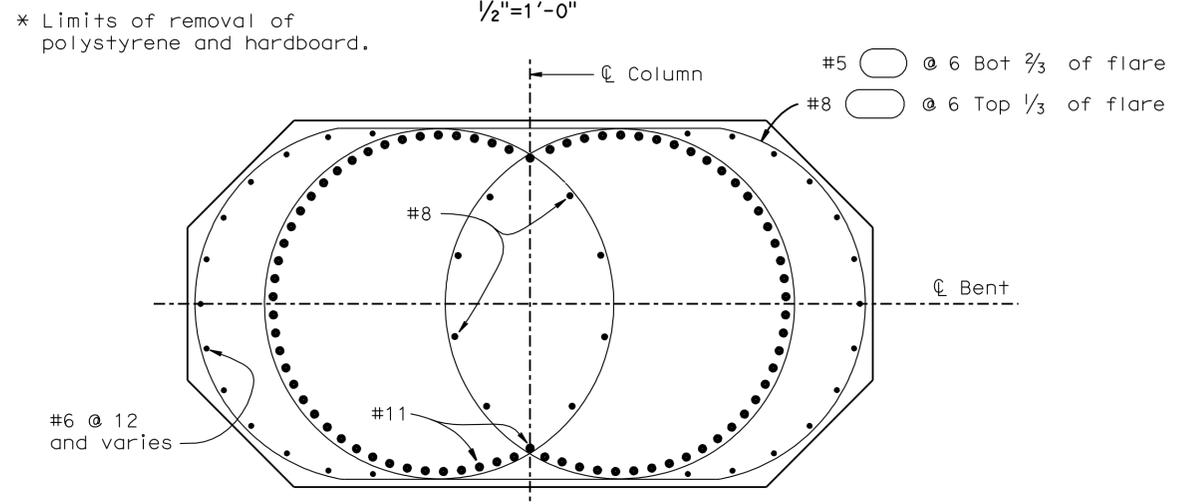
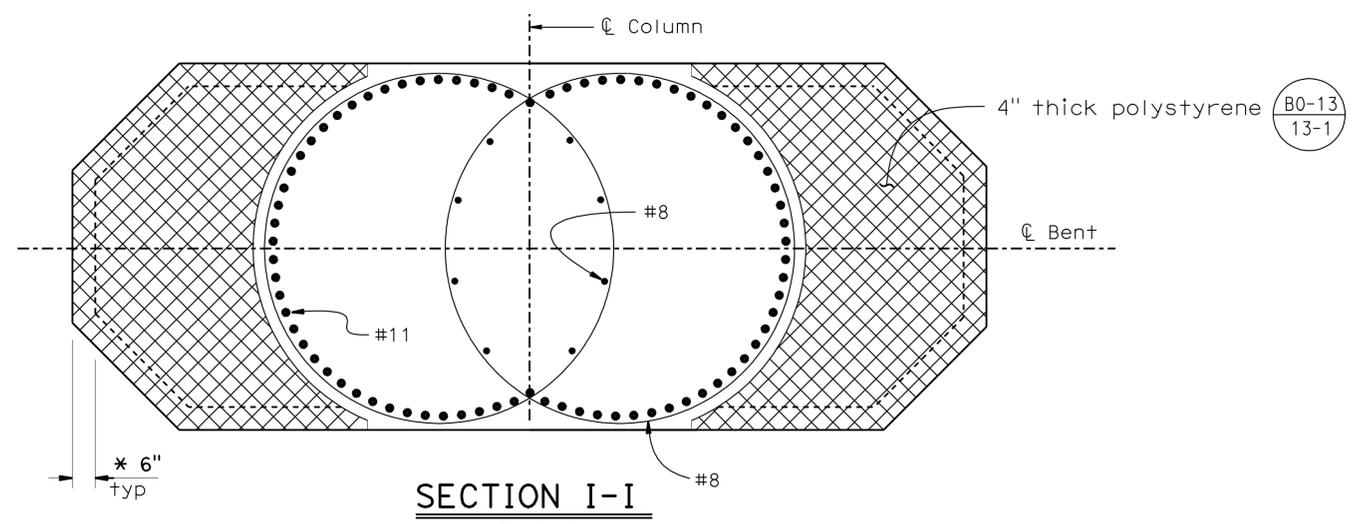
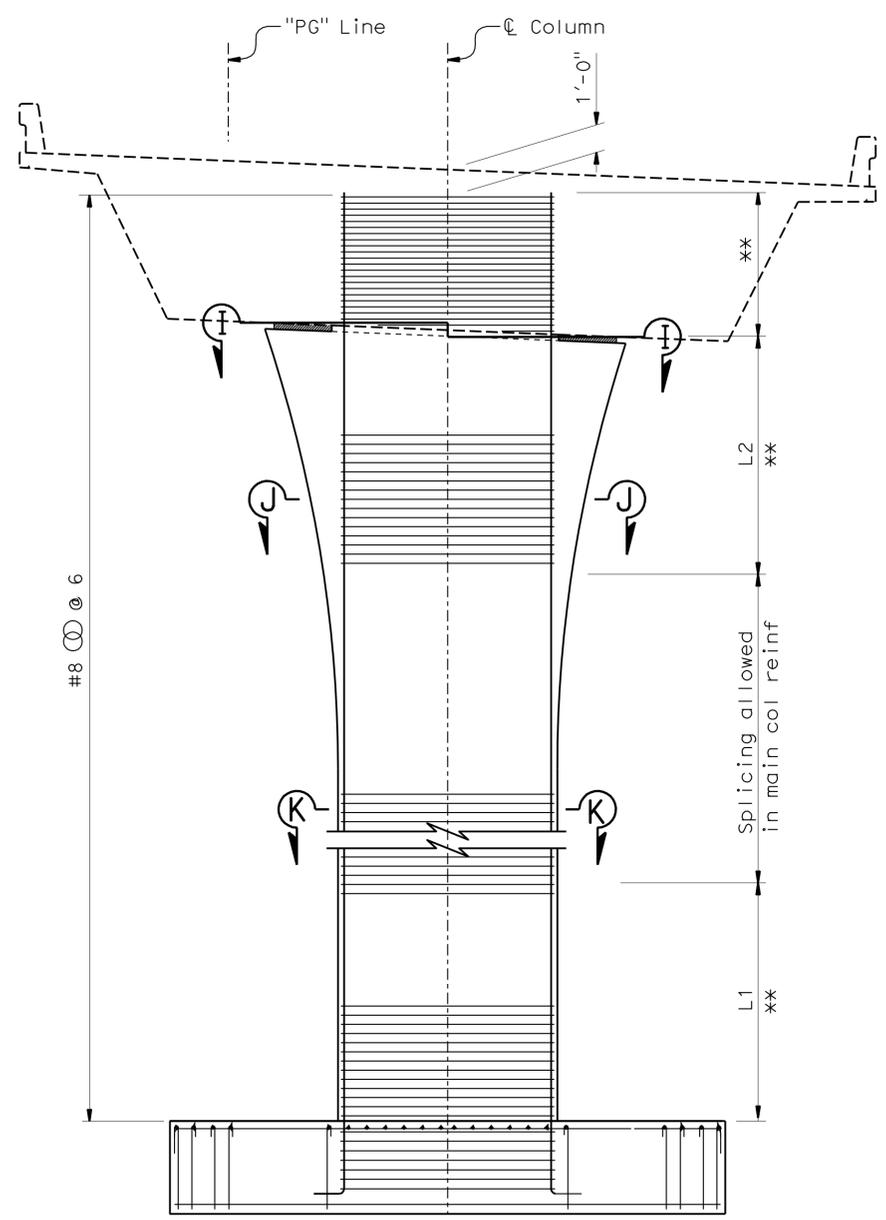
STATE OF CALIFORNIA	
DEPARTMENT OF TRANSPORTATION	

DIVISION OF ENGINEERING SERVICES	
STRUCTURE DESIGN	
BRIDGE NO.	32-0071
POST MILE	R5.09
DESIGN BRANCH 17	

MONO WAY UNDERCROSSING	
BENT LAYOUT	
REVISION DATES	
7-30-09	9-09-09
10-24-09	12-01-09
SHEET	OF
10	28

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	220	237

REGISTERED CIVIL ENGINEER DATE 12-17-09
 5-10-10
 PLANS APPROVAL DATE
 Rodney Simmons
 No. 51174
 Exp. 09-30-11
 CIVIL
 STATE OF CALIFORNIA
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- Notes:
- All splices and hoops in columns shall conform to ultimate splice specifications.
 - For column flare dimensions, see "Bent Layout" sheet.
 - Transverse flare reinforcement may use mechanical couplers.

Bent #	L1	L2
2	13'	13'
3	17'	17'
4	19'	19'

TYPICAL ELEVATION
 1" = 5'
 ** No splicing allowed in main column reinf

NOTE:
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN	BY R. Coria	CHECKED B. Addlespurger
DETAILS	BY G. Leung	CHECKED R. Coria
QUANTITIES	BY R. Coria	CHECKED R. Simmons

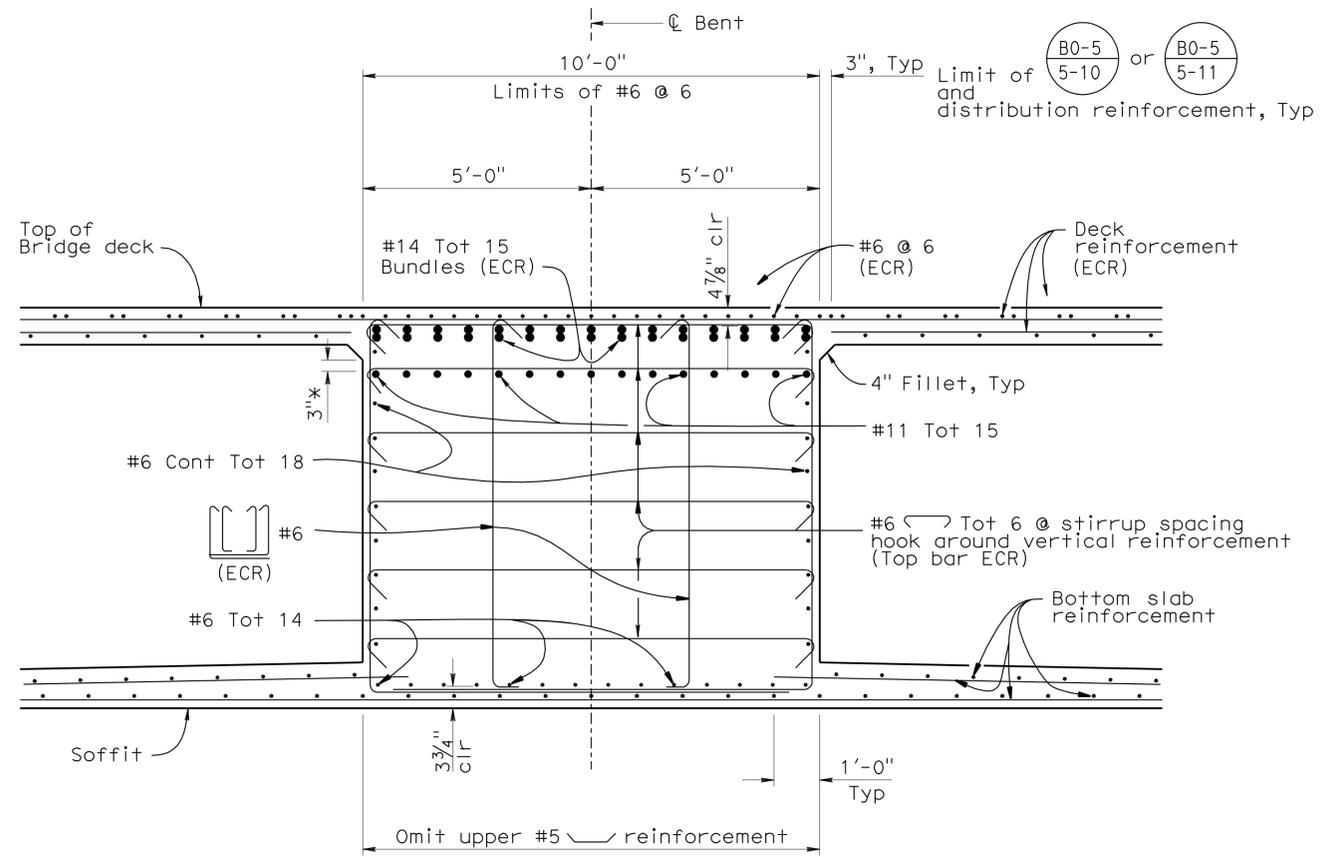
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF ENGINEERING SERVICES
 STRUCTURE DESIGN
 DESIGN BRANCH 17

