

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	401	457

12-7-10  
REGISTERED CIVIL ENGINEER DATE

1-23-12  
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER

LINAN WANG

No. 54714

Exp. 12-31-11

CIVIL

STATE OF CALIFORNIA

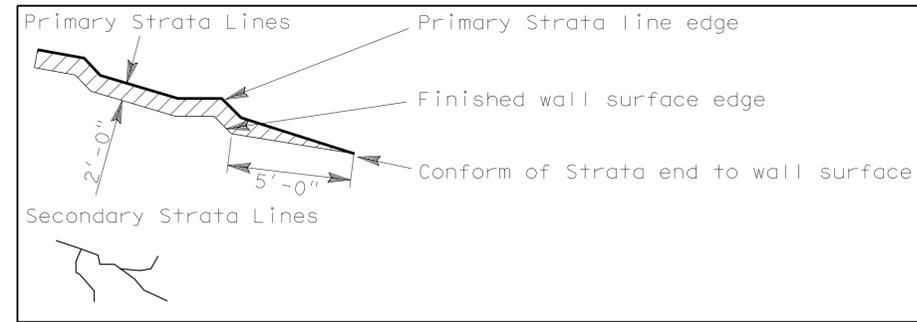
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NOTES:

- ① Primary Strata lines drawn on the front elevation are to be used as a guide for layout of Primary Strata line reinforcement. See "Architectural Wall Surface Treatment Plan".
- ② Secondary Strata lines drawn on the front elevation are to be used as a General Guide. Strata lines shall be sculpted to mimic local geology.
- ③ This sheet accurate for Architectural Treatment only.
- ④ Architectural Surface Treatment shall be continuous throughout the face of the wall.

- ⑤ No relief shall be allowed within 6'-6" (vertical) of the roadway surface. Etching or scoring may be allowed to carry through sculpting.
- ⑥ Additional shotcrete needed for carving the Primary Strata lines to be reinforced as shown on Structural Detail Plans.
- ⑦ Primary Strata lines to be tapered into the top and bottom of wall.
- ⑧ Secondary Strata lines are not to exceed 2" amplitude.

LEGEND

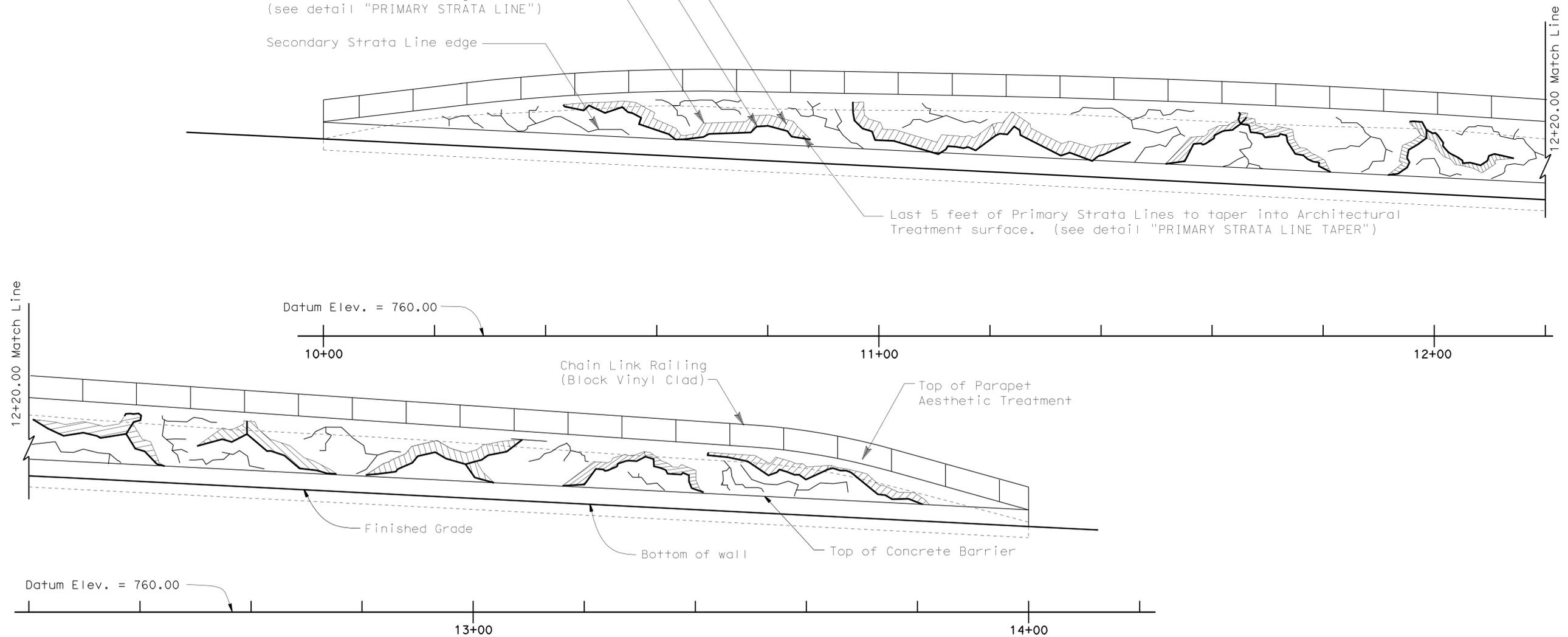


Width of Primary Strata Lines a maximum of 2 feet, Tapering from Primary Strata Line edge to finished wall surface (see detail "PRIMARY STRATA LINE")

Primary Strata Line edge (see detail "PRIMARY STRATA LINE")

Finished Wall Surface edge (see detail "PRIMARY STRATA LINE")

Secondary Strata Line edge



**AESTHETIC WALL SURFACE TREATMENT**

1" = 10'

DESIGN	BY David Fowkes	CHECKED Linan Wang
DETAILS	BY Jeff Thorne	CHECKED Linan Wang
QUANTITIES	BY Toung Ha	CHECKED Linan Wang

**STATE OF CALIFORNIA**  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
**DESIGN BRANCH 4**

BRIDGE NO.	33E0214
POST MILE	R5.03

**RETAINING WALL NO.4**  
**ARCHITECTURAL TREATMENT LAYOUT**

TIME PLOTTED => USERNAME => s128843 DATE PLOTTED =>

NOTES:

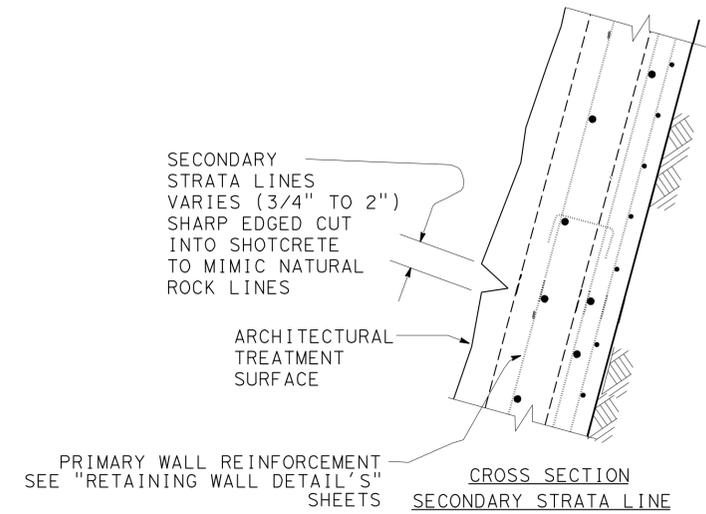
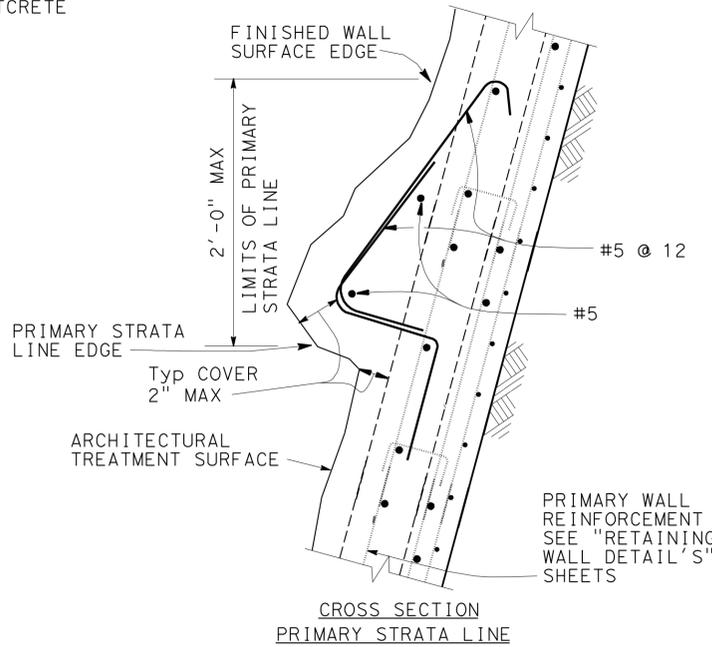
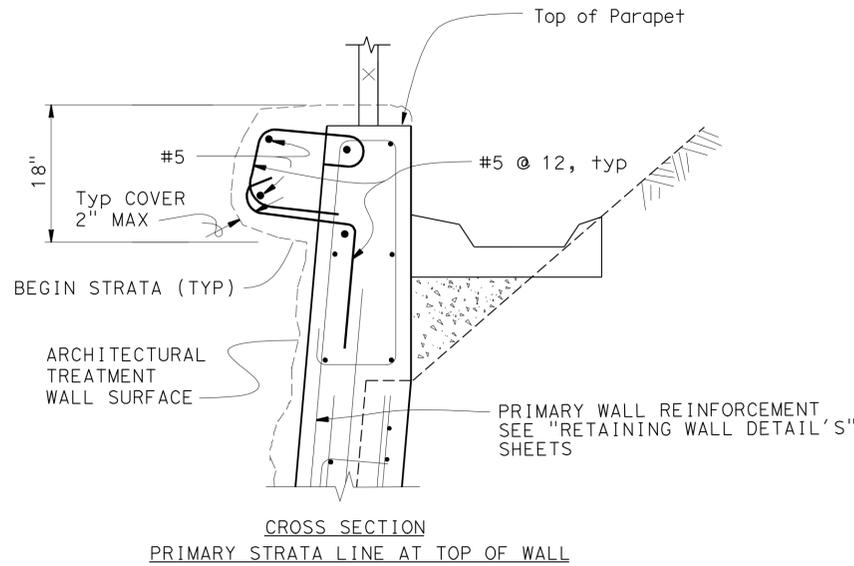
- MAX 6" THICK REINFORCED SHOTCRETE ZONE FOR TOP OF WALL ARCHITECTURAL TREATMENT.
- LONGITUDINAL BARS SHALL TAPER TO A POINT AND BE FLUSH WITH THE FINISHED WALL SURFACE AT THE END OF PRIMARY STRATA LINE WHERE THEY TRANSITIONS INTO THE WALL FACE.
- ANGLE OF PRIMARY STRATA LINE ACROSS WALL APRON 15 DEGREES FOR CROSS SLOPES 0-10%, 45 DEGREES FOR CROSS SLOPES GREATER THAN 10%.
- MAXIMUM 2" THICK UNREINFORCED SHOTCRETE ARCHITECTURAL TREATMENT ZONE.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	402	457

REGISTERED CIVIL ENGINEER DATE 12-7-10  
 1-23-12  
 PLANS APPROVAL DATE

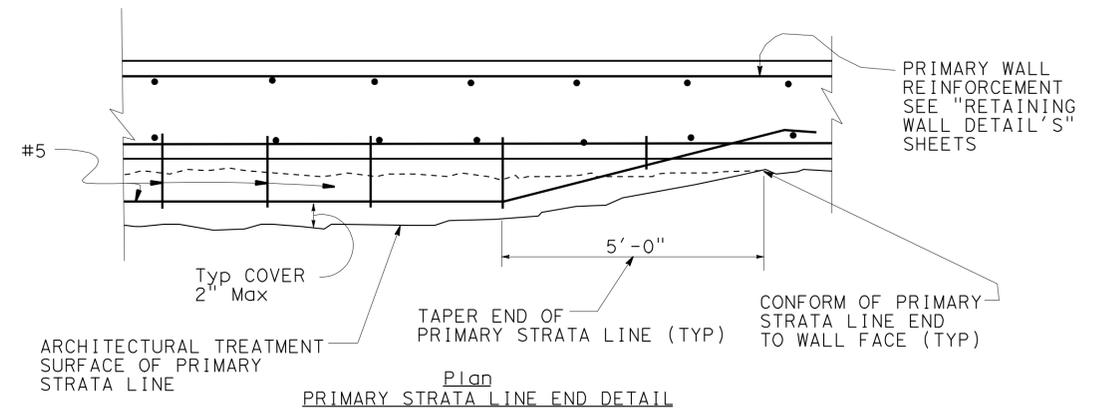
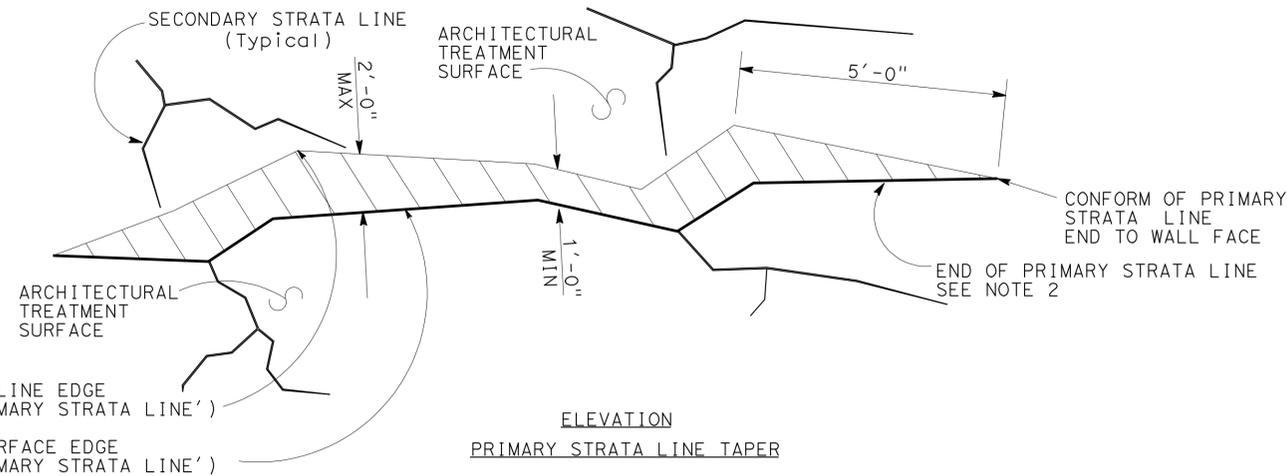
REGISTERED PROFESSIONAL ENGINEER  
 LINAN WANG  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA

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Notes:

- Chain Link Railing not shown.
- For reinforcing in wall and parapet, see "TYPICAL SECTION" in "TYPICAL SECTION" sheet.