BRIDGE NO.	32-0071
POST MILE	R5.09

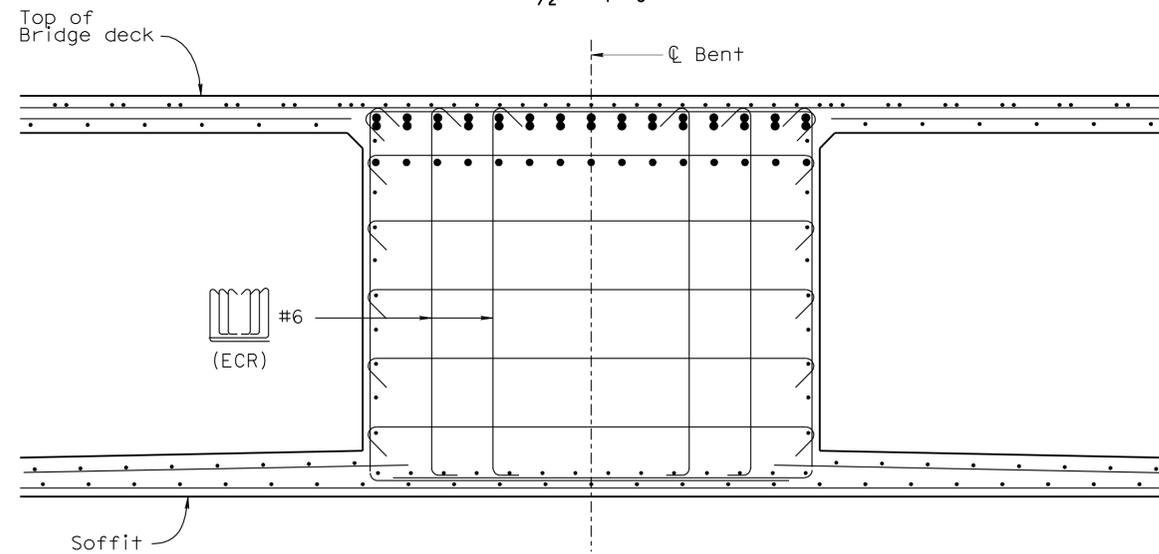
MONO WAY UNDERCROSSING
 BENT DETAILS NO. 1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
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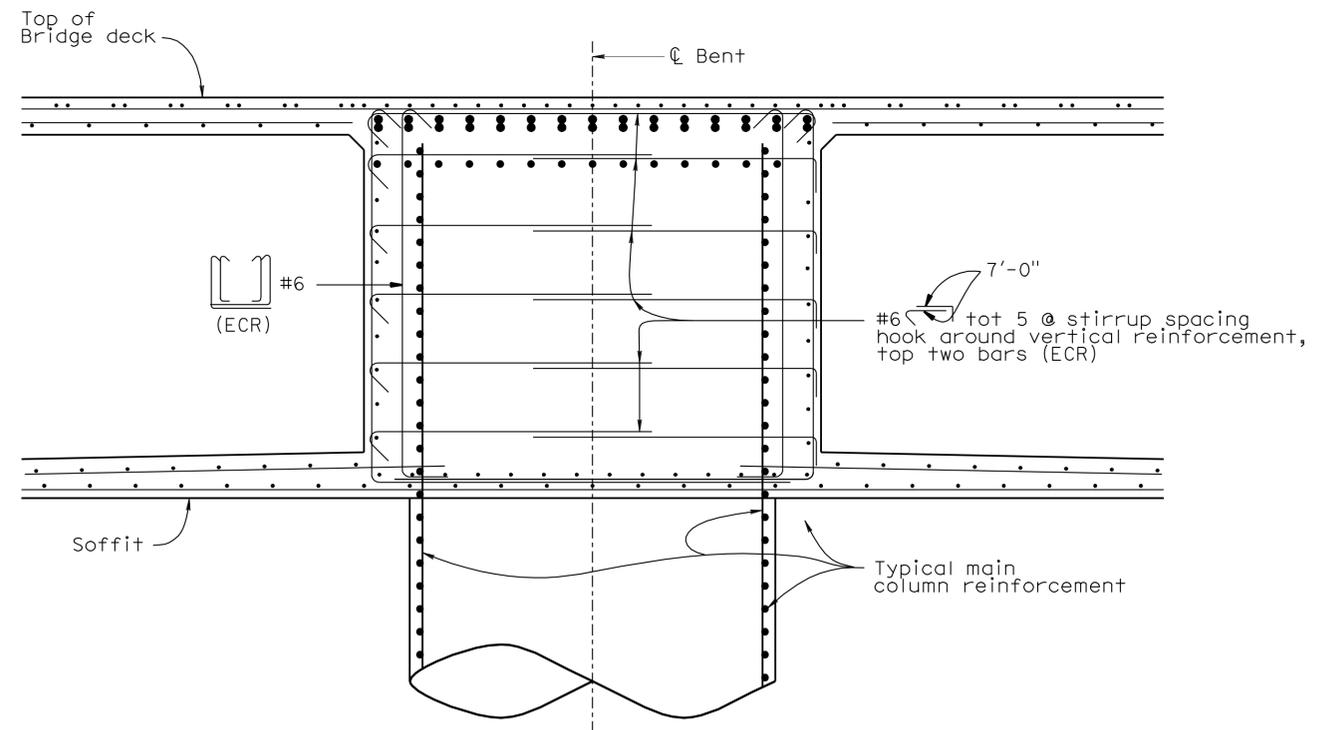
Rodney Simmons
 REGISTERED CIVIL ENGINEER DATE 12-17-09
 5-10-10
 PLANS APPROVAL DATE
 Rodney Simmons
 No. 51174
 Exp. 09-30-11
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SECTION F-F
1/2" = 1'-0"



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



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

LEGEND

* Reinforcement may be bent or adjusted to clear PS Ducts, as approved by the Engineer
 (ECR) = Epoxy Coated Rebar

NOTE:

1. For location of Sections F-F, G-G, and H-H see "BENT LAYOUT" sheet.

NOTE:
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN	BY	R. Coria	CHECKED	B. Addlespurger	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO.	32-0071	MONO WAY UNDERCROSSING BENT DETAILS NO. 2	
	DETAILS	BY	F. Mendoza	CHECKED			R. Coria	POST MILE		R5.09
	QUANTITIES	BY	R. Coria	CHECKED			R. Simmons	REVISION DATES		

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3 CU 06 228 EA 340421 DISREGARD PRINTS BEARING EARLIER REVISION DATES 7-30-09 9-09-09 11-02-09 12-15-09 SHEET 12 OF 28

USERNAME => hmgp11n DATE PLOTTED => 20-MAY-2010 TIME PLOTTED => 13:53

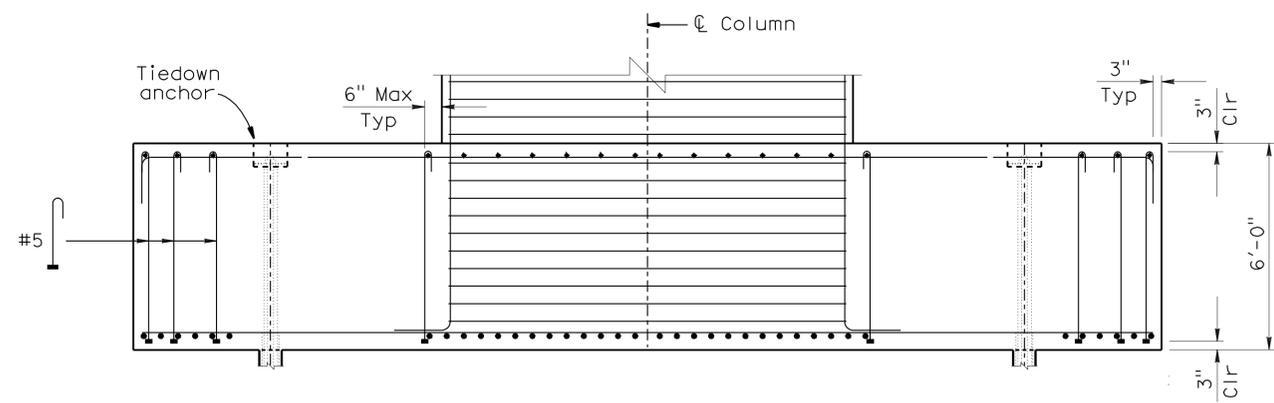
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	222	237

Rodney Simmons 12-17-09
REGISTERED CIVIL ENGINEER DATE

5-10-10
PLANS APPROVAL DATE

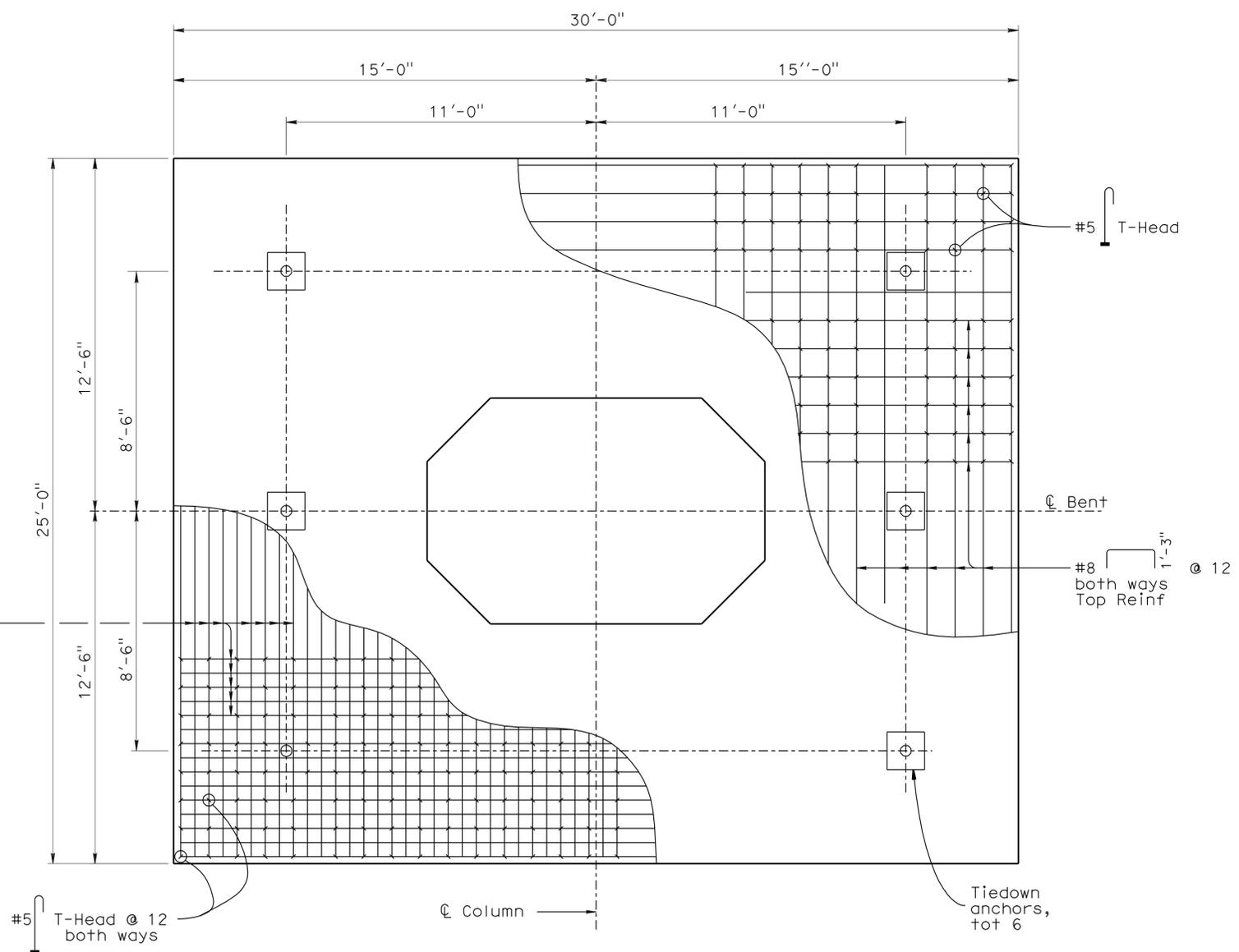
Rodney Simmons
REGISTERED PROFESSIONAL ENGINEER
No. 51174
Exp. 09-30-11
CIVIL
STATE OF CALIFORNIA

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FOOTING ELEVATION

3/8" = 1'-0"



FOOTING PLAN

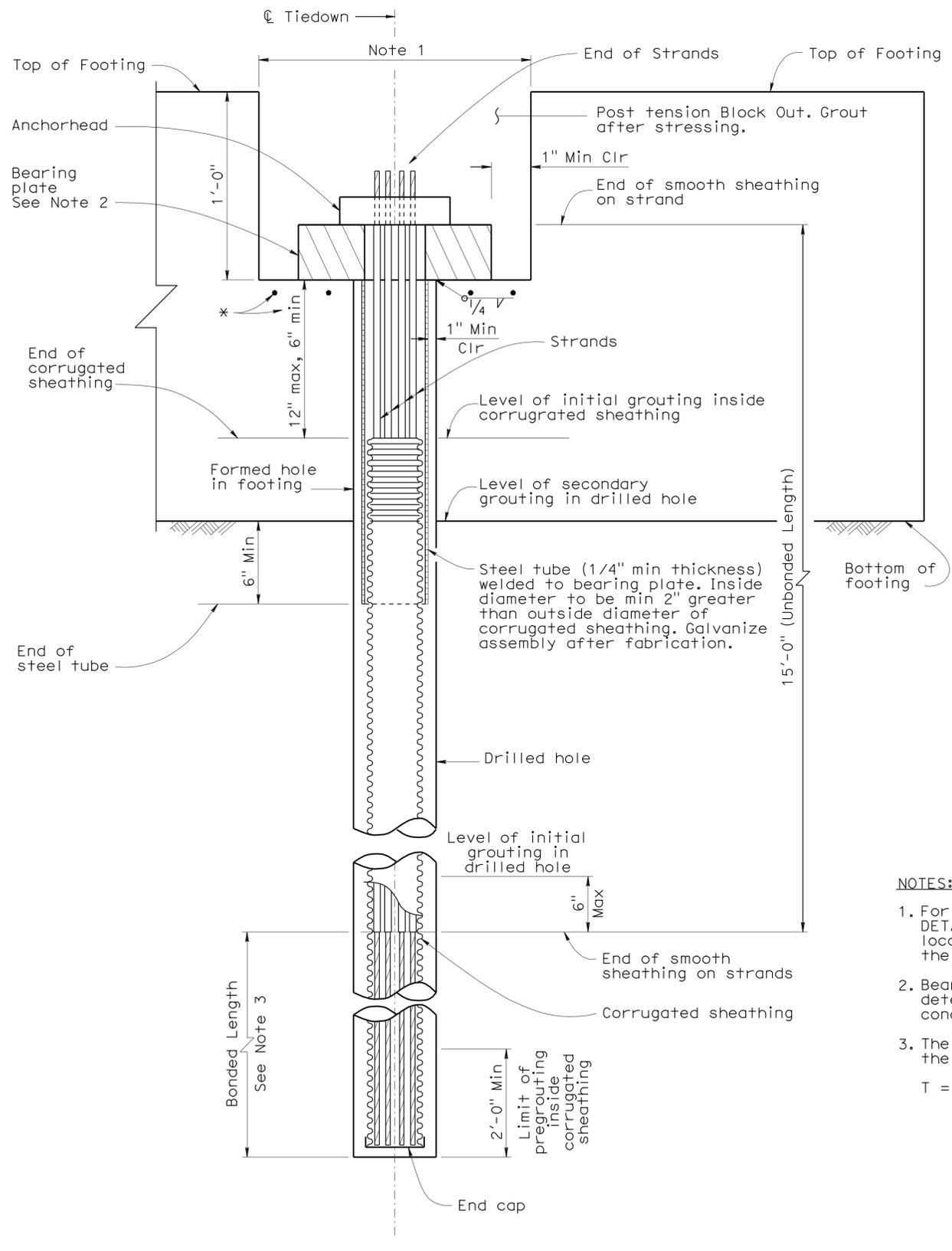
3/8" = 1'-0"

Bent 2 shown, Bents 3, and 4 similar except as noted.

Bottom Reinf #14 @ 6 both ways

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	DESIGN	BY R. Coria	CHECKED B. Addlespurger	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO.	32-0071	MONO WAY UNDERCROSSING BENT DETAILS NO. 3
	DETAILS	BY F. Mendoza	CHECKED R. Coria			POST MILE	R5.09	
	QUANTITIES	BY R. Coria	CHECKED R. Simmons					
			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES 7-30-09 9-08-09 12-15-09	SHEET 13 OF 28

USERNAME => hrmopt10 DATE PLOTTED => 20-MAY-2010 TIME PLOTTED => 13:53



TIEDOWN ANCHOR DETAIL (STRANDS)
No Scale

GENERAL NOTES-TIEDOWN ANCHOR

PRESTRESSING (TIEDOWNS):
 BARS - ASTM Designation: A722 Type II
 STRANDS - ASTM Designation: A416
 T = Design Force per Tiedown (Kip)
 fpu = Minimum Tensile Strength of Prestressing Steel (Ksi)
 As = Minimum Cross Sectional Area of Prestressing Steel in Tiedown Tendon (square inches)

$$A_s (\text{Min}) = \frac{1.0 T}{0.75 f_{pu}}$$

Tiedowns to be stressed only after falsework release.

NOTES:

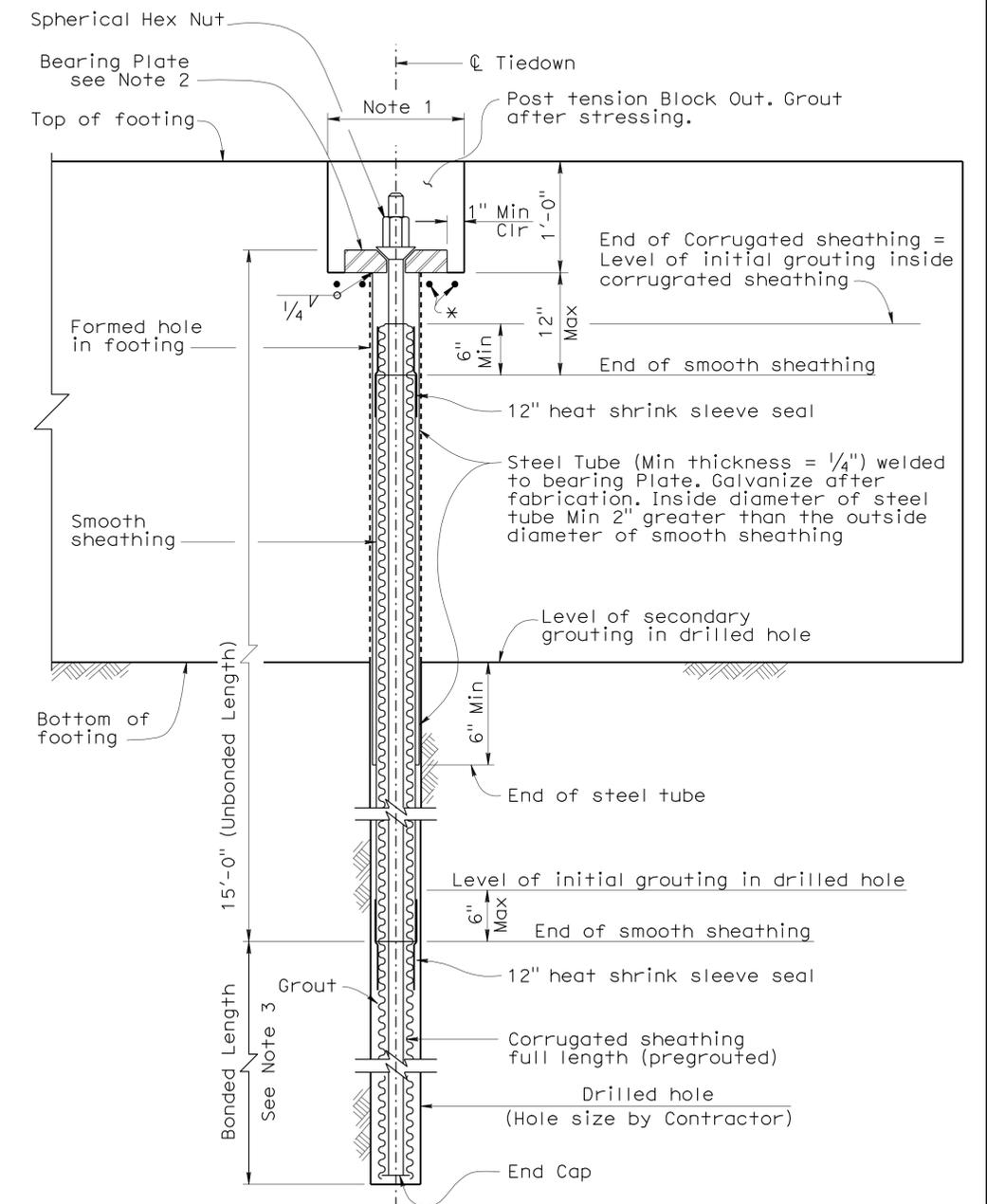
- For footing reinf not shown, see "BENT DETAILS No. 3" sheet, Footing Bar Reinf locations may be adjusted as directed by the Engineer. Bar reinf shall not be cut.
- Bearing Plate size and thickness to be determined by the Contractor. Pre-level concrete bearing surface.
- The bonded length is to be determined by the Contractor.

T = Design Force per Tiedown

Bent No.	T (kips)
2	130
3	175
4	175

Lock-off Force per Tiedown = 0.1 T

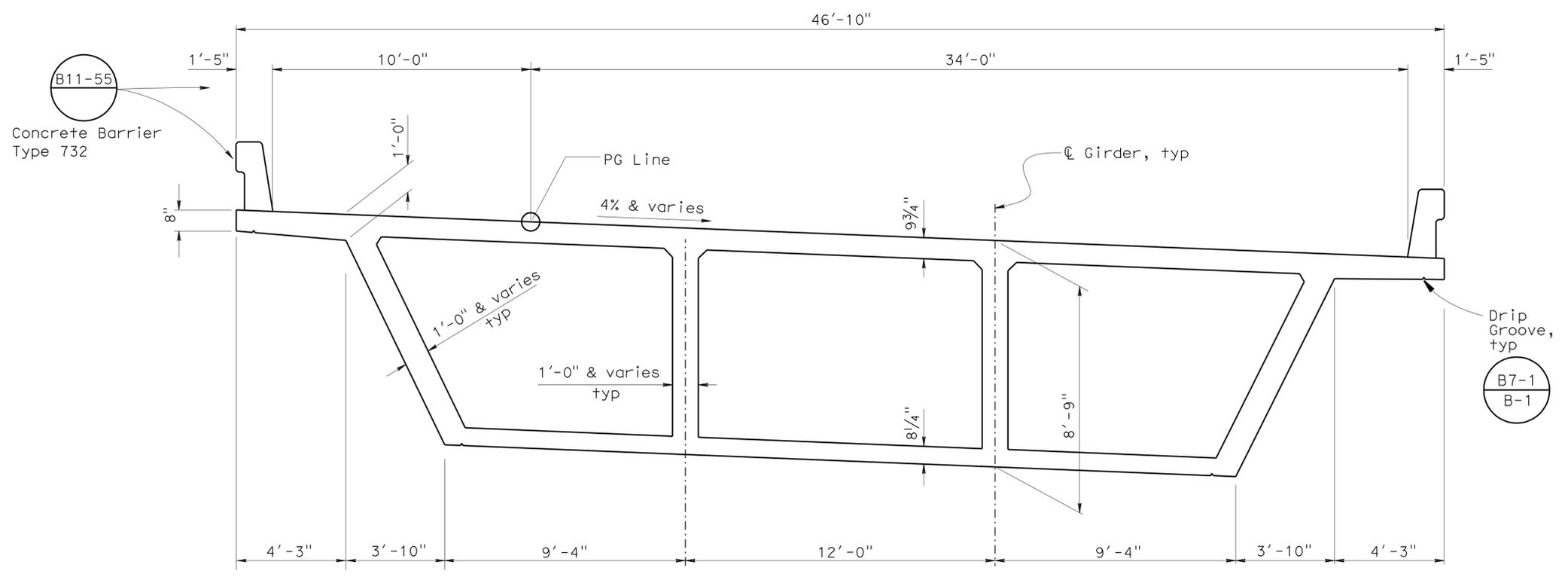
* #5 x 3'-0" both ways (2 each side of Tiedown)



TIEDOWN ANCHOR DETAIL (BAR)
No Scale

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	224	237

Rodney Simmons
 REGISTERED CIVIL ENGINEER DATE 12-17-09
 5-10-10
 PLANS APPROVAL DATE
 Rodney Simmons
 No. 51174
 Exp. 09-30-11
 CIVIL
 STATE OF CALIFORNIA

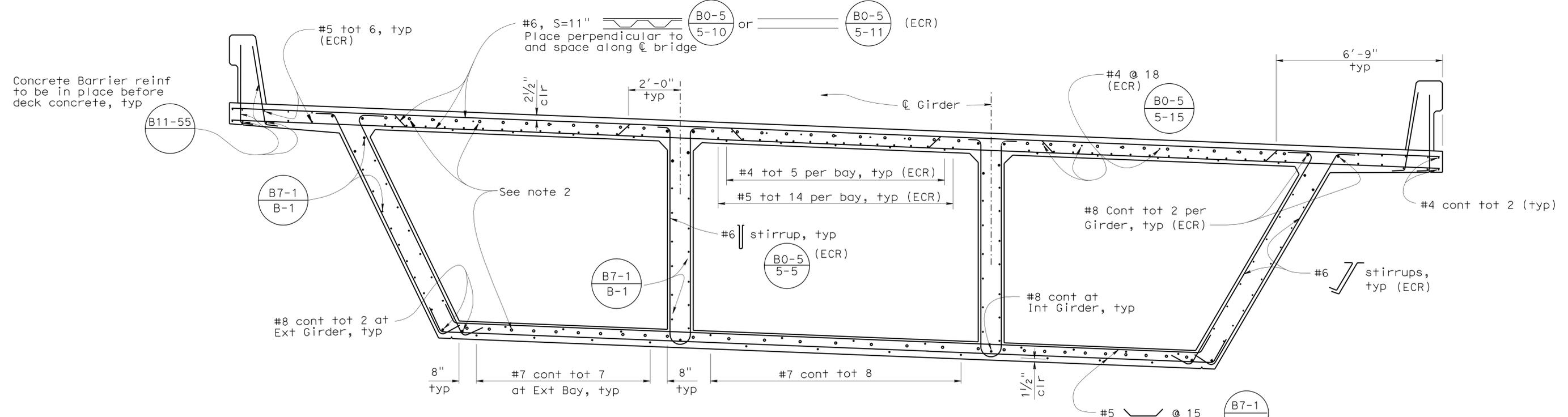


TYPICAL SECTION

3/8"=1'-0"

Notes:

1. For Girder Flare Dimensions, see "Girder Layout No. 1 & 2" sheets.
 2. For Additional Girder Longitudinal Reinforcement, see "Additional Girder Reinforcement No. 1 & 2" sheets.
- (ECR)= Epoxy Coated Rebar



TYPICAL SECTION

1/2"=1'-0"

DESIGN	BY R. Coria	CHECKED B. Addlespurger
DETAILS	BY G. Leung	CHECKED R. Coria
QUANTITIES	BY R. Coria	CHECKED R. Simmons

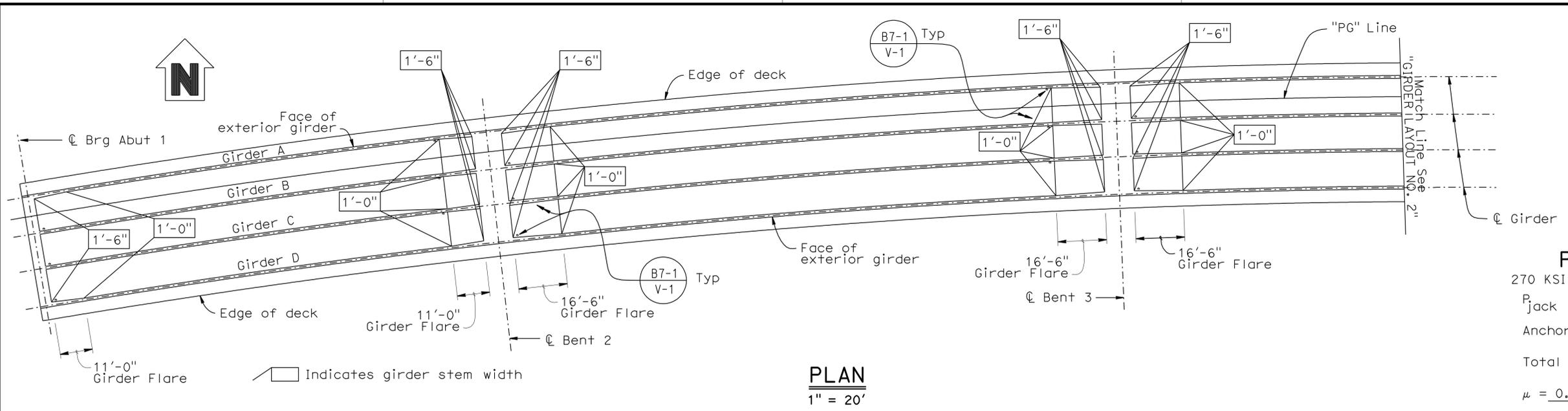
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF ENGINEERING SERVICES
 STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO.	32-0071
POST MILE	R5.09

MONO WAY UNDERCROSSING
TYPICAL SECTION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	225	237

REGISTERED CIVIL ENGINEER DATE 12-17-09
 5-10-10
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



PRESTRESSING NOTES

270 KSI Low Relaxation Strand:

P_{jack} = 14800 kips

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

Total Number of Girders = 4

μ = 0.20 K = 0.0002 K/ft

Distribution of prestress force (P_{jack}) between girders shall not exceed the ratio of 3:2. Maximum final force variation between girders shall not exceed 725 kips.

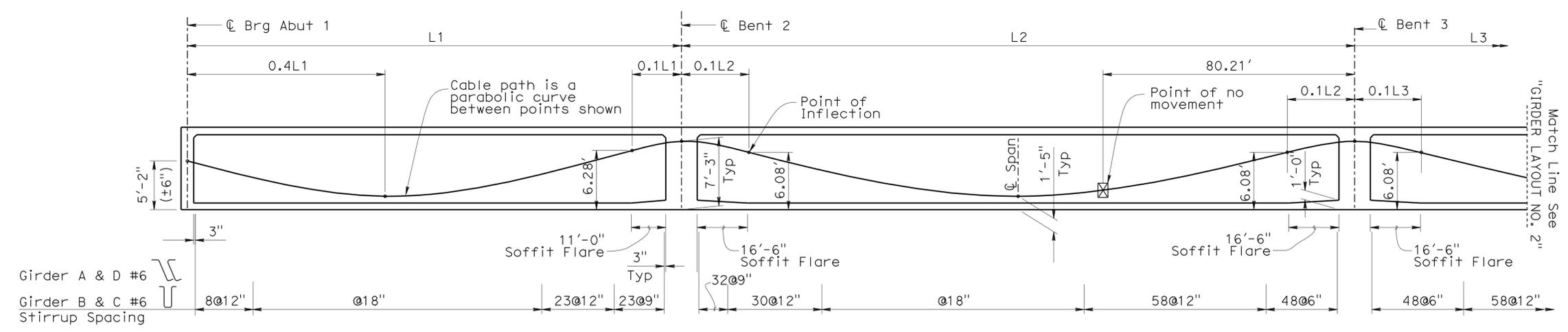
Concrete: f'_c = 4000 psi @ 28 days

f'_{ci} = 3500 psi @ time of stressing

Contractor shall submit elongation calculations based on initial stress at

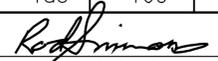
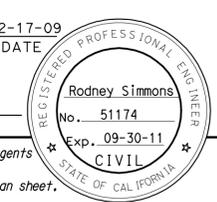
λ = 0.792 times jacking stress.