DESIGN	BY	Toung Ha	CHECKED	Linan Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO.	33E0214	RETAINING WALL NO. 4 ARCHITECTURAL TREATMENT DETAILS	
	DETAILS	BY	Jeff Thorne/ Wei Zhang	CHECKED			Linan Wang	POST MILE		R5.03
	QUANTITIES	BY	Toung Ha	CHECKED			Linan Wang	CU 04 EA 4A07U1		REVISION DATES

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES

FILE => 04-4a0701-rw04-h-exbf01-1.dgn

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:41

**BENCH MARK**

CT 262 (NAVD88)

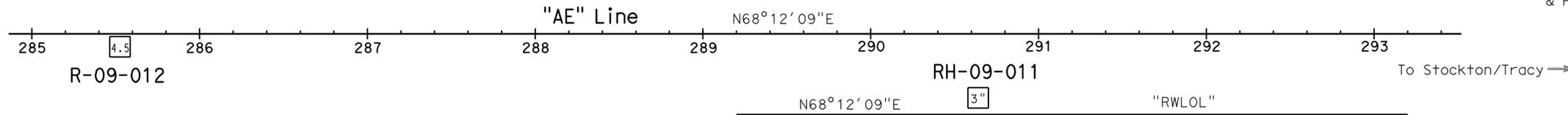
Fnd a Mag nail and shiner in the AC shoulder along SR 580 EB. It is about 155' east of PM marker 5.0  
 N 2088147.382  
 E 6230611.321  
 Elev = 787.532'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	403	457

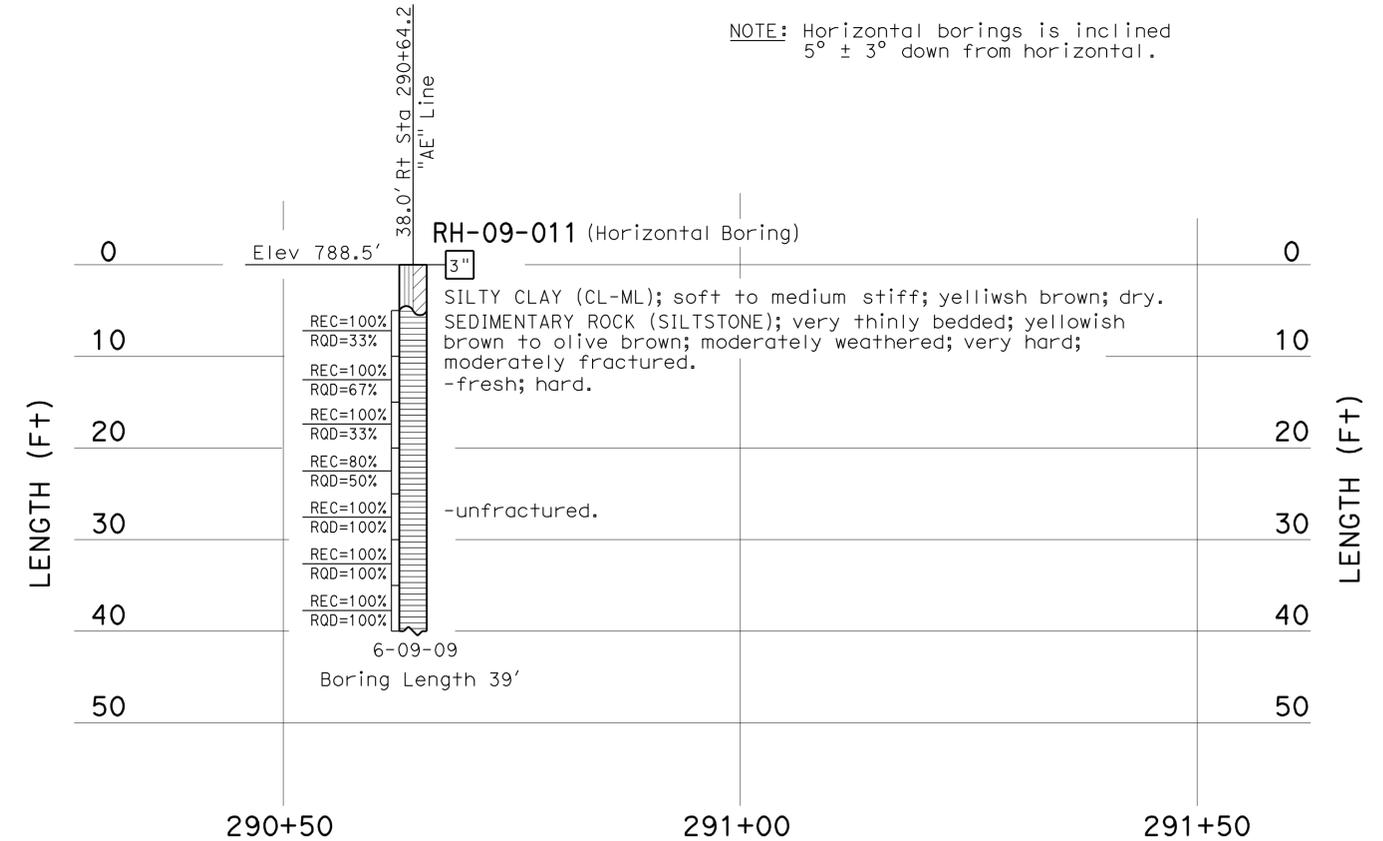
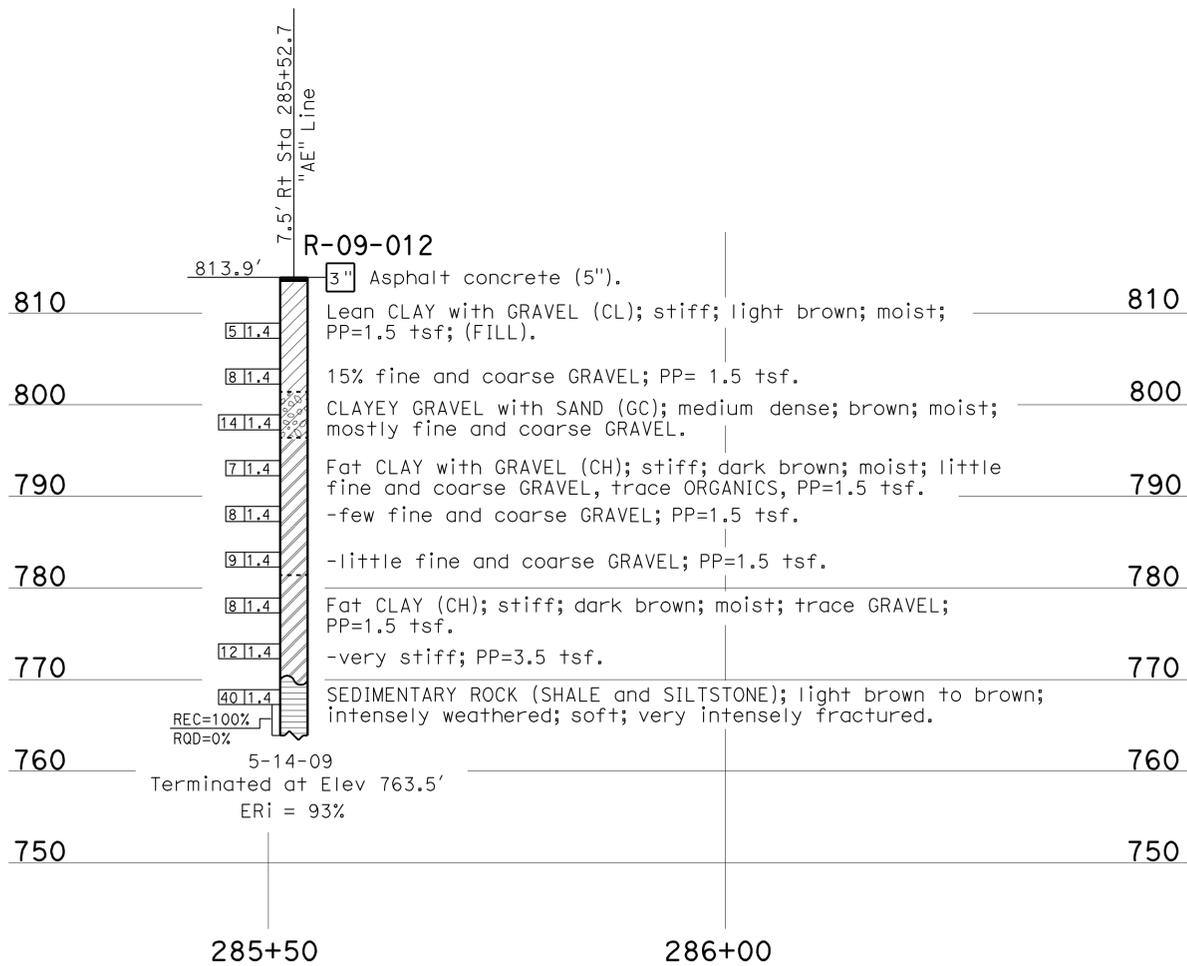
12-29-10  
 REGISTERED CIVIL ENGINEER  
 Eduardo Ortega  
 No. C41012  
 Exp. 3-31-11  
 CIVIL  
 STATE OF CALIFORNIA

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



**PLAN**  
 1" = 40'



NOTE: Horizontal borings is inclined 5° ± 3° down from horizontal.

**PROFILE**  
 Horiz: 1" = 10'  
 Vert: 1" = 10'

<b>ENGINEERING SERVICES</b>		<b>GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA</b>		<b>DIVISION OF ENGINEERING SERVICES</b>		<b>BRIDGE NO.</b>		<b>RETAINING WALL NO. 4</b>	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 8/10, I.G-Remmen 12/10		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		33E0214		<b>LOG OF TEST BORINGS 1 OF 4</b>	
NAME: M. Momenzadeh		CHECKED BY: R. Nashed		C. Koepke, R. Karpowicz		<b>DESIGN BRANCH</b>		POST MILES		REVISION DATES	
06S CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU EA		04 4A0701		R5.03		10-04-10 11-05-10 12-29-10	
										SHEET 10 OF 13	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	404	457

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1-23-12  
PLANS APPROVAL DATE

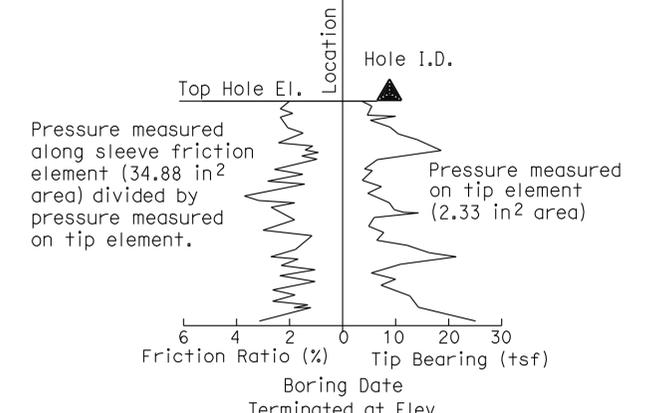
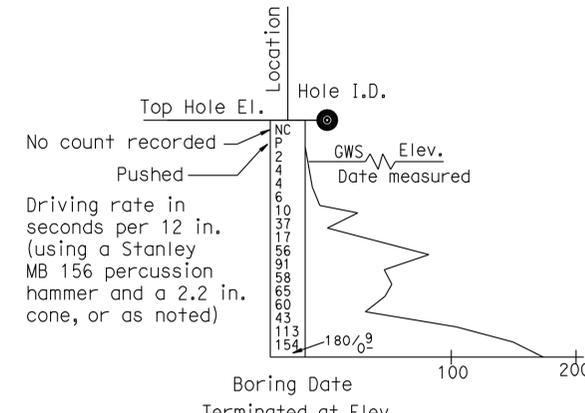
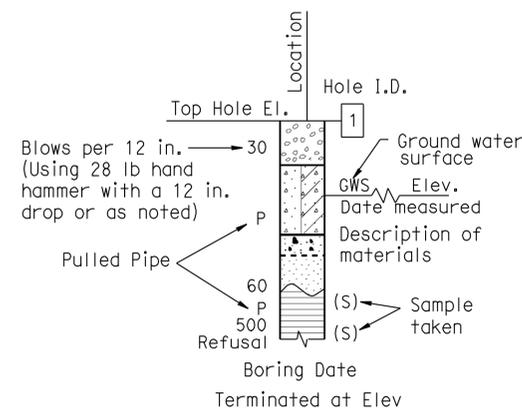
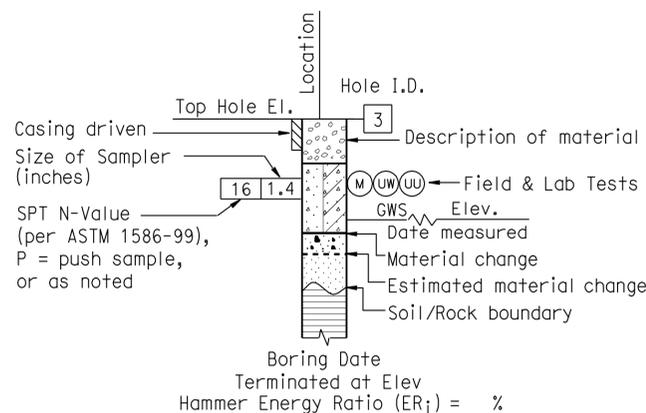
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CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring (hollow or solid stem bucket)
	R	Rotary drilled boring (conventional)
	RW	Rotary drilled with self-casing wire-line
	RC	Rotary core with continuously-sampled, self-casing wire-line
	P	Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778)
	O	Other (note on LOTB)

**Note: Size in inches.**

CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



ENGINEERING SERVICES	GEOTECHNICAL SERVICES PREPARED BY: F. Nguyen	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33E0214	RETAINING WALL NO. 4 LOG OF TEST BORINGS 2 OF 4
				POST MILE R5.03	
GS LOTB SOIL LEGEND	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 11 OF 13