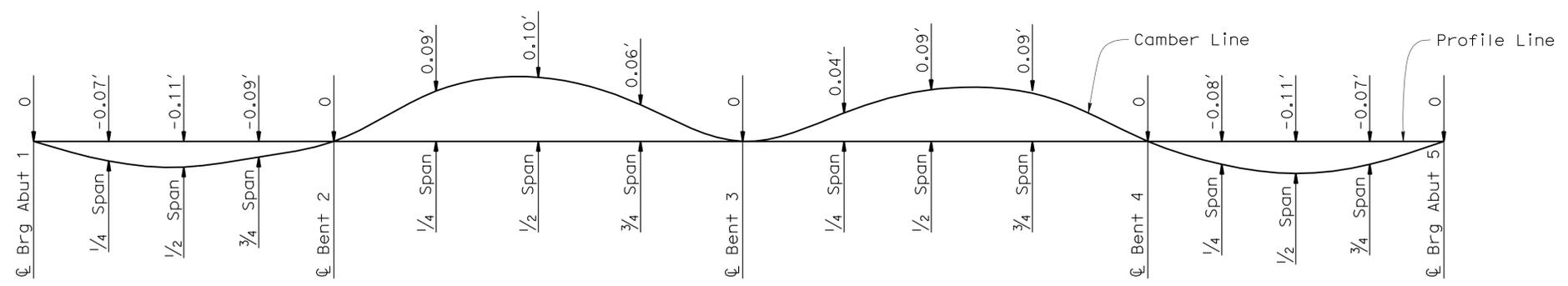
Two end stressing shall be performed.



NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

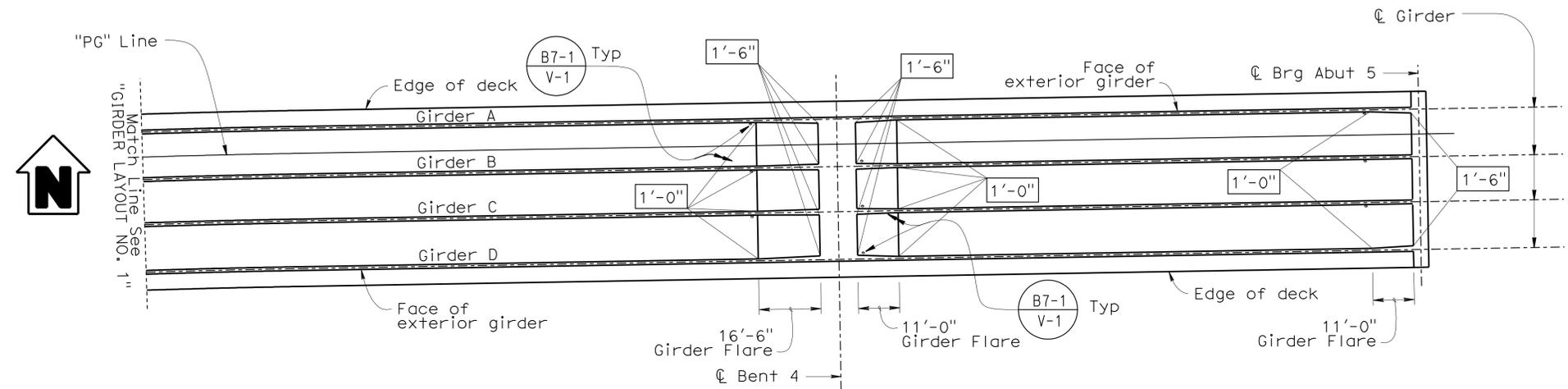
DESIGN BY R. Coria CHECKED B. Addlespurger DETAILS BY F. Mendoza CHECKED R. Coria QUANTITIES BY R. Coria CHECKED R. Simmons	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO. 32-0071	MONO WAY UNDERCROSSING GIRDER LAYOUT NO. 1
			POST MILE R5.09	
			REVISION DATES 7-30-09 9-04-09 11-04-09 12-15-09	
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES	SHEET 16 OF 28

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	226	237
 REGISTERED CIVIL ENGINEER DATE 12-17-09					
5-10-10 PLANS APPROVAL DATE					
<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>					



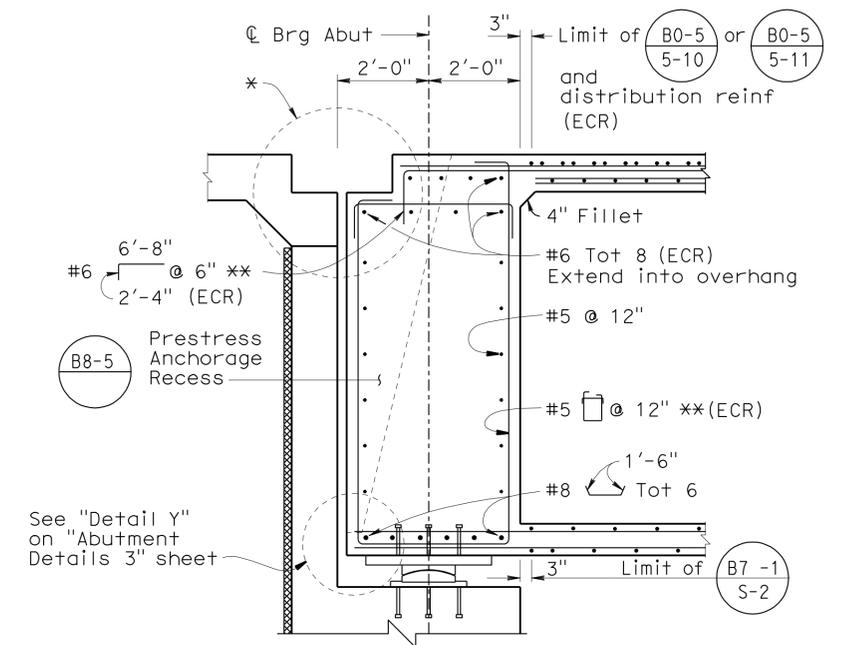
CAMBER DIAGRAM

No Scale
(Does not include allowance for falsework settlement)



PLAN

1" = 20'

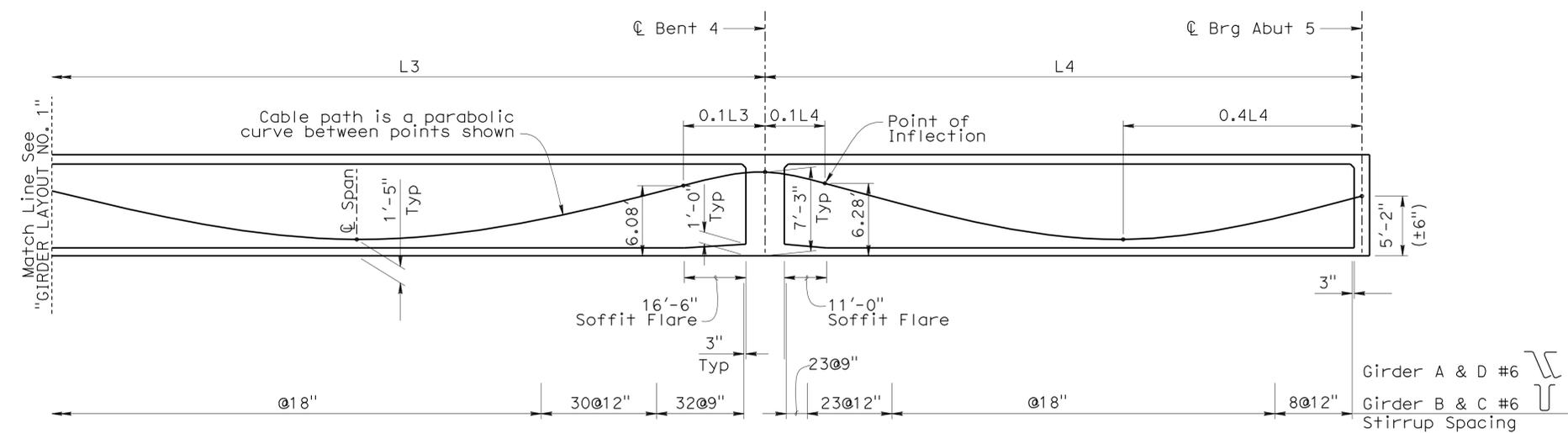


NOTES:

- * See "Joint Protection Detail" on "Abutment Details No. 3" sheet
- ** Place parallel to C girder and space along C Brg Abut
- Abut 1 shown, Abut 5 similar
- (ECR) = Epoxy Coated Rebar

END DIAPHRAGM SECTION

1/2" = 1'-0"

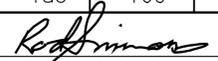
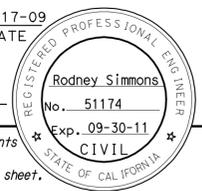


LONGITUDINAL SECTION

No Scale

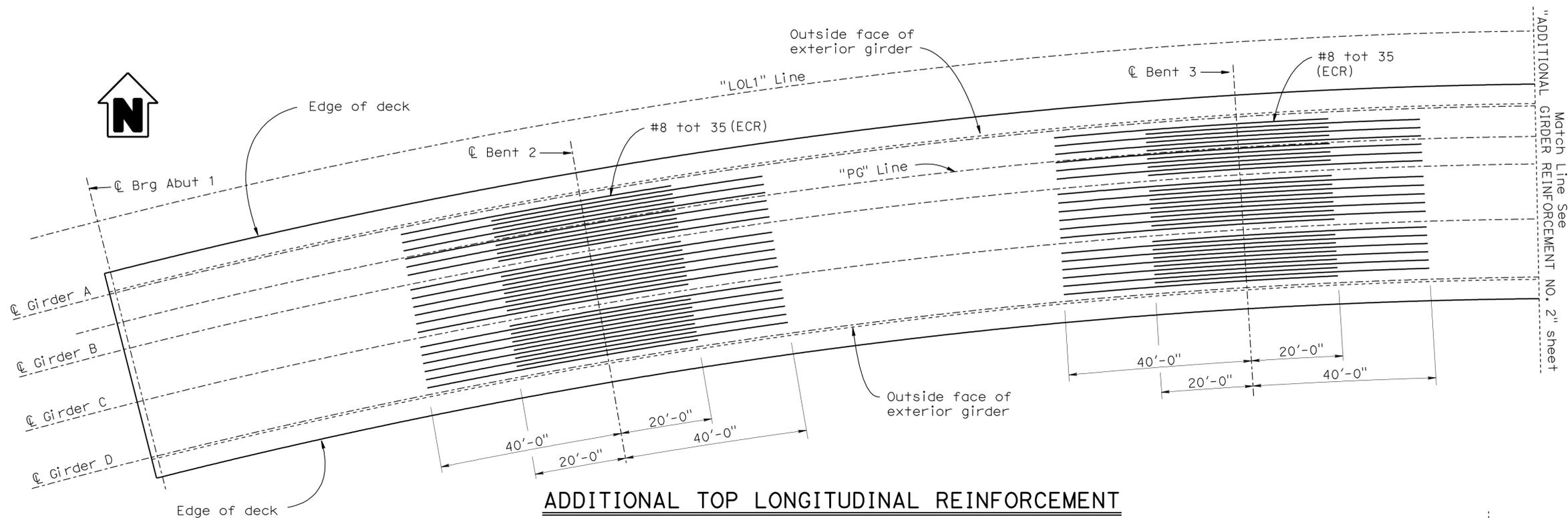
NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN BY R. Coria CHECKED B. Addlespurger DETAILS BY F. Mendoza CHECKED R. Coria QUANTITIES BY R. Coria CHECKED R. Simmons	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 17	BRIDGE NO. 32-0071	MONO WAY UNDERCROSSING GIRDER LAYOUT NO. 2
			POST MILE R5.09	
			REVISION DATES 7-30-09 9-09-09 11-24-09 12-15-09	
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES	SHEET 17 OF 28

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	227	237
 REGISTERED CIVIL ENGINEER DATE 12-17-09					
5-10-10 PLANS APPROVAL DATE					
<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>					

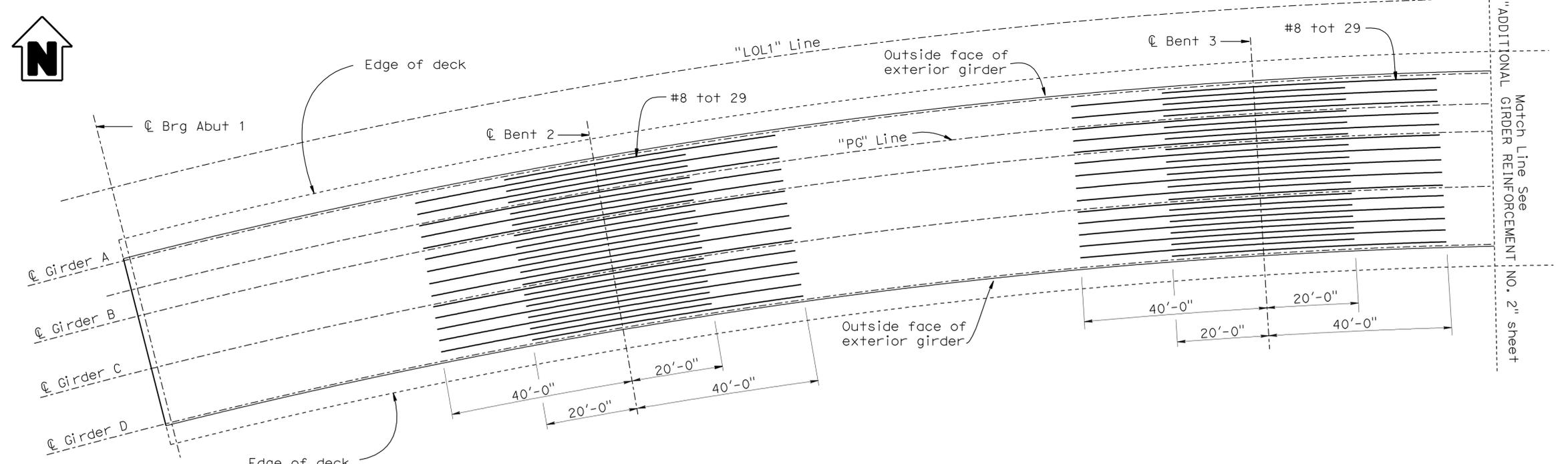
Notes:

1. Splices shall be service level
ECR = Epoxy Coated Reinforcement



ADDITIONAL TOP LONGITUDINAL REINFORCEMENT

No Scale



ADDITIONAL BOTTOM LONGITUDINAL REINFORCEMENT

No Scale

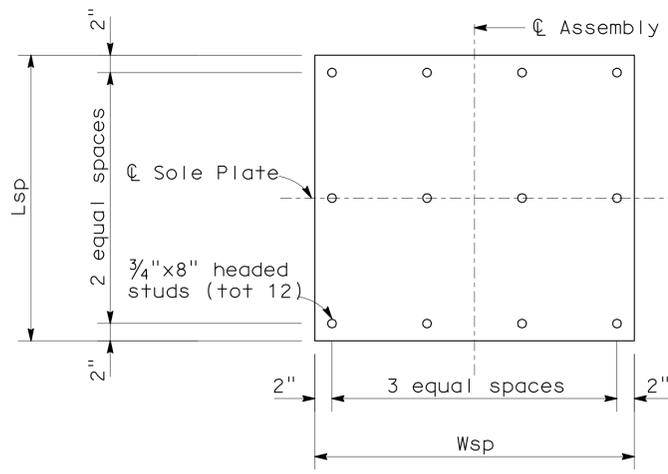
DESIGN	BY R. Coria	CHECKED B. Addlespurger
DETAILS	BY F. Mendoza	CHECKED R. Coria
QUANTITIES	BY R. Coria	CHECKED R. Simmons

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

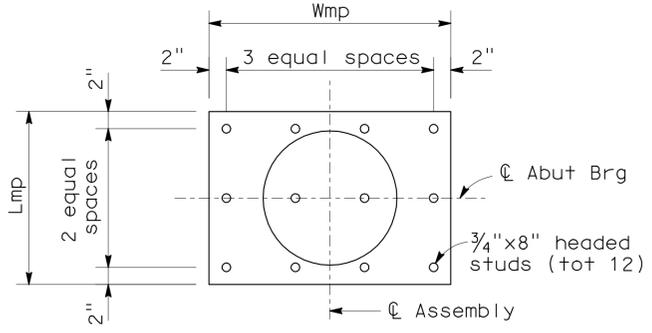
DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO.	32-0071
POST MILE	R5.09

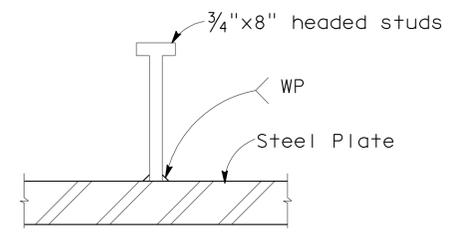
MONO WAY UNDERCROSSING
ADDITIONAL GIRDER REINF NO. 1



2 **SOLE PLATE**
No scale



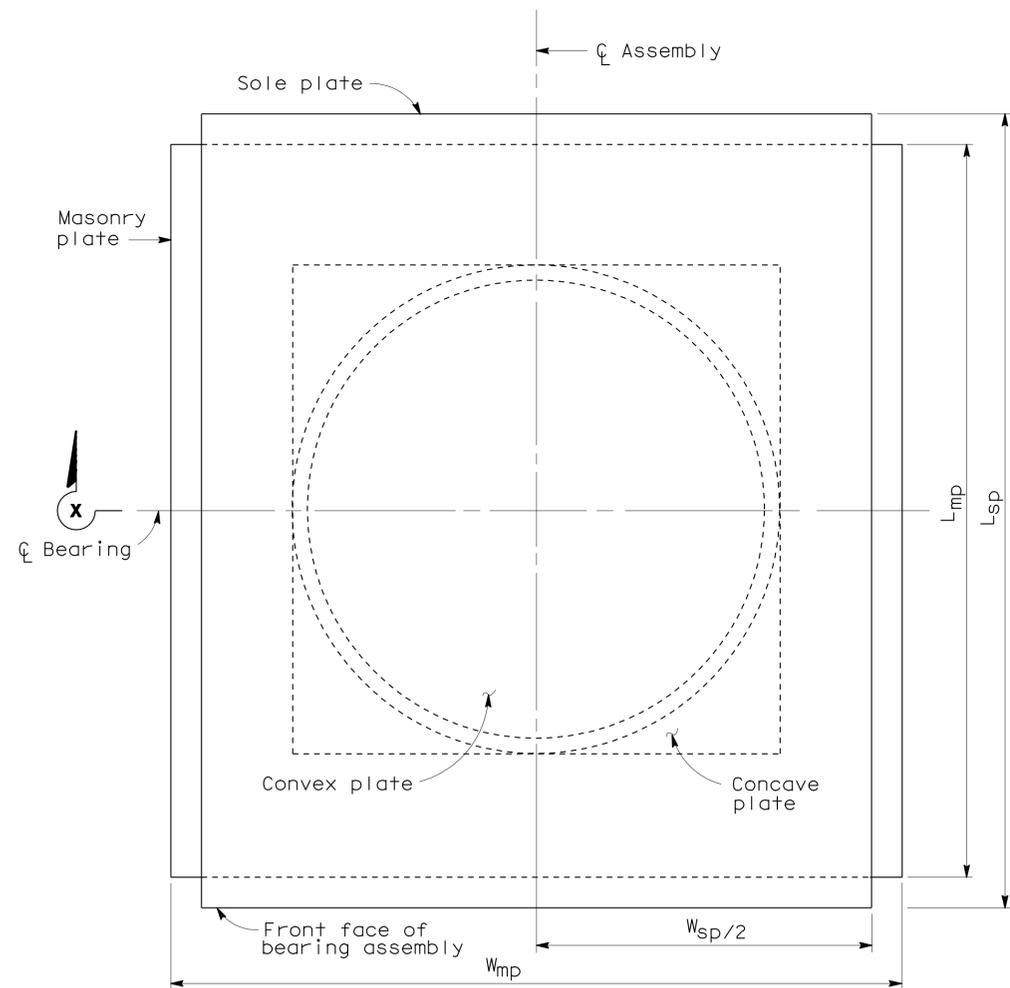
2 **MASONRY PLATE**
No scale



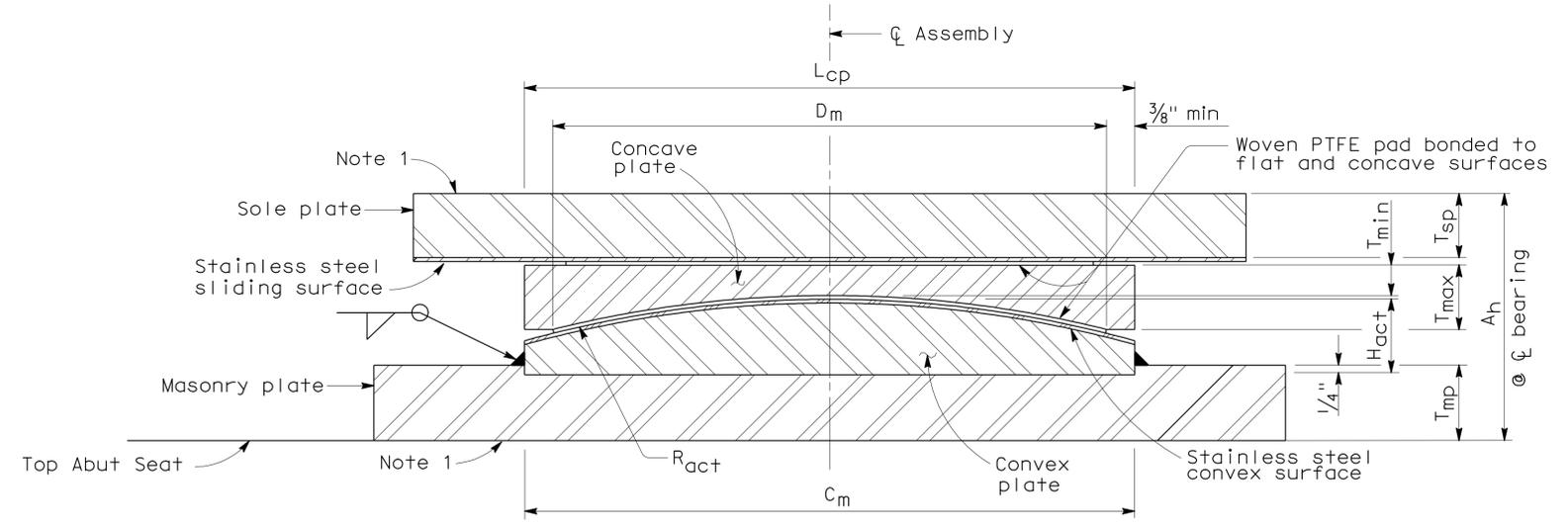
2 **STUD DETAIL**
No scale

1 **EXPANSION BEARING TABLE**

LOCATION	MAXIMUM VERTICAL LOAD (kips)	MINIMUM DEAD LOAD (kips)	DESIGN ROTATION (Degrees)	CONCAVE PLATE						CONVEX PLATE		MASONRY PLATE			SOLE PLATE			ASSEMBLY HEIGHT
				WIDTH / LENGTH	FLAT PTFE AREA (in ²)	DIAMETER	SPHERICAL RADIUS	MINIMUM THICKNESS	MAXIMUM THICKNESS	DIAMETER	MAXIMUM THICKNESS	WIDTH	LENGTH	THICKNESS	WIDTH	LENGTH	THICKNESS	
				Lcp	APTFE	Dm	Ract	Tmin	Tmax	Cm	Hact	Wmp	Lmp	Tmp	Wsp	Lsp	Tsp	
ABUT 1	496	376	2	14.625	144.0	13.50	29.5	0.75	1.75	15.50	1.75	28.0	20.0	1.5	37.0	33.0	2.50	6.5
ABUT 5	491	371	2	14.625	144.0	13.50	29.5	0.75	1.75	15.50	1.75	28.0	20.0	1.5	37.0	33.0	2.50	6.5



PLAN



SECTION X-X

NOTES:

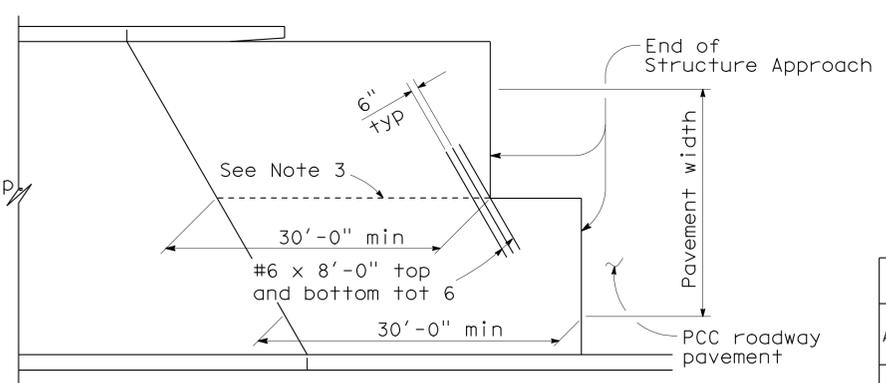
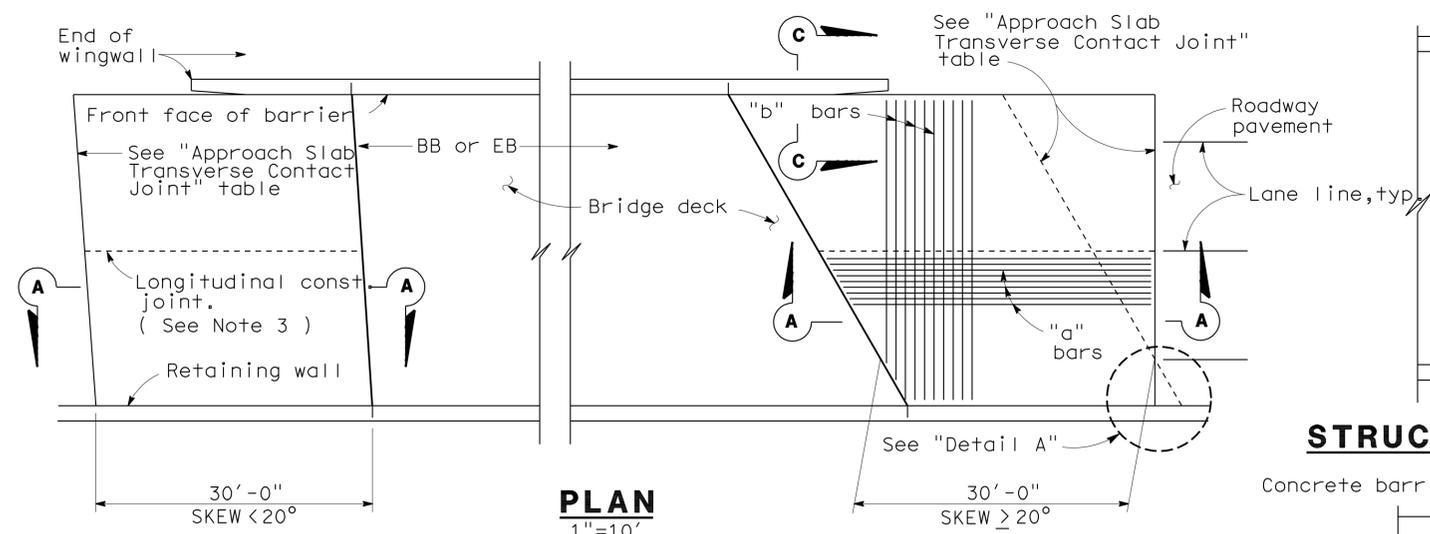
1. All units in inches unless otherwise noted.
2. All dimensions shown are steel only unless otherwise noted.
3. Hact includes stainless steel.
4. Ah includes PTFE, substratum and stainless steel.
5. Ract is to sliding surface.

STANDARD DRAWING			
RELEASE DATE	DESIGN	CHECKED	RELEASED BY
4/9/97	BY ROBERTO LACALLE	CHECKED ROD SIMMONS	
FILE NO.	DETAILS	CHECKED	
xs9-010e	BY R.YEE	CHECKED ROD SIMMONS	
	SUBMITTED	DRAWING DATE	OFFICE CHIEF
	BY ROBERTO LACALLE	Revised	

- 1 Revised Table
- 2 Added Details

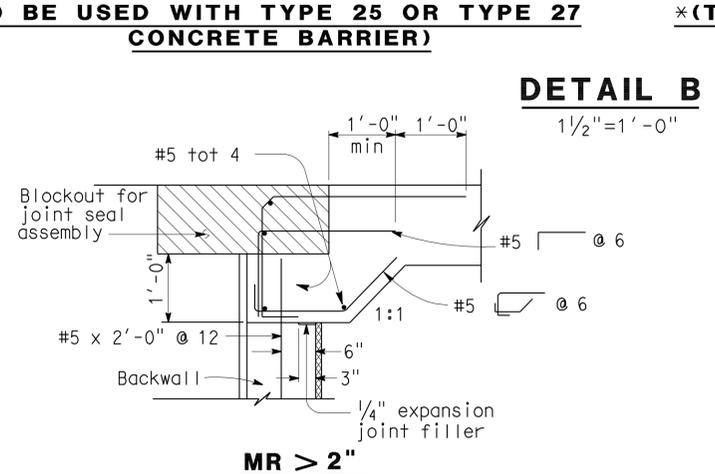
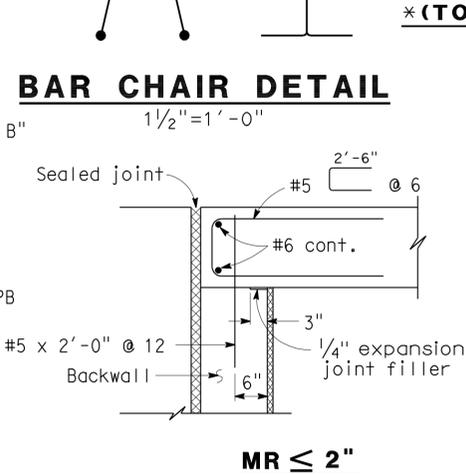
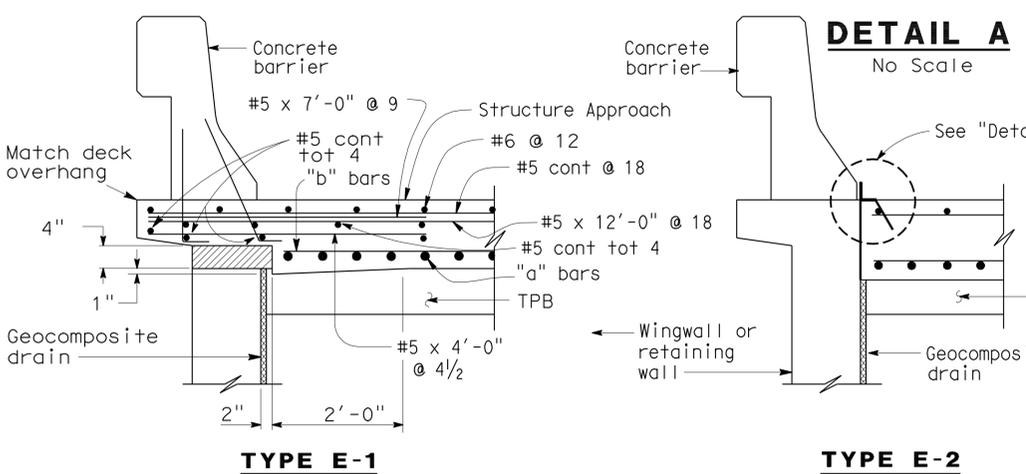
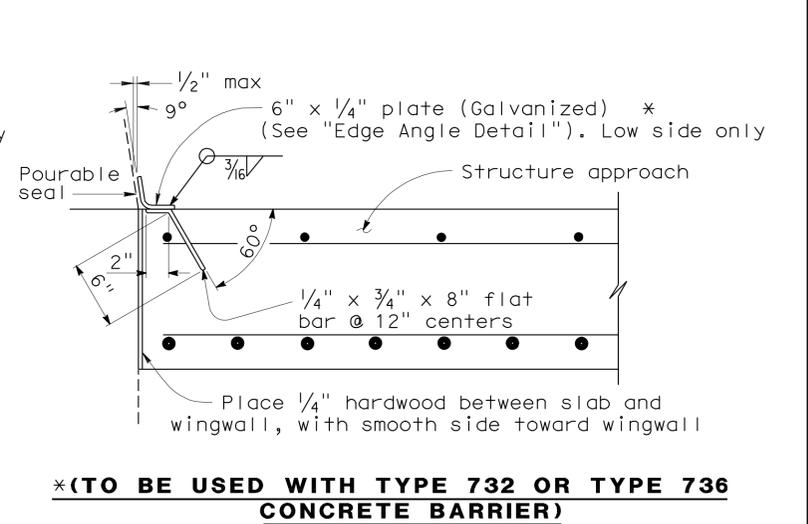
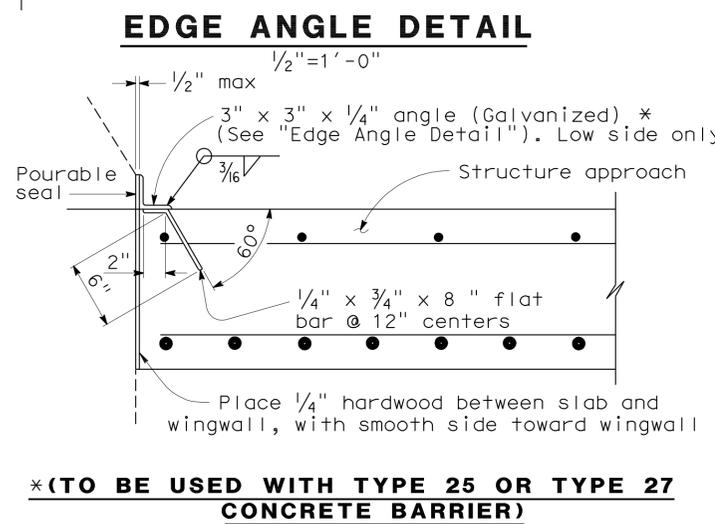
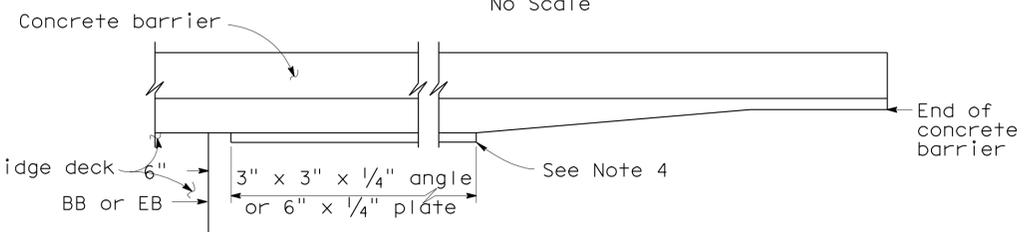
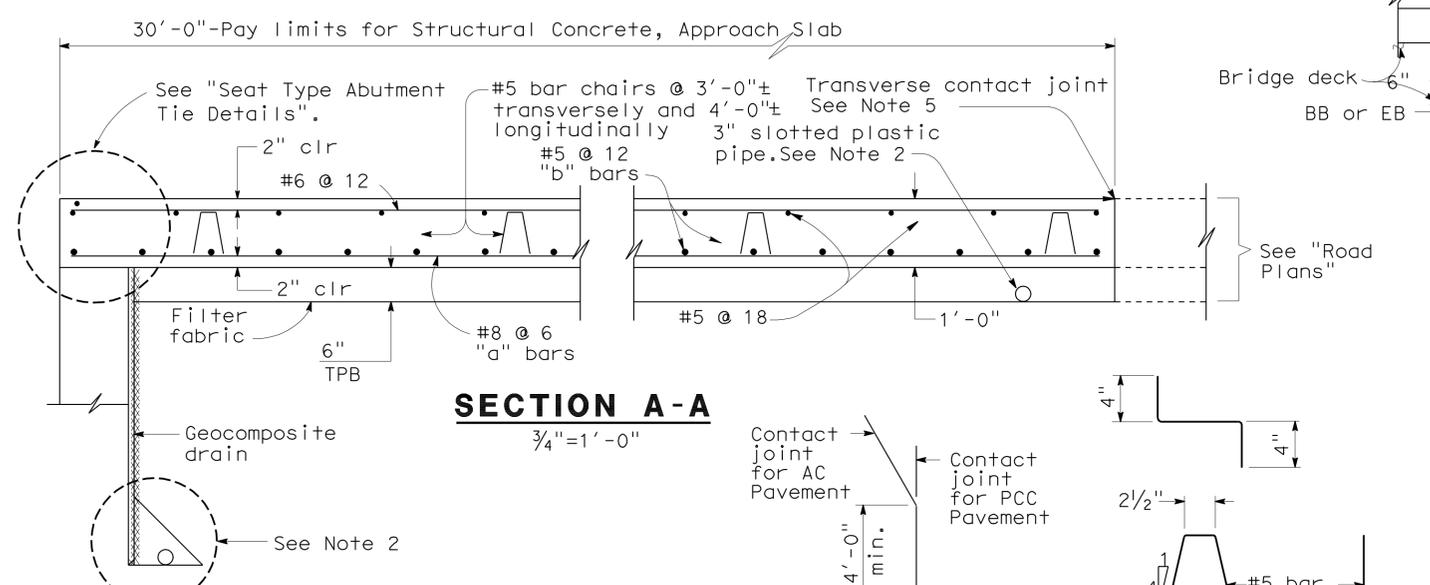
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF ENGINEERING SERVICES

BRIDGE NO. 32-0071
 POST MILE R5.09
 MONO WAY UNDERCROSSING
 PTFE/SPHERICAL EXPANSION BEARING DETAILS



APPROACH SLAB TRANSVERSE CONTACT JOINT

APPROACH SKEW	WITH AC ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
< 20°	Parallel to face of paving notch	Parallel to face of paving notch
20° - 45°	Parallel to face of P N use (Detail A)	Stagger lines 24' to 36' apart.
> 45°	Parallel to face of P N use (Detail A)	Stagger at each lane line.



SEAT TYPE ABUTMENT TIE DETAILS (SEE NOTE 1)
3/4"=1'-0"

- 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, shall 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 Bars in Approach Slab to be Epoxy Coated
- Remove all polystyrene.

STANDARD DRAWING

RELEASE DATE	DESIGN BY	CHECKED	RELEASED BY
3/14/05	M. TRAFFALIS	E. THORKILDSEN	
FILE NO.	DETAILS BY	CHECKED	
xs3-120e	R. YEE	E. THORKILDSEN	
	SUBMITTED BY	DRAWING DATE	OFFICE CHIEF
	M. HA	Revised	

Revised

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

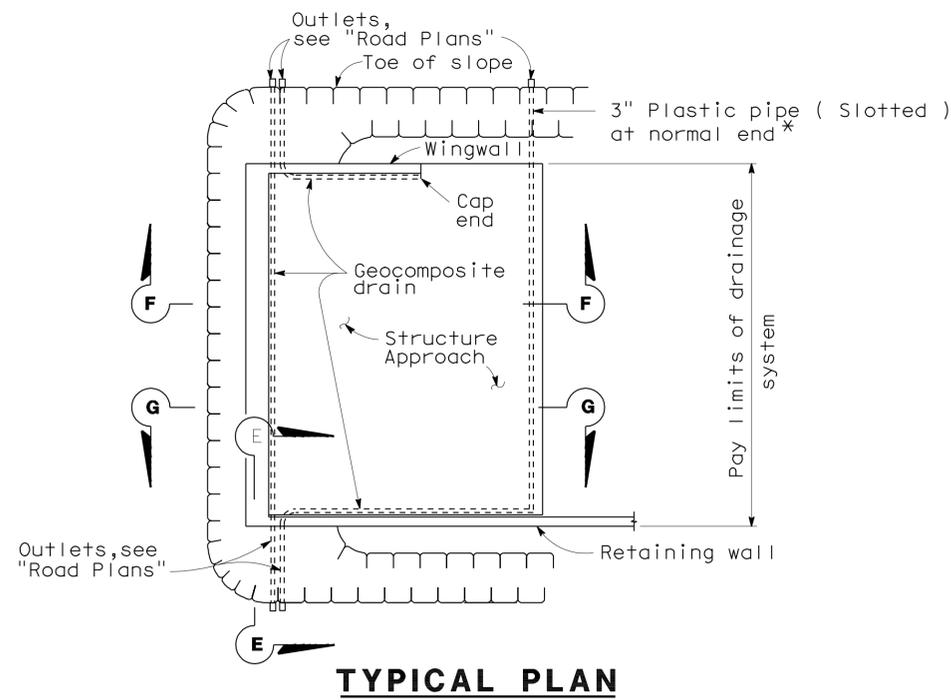
BRIDGE NO. 32-0071
MILE POST R5.09

MONO WAY UNDERCROSSING
STRUCTURE APPROACH TYPE N(30S)