FILE => 04-4a0701-rw04-k-lotd\_2of4.dgn

12-29-10

REGISTERED CIVIL ENGINEER

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1-23-12  
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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		SANDY lean CLAY with GRAVEL
	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)		SILTY CLAY with GRAVEL
	Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SANDY SILTY CLAY
	Poorly-graded GRAVEL with SILT		SANDY SILTY CLAY with GRAVEL
	Poorly-graded GRAVEL with SILT and SAND		GRAVELLY SILTY CLAY
	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		GRAVELLY ORGANIC lean CLAY
	Well-graded SAND with CLAY (or SILTY CLAY)		GRAVELLY ORGANIC lean CLAY with SAND
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		ORGANIC SILT
	Poorly-graded SAND with SILT		ORGANIC SILT with SAND
	Poorly-graded SAND with SILT and GRAVEL		ORGANIC SILT with GRAVEL
	Poorly-graded SAND with CLAY (or SILTY CLAY)		SANDY ORGANIC SILT
	Poorly-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		SANDY ORGANIC SILT with GRAVEL
	SILTY SAND		GRAVELLY elastic SILT
	SILTY SAND with GRAVEL		GRAVELLY elastic SILT with SAND
	CLAYEY SAND		ORGANIC fat CLAY
	CLAYEY SAND with GRAVEL		ORGANIC fat CLAY with SAND
	SILTY, CLAYEY SAND		ORGANIC fat CLAY with GRAVEL
	SILTY, CLAYEY SAND with GRAVEL		SANDY ORGANIC fat CLAY
	PEAT		SANDY ORGANIC fat CLAY with GRAVEL
	COBBLES		GRAVELLY ORGANIC fat CLAY
	COBBLES and BOULDERS		GRAVELLY ORGANIC fat CLAY with SAND
	BOULDERS		ORGANIC elastic SILT
	CLAYEY SAND with GRAVEL		ORGANIC elastic SILT with SAND
	SILTY, CLAYEY SAND		ORGANIC elastic SILT with GRAVEL
	SILTY, CLAYEY SAND with GRAVEL		SANDY ORGANIC elastic SILT
	ORGANIC elastic SILT with GRAVEL		SANDY ORGANIC elastic SILT with GRAVEL
	PEAT		GRAVELLY ORGANIC elastic SILT
	ORGANIC SOIL		GRAVELLY ORGANIC elastic SILT with SAND
	COBBLES and BOULDERS		ORGANIC SOIL with SAND
	BOULDERS		ORGANIC SOIL with GRAVEL
	COBBLES and BOULDERS		SANDY ORGANIC SOIL
	BOULDERS		SANDY ORGANIC SOIL with GRAVEL
	COBBLES and BOULDERS		GRAVELLY ORGANIC SOIL
	BOULDERS		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
(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)
(UC)	Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
(UU)	Unconsolidated Undrained Triaxial (ASTM D 2850)
(UW)	Unit Weight (ASTM D 4767)

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N <sub>60</sub> (Blows / 12 in.)
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Greater than 50

MOISTURE	
Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

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

PARTICLE SIZE		
Description	Size (in.)	
Boulder	Greater than 12	
Cobble	3 - 12	
Gravel	Coarse	3/4 - 3
	Fine	1/5 - 3/4
Sand	Coarse	1/16 - 1/5
	Medium	1/64 - 1/16
	Fine	1/300 - 1/64
Silt and Clay	Less than 1/300	

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**PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)**

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

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

RQD\* Indicates soundness criteria not met.

**BEDDING SPACING**

Description	Thickness / Spacing
Massive	Greater than 10 ft
Very Thickly Bedded	3 ft - 10 ft
Thickly Bedded	1 ft - 3 ft
Moderately Bedded	4 in. - 1 ft
Thinly Bedded	1 in. - 4 in.
Very Thinly Bedded	1/4 in. - 1 in.
Laminated	Less than 1/4 in.

**LEGEND OF ROCK MATERIALS**

- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

**ROCK HARDNESS**

Description	Criteria
Extremely Hard	Cannot be scratched with a pocketknife or sharp pick. Can only be chipped with repeated heavy hammer blows.
Very Hard	Cannot be scratched with a pocketknife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Can be scratched with a pocketknife or sharp pick with difficulty (heavy pressure). Breaks with heavy hammer blows.
Moderately Hard	Can be scratched with pocketknife or sharp pick with light or moderate pressure. Breaks with moderate hammer blows.
Moderately Soft	Can be grooved 1/16 in. deep with a pocketknife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Can be grooved or gouged easily by a pocketknife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Can be readily indented, grooved or gouged with fingernail, or carved with a pocketknife. 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 Leaching		
	Body of Rock	Fracture Surfaces		Texture		Leaching
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change	No leaching	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.	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."

**FRACTURE DENSITY**

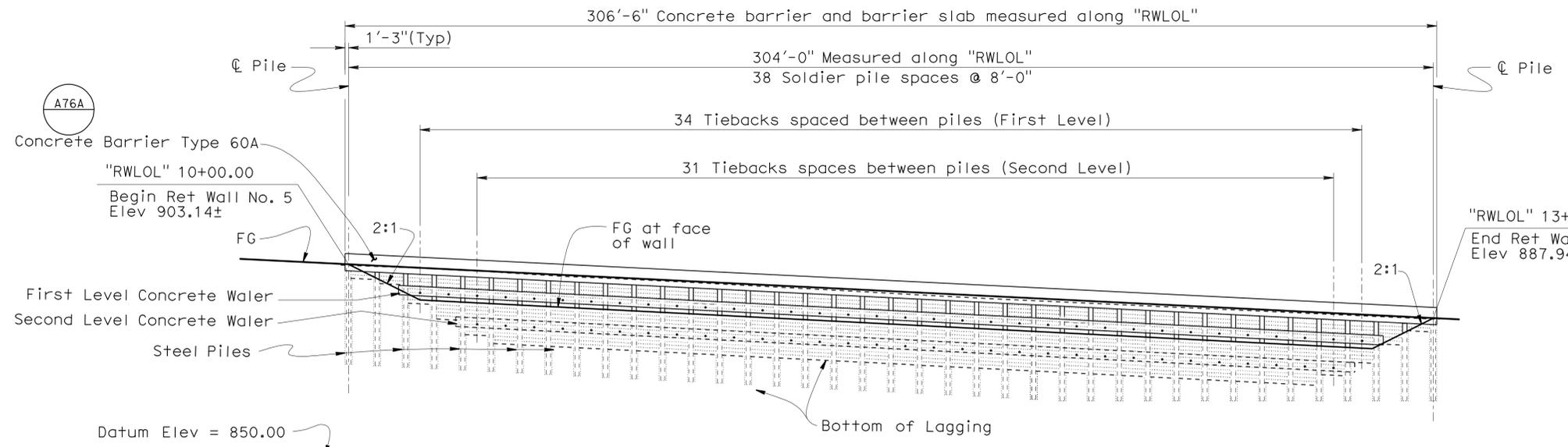
Description	Observed Fracture Density
Unfractured	No fractures.
Very Slightly Fractured	Core lengths greater than 3 ft.
Slightly Fractured	Core lengths mostly from 1 to 3 ft.
Moderately Fractured	Core lengths mostly from 4 in. to 1 ft.
Intensely Fractured	Core lengths mostly from 1 to 4 in.
Very Intensely Fractured	Mostly chips and fragments.

<b>ENGINEERING SERVICES</b>	<b>GEOTECHNICAL SERVICES</b>	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	<b>DIVISION OF ENGINEERING SERVICES</b> STRUCTURE DESIGN <b>DESIGN BRANCH</b>	BRIDGE NO. 33E0214 POST MILE R5.03	<b>RETAINING WALL NO. 4</b> <b>LOG OF TEST BORINGS 4 OF 4</b>
	PREPARED BY: F. Nguyen				
GS LOTB SOIL LEGEND	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	CU EA 04 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES
					10-04-10
					SHEET 13 OF 13