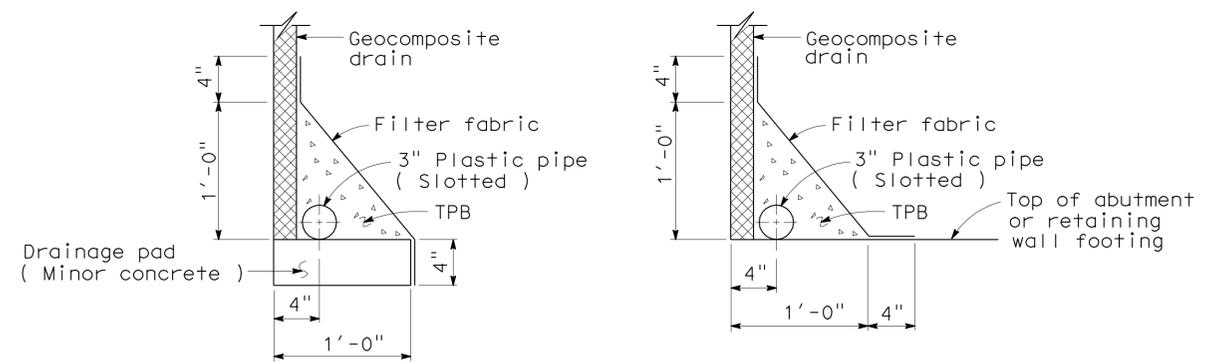
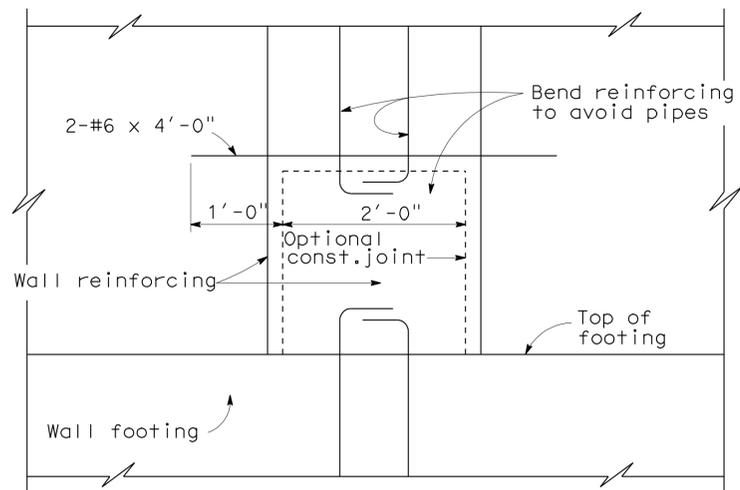
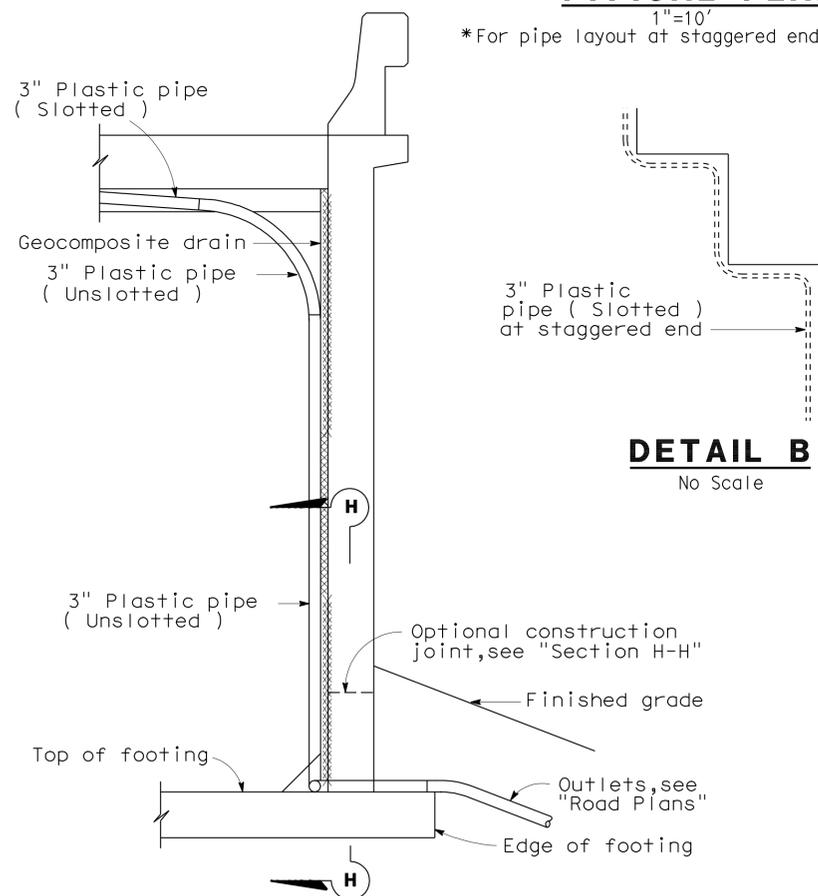
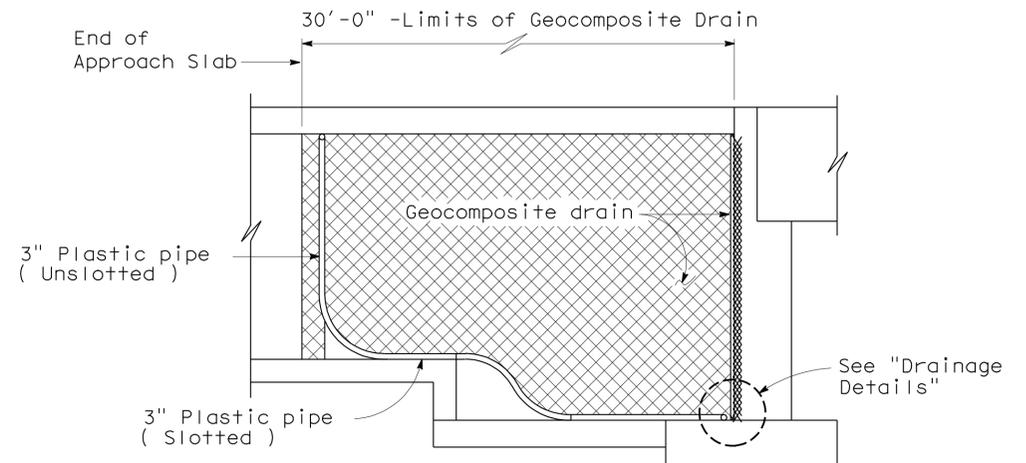
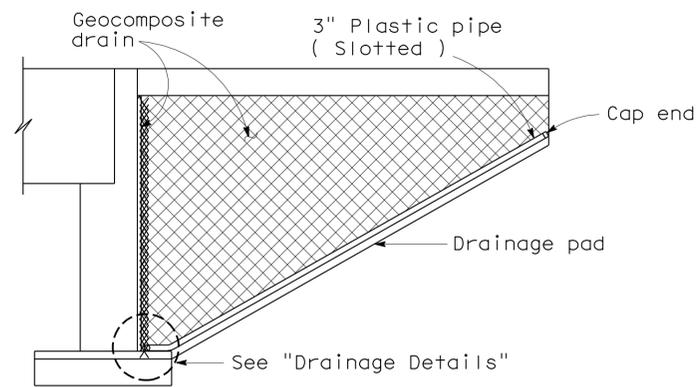
DIST.	COUNTY	ROUTE	MILE POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	232	237

Reddman 12-17-09
 REGISTERED ENGINEER - CIVIL
 Rodney Simmons
 No. 51174
 Exp. 09-30-11
 CIVIL
 STATE OF CALIFORNIA

5-10-10
 PLANS APPROVAL DATE
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*For pipe layout at staggered end, see "Detail B".



SECTION E-E

1/2"=1'-0"

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

STANDARD DRAWING			
RELEASE DATE 4/23/98	DESIGN BY M. TRAFFALIS	CHECKED E. THORKILDSEN	RELEASED BY
FILE NO. xs3-110e	DETAILS BY R. YEE	CHECKED E. THORKILDSEN	
	SUBMITTED BY M. HA	DRAWING DATE 4/98	OFFICE CHIEF

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 17

BRIDGE NO.
32-0071
MILE POST
R5.09

MONO WAY UNDERCROSSING
STRUCTURE APPROACH DRAINAGE DETAILS

USERNAME => HT100909 DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 07:07

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	233	237

Chris Koepke
 CERTIFIED ENGINEERING GEOLOGIST DATE 9-08-09

5-10-10
 PLANS APPROVAL DATE

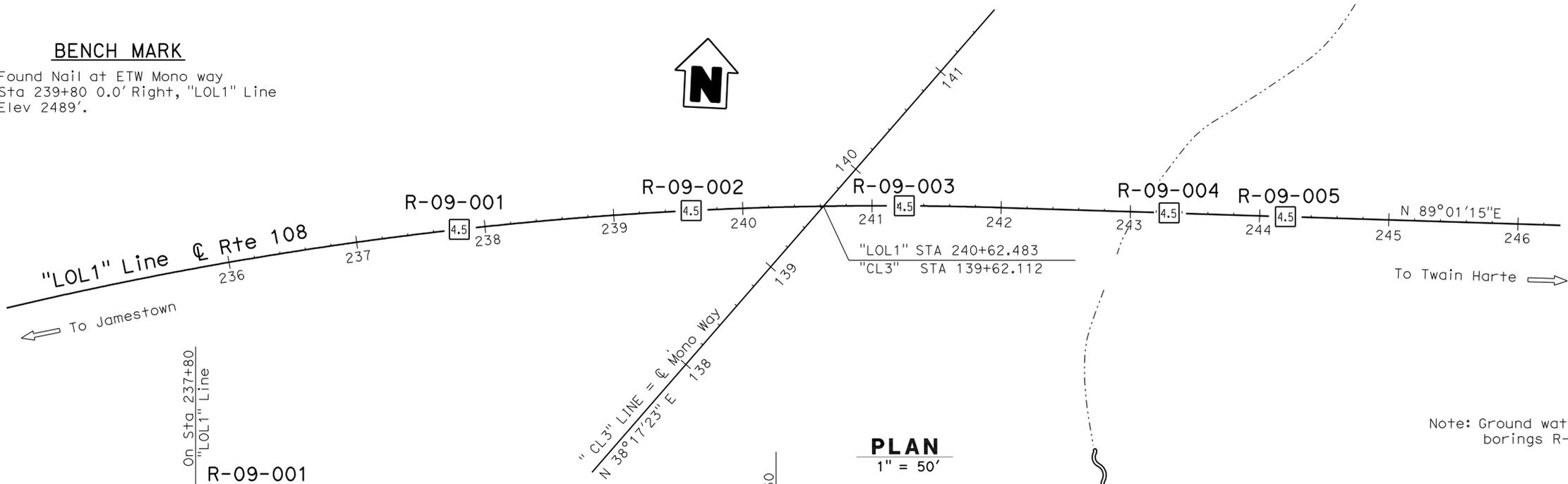
REGISTERED PROFESSIONAL GEOLOGIST
 Christopher W. Koepke
 No. 2207
 Exp. 10-31-10
 CERTIFIED ENGINEERING GEOLOGIST
 STATE OF CALIFORNIA

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This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (June 2007).

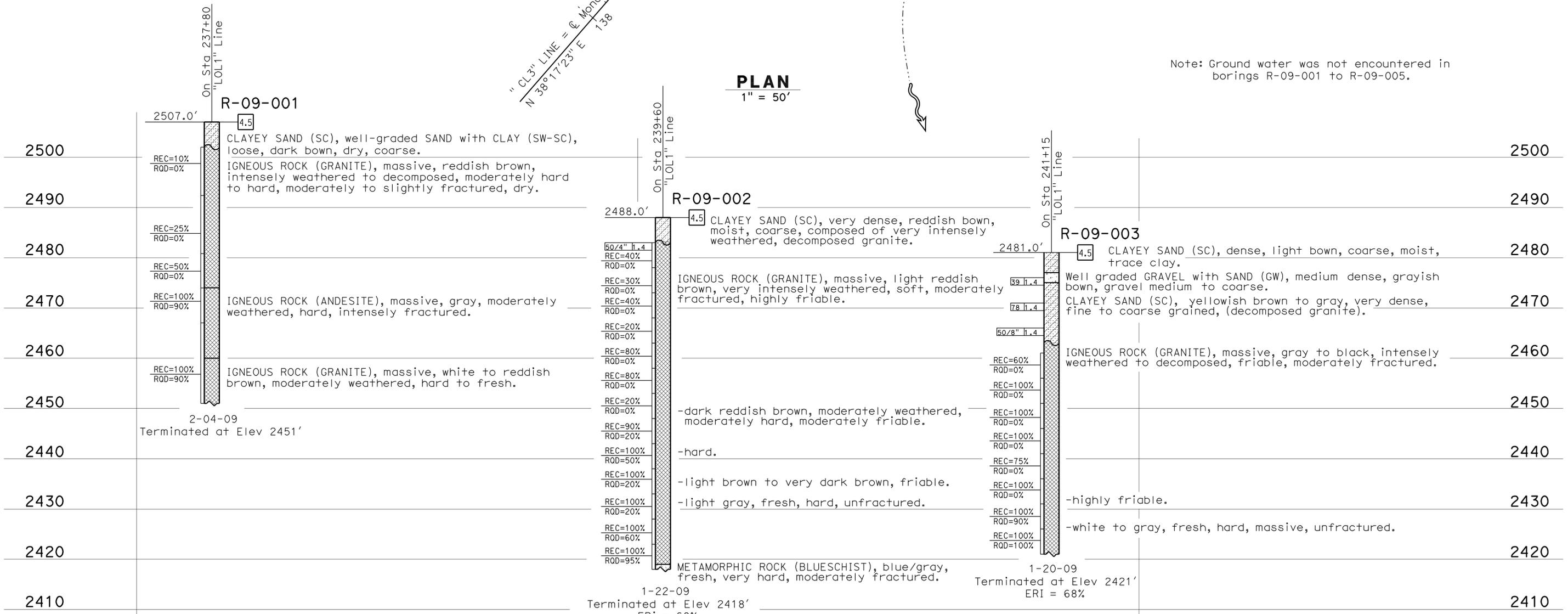
BENCH MARK

Found Nail at ETW Mono way
 Sta 239+80 0.0' Right, "LOL1" Line
 Elev 2489'.



PLAN
 1" = 50'

Note: Ground water was not encountered in borings R-09-001 to R-09-005.



PROFILE
 HOR. 1"=20'
 VER. 1"=10'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.		MONO WAY UNDERCROSSING	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 6/09		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		32-0071		LOG OF TEST BORINGS 1 OF 5	
NAME: Q. Huang		CHECKED BY: C. Zhen		FIELD INVESTIGATION BY: C. Koepke		DESIGN BRANCH		POST MILES		REVISION DATES	
06S CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU 06 228 EA 340421		R5.09		07-15-09 08-11-09 09-01-09 09-08-09 09-09-09 11-07-09		SHEET 24 OF 28	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
10	Tuo	108	R4.0/R6.0	234	237

Christopher W. Koepke
 CERTIFIED ENGINEERING GEOLOGIST DATE 9-08-09

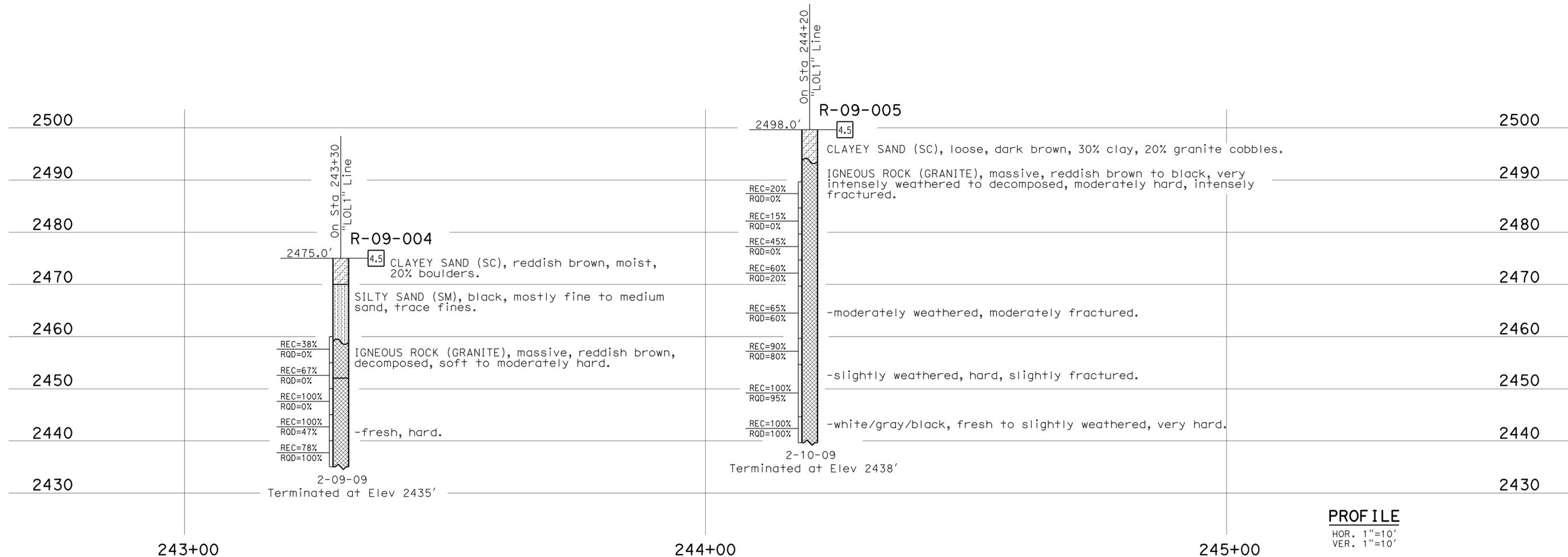
5-10-10
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL GEOLOGIST
 Christopher W. Koepke
 No. 2207
 Exp. 10-31-10
 CERTIFIED ENGINEERING GEOLOGIST
 STATE OF CALIFORNIA

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FOR PLAN VIEW, SEE
 "LOG OF TEST BORINGS 1 OF 5"



PROFILE
 HOR. 1"=10'
 VER. 1"=10'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.		MONO WAY UNDERCROSSING	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 6/09		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		32-0071		LOG OF TEST BORINGS 2 OF 5	
NAME: Q. Huang		CHECKED BY: C. Zhen		C. Koepke		DESIGN BRANCH		POST MILES		REVISION DATES	
								R5.09		07-15-09 08-11-09 09-01-09 09-08-09	
O&S CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU 06 228 EA 340421		DISREGARD PRINTS BEARING EARLIER REVISION DATES				SHEET 25 OF 28	

USERNAME => H:\engrad DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 07:07

Christopher W. Koepke
 CERTIFIED ENGINEERING GEOLOGIST
 DATE 9-08-09

5-10-10
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL GEOLOGIST
 Christopher W. Koepke
 No. 2207
 Exp. 10-31-10
 CERTIFIED ENGINEERING GEOLOGIST
 STATE OF CALIFORNIA

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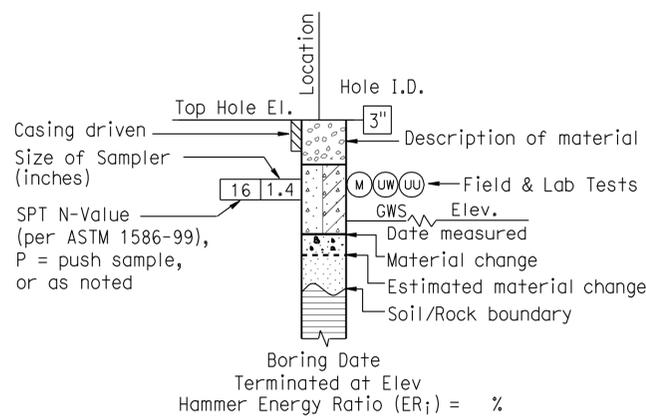
CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

CONSISTENCY OF COHESIVE SOILS				
Description	Unconfined Compressive Strength (tsf)	Pocket Penetrometer Measurement (tsf)	Torvane Measurement (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 to 0.50	0.25 to 0.50	0.12 to 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 to 1.0	0.50 to 1.0	0.25 to 0.50	Penetrated several inches by thumb with moderate effort
Stiff	1 to 2	1 to 2	0.50 to 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2 to 4	2 to 4	1.0 to 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

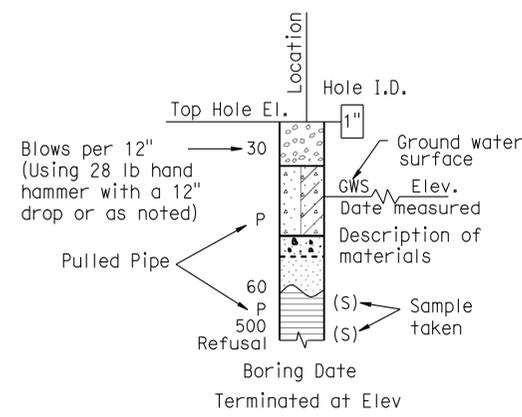
BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring
	R	Rotary drilled boring
	P	Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778-95)
	O	Other

Note: Size in inches.

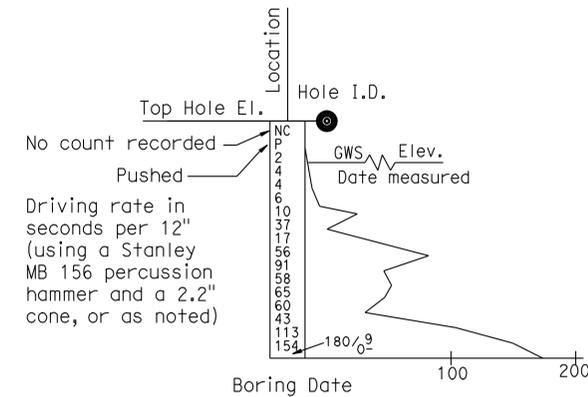
PLASTICITY OF FINE-GRAINED SOILS	
Description	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.



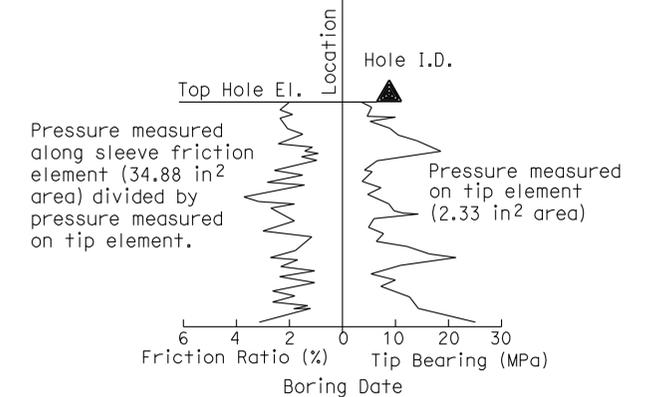
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) SOUNDING

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 32-0071	MONO WAY UNDERCROSSING LOG OF TEST BORINGS 3 OF 5
	PREPARED BY: F. Nguyen 6/09			POST MILES R5.09	
GS LOTB SOIL LEGEND	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 06 228 EA 340421	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 26 OF 28

FILE => 32-0071-z-1+b-3of5.dgn

USERNAME => hrlengard DATE PLOTTED => 12-MAY-2010 TIME PLOTTED => 07:08

Chris Koepke
 CERTIFIED ENGINEERING GEOLOGIST
 DATE: 9-08-09
 5-10-10
 PLANS APPROVAL DATE
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GROUP SYMBOLS AND NAMES			
Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
	Well-graded GRAVEL		Lean CLAY
	Well-graded GRAVEL with SAND		Lean CLAY with SAND
	Poorly graded GRAVEL		SANDY lean CLAY
	Poorly graded GRAVEL with SAND		GRAVELLY lean CLAY
	Well-graded GRAVEL with SILT		SILTY CLAY
	Well-graded GRAVEL with SILT and SAND		SILTY CLAY with SAND
	Well-graded GRAVEL with CLAY (or SILTY CLAY)		SANDY SILTY CLAY
	Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		GRAVELLY SILTY CLAY
	Poorly graded GRAVEL with SILT		SILTY CLAY with GRAVEL
	Poorly graded GRAVEL with SILT and SAND		SANDY SILTY CLAY with GRAVEL
	Poorly graded GRAVEL with CLAY (or SILTY CLAY)		GRAVELLY SILTY CLAY
	Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		GRAVELLY SILTY CLAY with SAND
	SILTY GRAVEL		SILT
	SILTY GRAVEL with SAND		SILT with SAND
	CLAYEY GRAVEL		SILT with GRAVEL
	CLAYEY GRAVEL with SAND		SANDY SILT
	SILTY, CLAYEY GRAVEL		SANDY SILT with GRAVEL
	SILTY, CLAYEY GRAVEL with SAND		GRAVELLY SILT
	Well-graded SAND		GRAVELLY SILT with SAND
	Well-graded SAND with GRAVEL		ORGANIC lean CLAY
	Poorly graded SAND		ORGANIC lean CLAY with SAND
	Poorly graded SAND with GRAVEL		ORGANIC lean CLAY with GRAVEL
	Well-graded SAND with SILT		SANDY ORGANIC lean CLAY
	Well-graded SAND with SILT and GRAVEL		SANDY ORGANIC lean CLAY with GRAVEL
	Well-graded SAND with CLAY (or SILTY CLAY)		GRAVELLY ORGANIC lean CLAY
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		GRAVELLY ORGANIC lean CLAY with SAND
	Poorly graded SAND with SILT		ORGANIC SILT
	Poorly graded SAND with SILT and GRAVEL		ORGANIC SILT with SAND
	Poorly graded SAND with CLAY (or SILTY CLAY)		ORGANIC SILT with GRAVEL
	Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		SANDY ORGANIC SILT
	SILTY SAND		SANDY ORGANIC SILT with GRAVEL
	SILTY SAND with GRAVEL		GRAVELLY ORGANIC SILT
	CLAYEY SAND		GRAVELLY ORGANIC SILT with SAND
	CLAYEY SAND with GRAVEL		Fat CLAY
	SILTY, CLAYEY SAND		Fat CLAY with SAND
	SILTY, CLAYEY SAND with GRAVEL		Fat CLAY with GRAVEL
	PEAT		SANDY fat CLAY
	COBBLES		SANDY fat CLAY with GRAVEL
	COBBLES and BOULDERS		GRAVELLY fat CLAY
	BOULDERS		GRAVELLY fat CLAY with SAND
	ORGANIC SOIL		Elastic SILT
	ORGANIC SOIL with SAND		Elastic SILT with SAND
	ORGANIC SOIL with GRAVEL		Elastic SILT with GRAVEL
	SANDY ORGANIC SOIL		SANDY elastic SILT
	SANDY ORGANIC SOIL		SANDY organic SILT with GRAVEL
	SANDY ORGANIC SOIL with GRAVEL		GRAVELLY elastic SILT
	GRAVELLY ORGANIC SOIL		GRAVELLY elastic SILT with SAND
	GRAVELLY ORGANIC SOIL with SAND		ORGANIC fat CLAY
	ORGANIC SOIL with SAND		ORGANIC fat CLAY with SAND
	ORGANIC SOIL with GRAVEL		ORGANIC fat CLAY with GRAVEL
	SANDY ORGANIC SOIL		SANDY ORGANIC fat CLAY
	SANDY ORGANIC SOIL with GRAVEL		SANDY ORGANIC fat CLAY with GRAVEL
	GRAVELLY ORGANIC SOIL		GRAVELLY ORGANIC fat CLAY
	GRAVELLY ORGANIC SOIL with SAND		GRAVELLY ORGANIC fat CLAY with SAND

FIELD AND LABORATORY TESTING	
(C)	Consolidation (ASTM D 2435)
(CL)	Collapse Potential (ASTM D 5333)
(CP)	Compaction Curve (CTM 216)
(CR)	Corrosivity Testing (CTM 643, CTM 422, CTM 417)
(CU)	Consolidated Undrained Triaxial (ASTM D 4767)
(DS)	Direct Shear (ASTM D 3080)
(EI)	Expansion Index (ASTM D 4829)
(M)	Moisture Content (ASTM D 2216)
(OC)	Organic Content-% (ASTM D 2974)
(P)	Permeability (CTM 220)
(PA)	Particle Size Analysis (ASTM D 422)
(PI)	Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
(PL)	Point Load Index (ASTM D 5731)
(PM)	Pressure Meter
(PP)	Pocket Penetrometer
(R)	R-Value (CTM 301)
(SE)	Sand Equivalent (CTM 217)
(SG)	Specific Gravity (AASHTO T 100)
(SL)	Shrinkage Limit (ASTM D 427)
(SW)	Swell Potential (ASTM D 4546)
(TV)	Pocket Torvane
(UC)	Unconfined Compression-Soil (ASTM D 2166)
(UC)	Unconfined Compression-Rock (ASTM D 2938)
(UU)	Unconsolidated Undrained Triaxial (ASTM D 2850)
(UW)	Unit Weight (ASTM D 4767)
(VS)	Vane Shear (AASHTO T 223)

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N ₆₀ (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE	
Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS	
Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE		
Description	Size	
Boulder	> 12"	
Cobble	3" to 12"	
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

Christopher W. Koepke
 CERTIFIED ENGINEERING GEOLOGIST 9-08-09 DATE
 5-10-10 PLANS APPROVAL DATE
 REGISTERED PROFESSIONAL GEOLOGIST
 No. 2207
 Exp. 10-31-10
 CERTIFIED ENGINEERING GEOLOGIST
 STATE OF CALIFORNIA
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PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)

$$REC = \frac{\sum \text{Length of the recovered core pieces (inches)}}{\text{Total length of core run (inches)}} \times 100\%$$

$$RQD = \frac{\sum \text{Length of intact core pieces} \geq 4''}{\text{Total length of core run (inches)}} \times 100\%$$

RELATIVE STRENGTH OF INTACT ROCK

Term	Uniaxial Compressive Strength (PSI)
Extremely Strong	> 30,000
Very Strong	14,500 - 30,000
Strong	7,000 - 14,500
Medium Strong	3,500 - 7,000
Weak	700 - 3,500
Very Weak	150 - 700
Extremely Weak	< 150

BEDDING SPACING

Description	Thickness / Spacing
Massive	Greater than 10 ft
Very thickly bedded	3 to 10 ft
Thickly bedded	1 to 3 ft
Moderately bedded	3-5/8" to 1 ft
Thinly bedded	1-1/4" to 3-5/8"
Very thinly bedded	3/8" to 1-1/4"
Laminated	Less than 3/8"

LEGEND OF ROCK MATERIALS

- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

ROCK HARDNESS

Description	Criteria
Extremely Hard	Specimen cannot be scratched with a pocket knife or sharp pick; can only be chipped with repeated heavy hammer blows.
Very Hard	Specimen cannot be scratched with a pocket knife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Specimen can be scratched with a pocket knife or sharp pick with difficulty (heavy pressure). Heavy hammer blows required to break specimen.
Moderately Hard	Specimen can be scratched with pocket knife or sharp pick with light or moderate pressure. Core breaks with moderate hammer blows.
Moderately Soft	Specimen can be grooved 1/6" deep with a pocket knife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Specimen can be grooved or gouged easily by a pocket knife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Specimen can be readily indented, grooved or gouged with fingernail, or carved with a pocket knife. Breaks with light manual pressure.

WEATHERING DESCRIPTORS FOR INTACT ROCK

Description	Diagnostic features					General Characteristics
	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	
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change.	No solutioning.	Hammer rings when crystalline rocks are struck.
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.
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.
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.
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. Resistant minerals such as quartz may be present as "stringers" or "dikes."

Combination descriptors (such as "slightly weathered to fresh") are permissible where equal distribution of both weathering characteristics is present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, combination descriptors should not be used where significant, identifiable zones can be delineated. Only two adjacent descriptors may be combined. "Very intensely weathered" is the combination descriptor for "intensely weathered to decomposed."

FRACTURE DENSITY

Description	Observed Fracture Density
Unfractured	No fractures.
Very slightly fractured	Lengths greater than 3 feet.
Slightly fractured	Lengths from 1 to 3 feet with few lengths less than 1 foot or greater than 3 feet.
Moderately fractured	Lengths mostly in 4" to 1 foot range with most lengths about 8"
Intensely fractured	Lengths average from 1 to 4" with scattered fragmented intervals with lengths less than 4"
Very intensely fractured	Mostly chips and fragments with a few scattered short core lengths.

Combination descriptors (such as "Very intensely to intensely fractured") are used where equal distribution of both fracture density characteristics is present over a significant interval or exposure, or where characteristics are "in between" the descriptor definitions. Only two adjacent descriptors may be combined.