FILE => 04-4a0701-rw04-k-lotb\_4of4.dgn

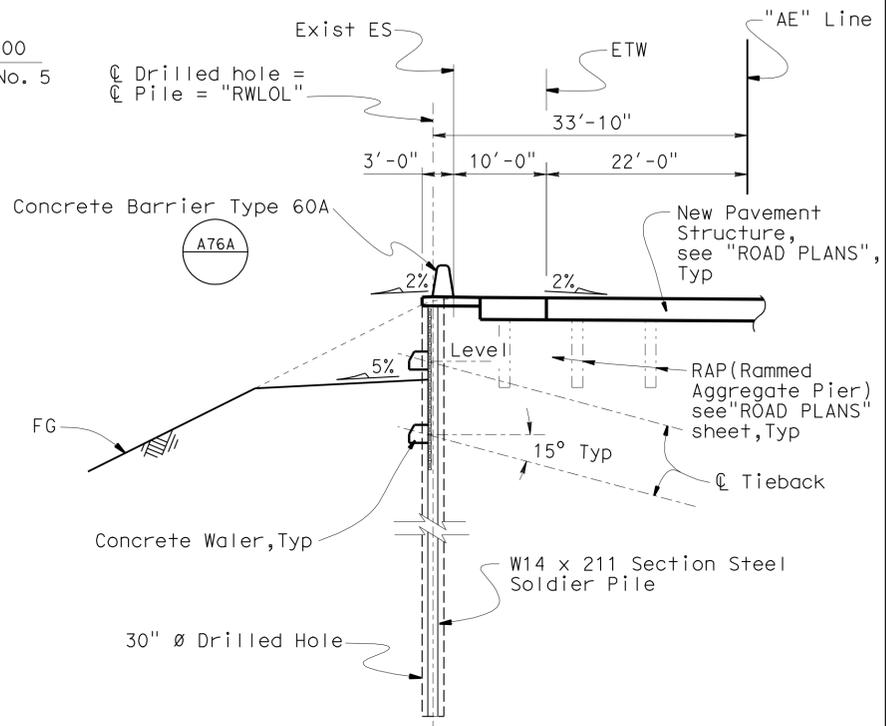
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
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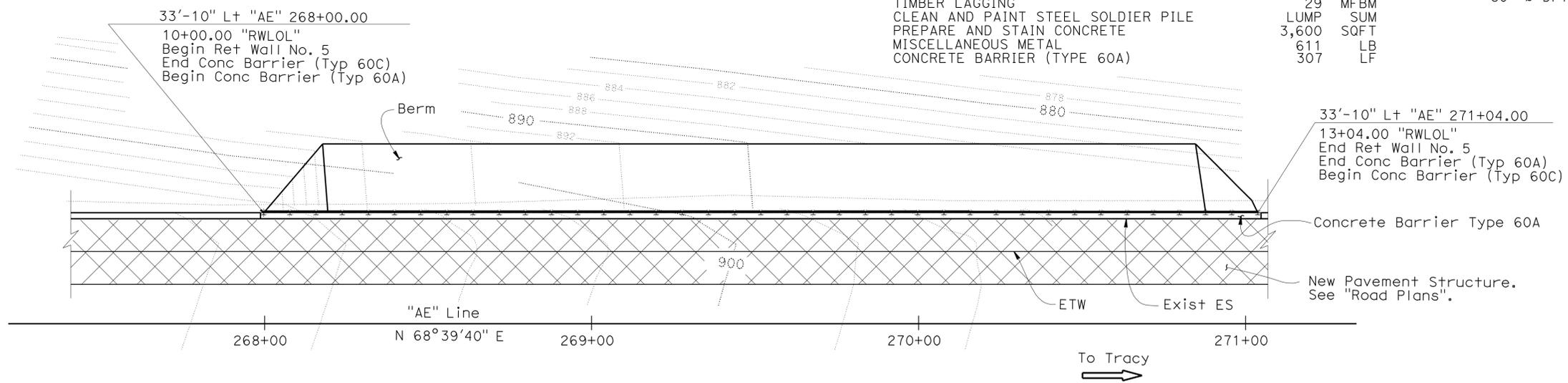


**MIRROR ELEVATION**  
1" = 20'

QUANTITIES			
STRUCTURE EXCAVATION (SOLDIER PILE WALL)	1,905	CY	
STRUCTURE EXCAVATION (TYPE Y-1) (AERIALY DEPOSITED LEAD)	145	CY	
STRUCTURE BACKFILL (SOLDIER PILE WALL)	1,310	CY	
CONCRETE BACKFILL (SOLDIER PILE WALL)	171	CY	
LEAN CONCRETE BACKFILL	214	CY	
30" DRILLED HOLE	2,386	LF	
STEEL SOLDIER PILE (W 14 X 211)	2,340	LF	
TIEBACK ANCHOR	65	EA	
STRUCTURAL CONCRETE, WALLER	112	CY	
STRUCTURAL CONCRETE, BARRIER SLAB	115	CY	
BAR REINFORCING STEEL (RETAINING WALL)	71,600	LB	
TIMBER LAGGING	29	MFBM	
CLEAN AND PAINT STEEL SOLDIER PILE	LUMP	SUM	
PREPARE AND STAIN CONCRETE	3,600	SQFT	
MISCELLANEOUS METAL	611	LB	
CONCRETE BARRIER (TYPE 60A)	307	LF	



**TYPICAL SECTION**  
1" = 10'



**PLAN**  
1" = 20'

**INDEX TO PLANS**

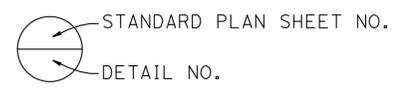
SHEET NO.	TITLE
1	GENERAL PLAN
2	STRUCTURE PLAN NO.1
3	STRUCTURE PLAN NO.2
4	RETAINING WALL DETAILS NO.1
5	RETAINING WALL DETAILS NO.2
6	RETAINING WALL DETAILS NO.3
7	RETAINING WALL DETAILS NO.4
8	LOG OF TEST BORINGS 1 OF 5
9	LOG OF TEST BORINGS 2 OF 5
10	LOG OF TEST BORINGS 3 OF 5
11	LOG OF TEST BORINGS 4 OF 5
12	LOG OF TEST BORINGS 5 OF 5

**STANDARD PLANS DATED MAY 2006**

DETAIL	DESCRIPTION
A10A	ACRONYMS AND ABBREVIATIONS A-L
A10B	ACRONYMS AND ABBREVIATIONS M-Z
A10C	SYMBOLS (SHEET 1 OF 2)
A10D	SYMBOLS (SHEET 2 OF 2)
A76A	CONCRETE BARRIER TYPE 60A

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

- Notes**
- For "General Notes" see "STRUCTURE PLAN NO.1" sheet
  - For details of "AE" Line, see "ROAD SHEETS"



Minh Ha DESIGN ENGINEER	DESIGN	BY Jay Quiogue	CHECKED Sergio Damian	LOAD & RESISTANCE FACTOR DESIGN	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO.	RETAINING WALL NO.5 GENERAL PLAN
	DETAILS	BY Wei Zhang/J. Thorne	CHECKED Linan Wang	LAYOUT			BY Linan Wang	
	QUANTITIES	BY Jay Quiogue	CHECKED Wei Zhang	SPECIFICATIONS	BY X	PLANS AND SPECS COMPARED X	POST MILE	R5.44

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS: 0 1 2 3  
 CU 04 EA 4A07U1  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES: 3-22-10, 3-16-11, 8-18-10, 8-30-10, 9-9-10, 9-18-10, 10-26-10, 11-11-10, 3-10-11  
 SHEET 1 OF 12  
 FILE => 04-4a0701-rw05-a-gp01.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	408	457

12-7-10  
REGISTERED CIVIL ENGINEER DATE

1-23-12  
PLANS APPROVAL DATE

No. 54714  
Exp. 12-31-11  
CIVIL  
STATE OF CALIFORNIA

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**GENERAL NOTES**

**DESIGN:**  
AASHTO Standard Specifications for Highway Bridges dated 1995 with Interim Bridge Design Specifications (Caltrans) 2000.

**SOIL PARAMETERS:**  
(For determination of design lateral earth pressures)  
 $\phi = 22^\circ$   $\gamma = 130$  pcf  $C = 0$

**REINFORCED CONCRETE:**  
 $f'c = 4.0$  ksi (Concrete compressive strength at 28 days)  
 $fy = 60$  ksi (Yield strength of reinforcement)

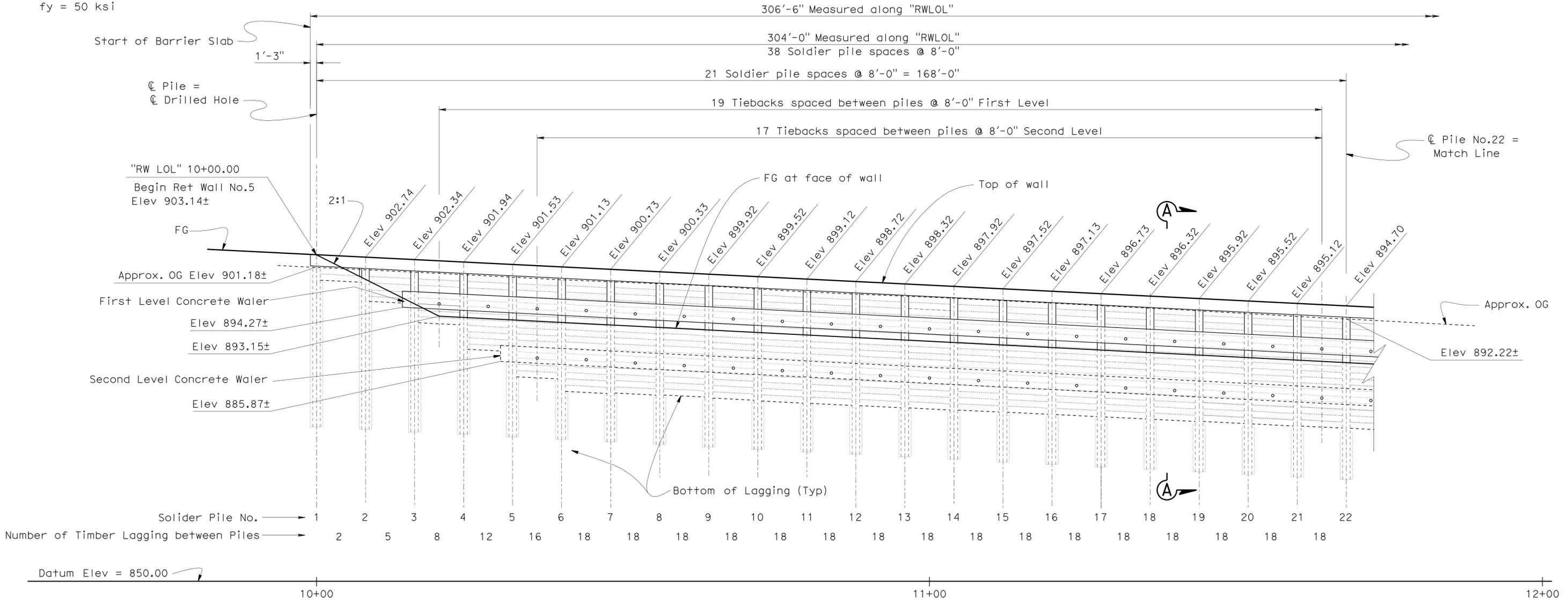
**STRUCTURAL STEEL:**  
ASTM Designation: A709/A709M  
 $fy = 50$  ksi

**GENERAL NOTES (Cont)**

**STRUCTURAL TIMBER:**  
Treated Douglas Fir, Grade No. 1 or better.  
Timber to be full sawn.

**PRESTRESS STEEL (TIEBACKS)**  
Strands - ASTM designation: A416  
 $T =$  Design force per Tieback = 196 kips  
 $f_{pu}$  = Minimum tensile strength of prestressing steel (kips per square inch)  
 $A_s$  (Min) = Minimum cross sectional area of prestressing steel in Tieback tendon. (square inch)  
 $A_s$  (Min) =  $\frac{1.5 T}{0.75 f_{pu}}$

- Notes:
- For "Section A-A" see "RETAINING WALL DETAIL NO.1" sheet.
  - The construction of soldier pile shall be staggered and no open holes adjacent.
  - Concrete barrier Type 60A not shown.
  - Remove lean concrete to bottom of laggings where it requires.



**MIRROR ELEVATION**

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

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

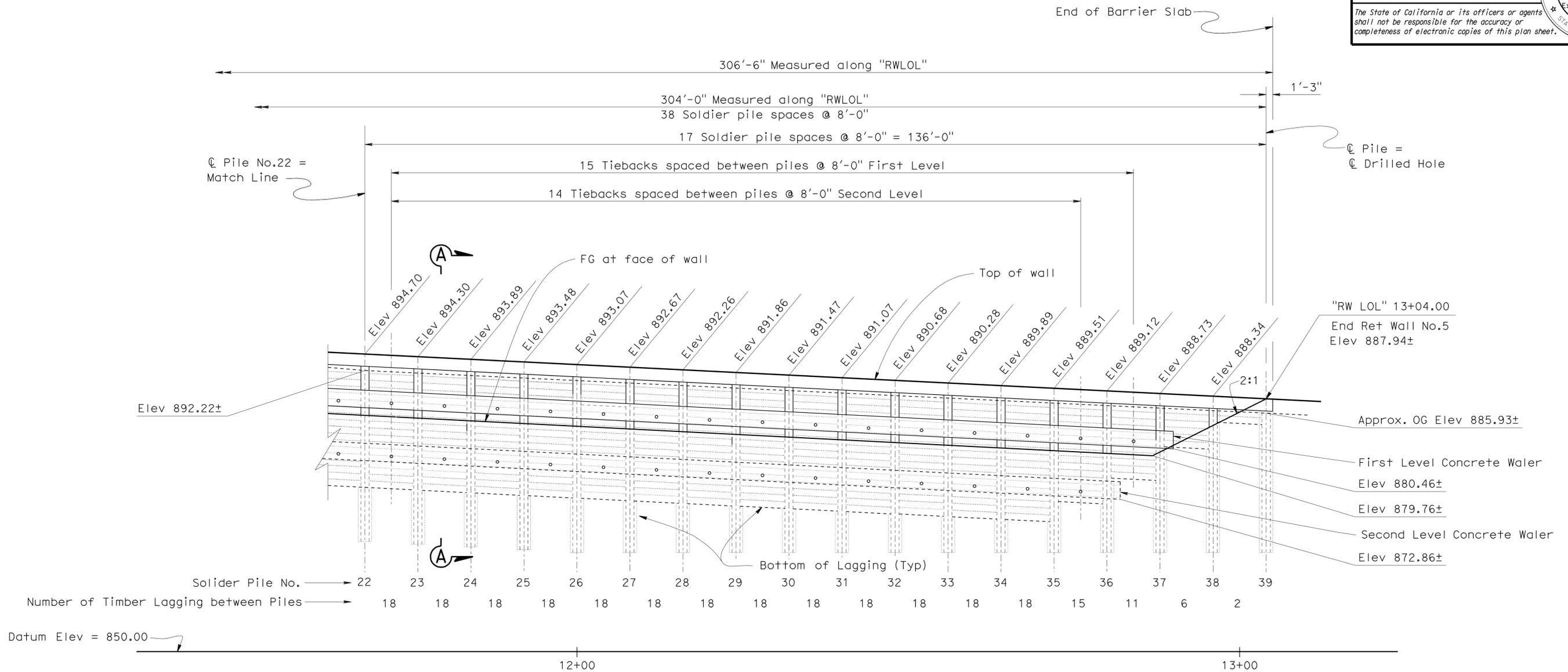
DESIGN	BY Jay Quiogue	CHECKED Linan Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO. 33E0213	RETAINING WALL NO.5 STRUCTURE PLAN NO.1
	DETAILS BY Wei Zhang	CHECKED Linan Wang			POST MILE R5.44	
	QUANTITIES BY Jay Quiogue	CHECKED Wei Zhang				
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES
				0 1 2 3	7-27-10 9-7-10 9-13-10 10-26-10 11-9-10	SHEET 2 OF 12

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	409	457

12-7-10  
 REGISTERED CIVIL ENGINEER DATE  
 1-23-12  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 LINAN WANG  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA

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**MIRROR ELEVATION**  
 $\frac{1}{8}'' = 1'-0''$

Notes:

1. For "Section A-A" see "RETAINING WALL DETAILS NO.1" sheet.
2. The construction of soldier pile shall be staggered and no open holes adjacent.
3. Concrete barrier Type 60A not shown.
4. Remove lean concrete to bottom of lagging where requires.

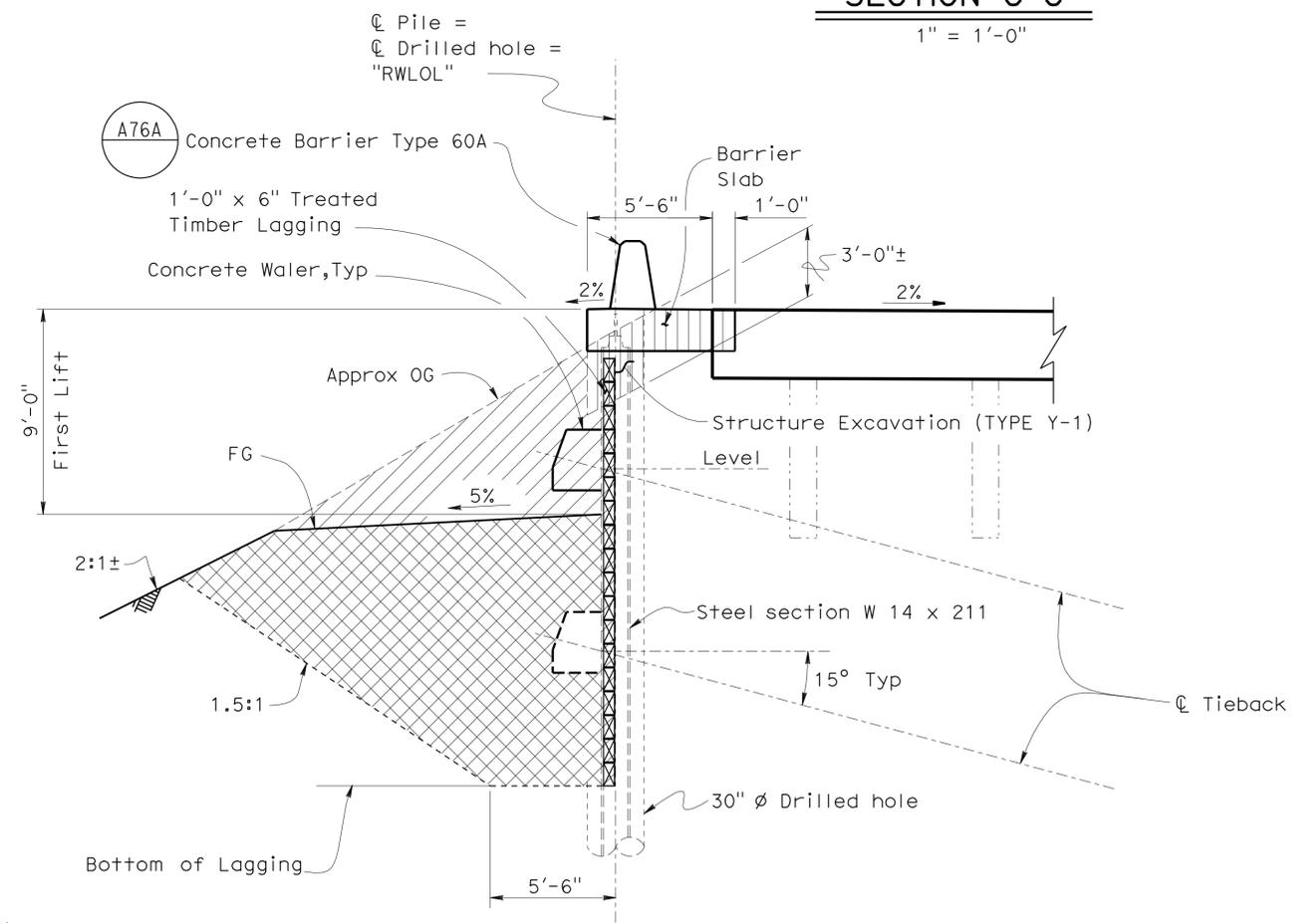
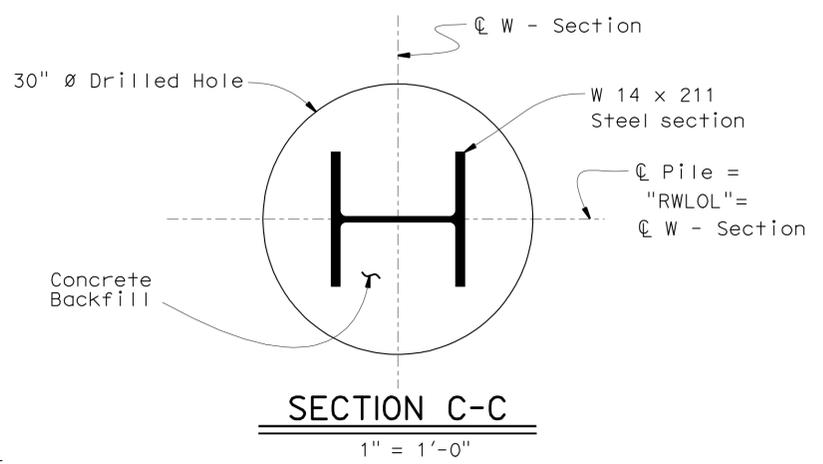
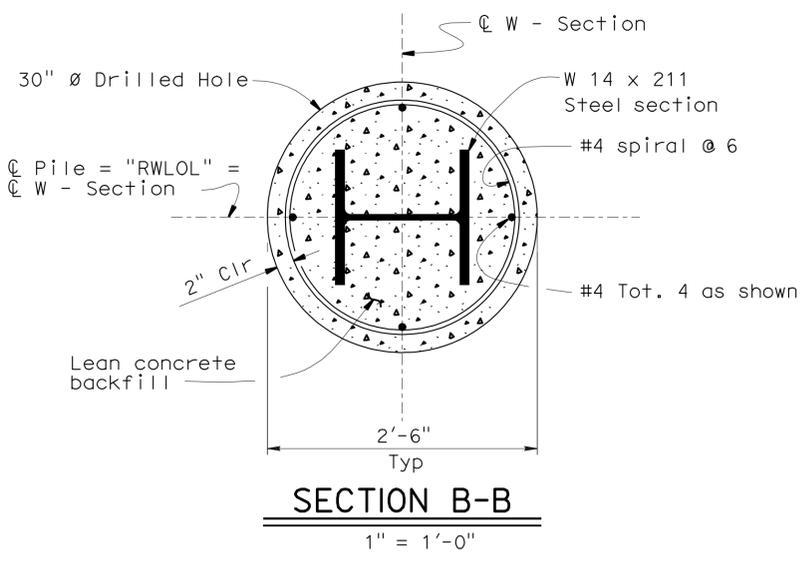
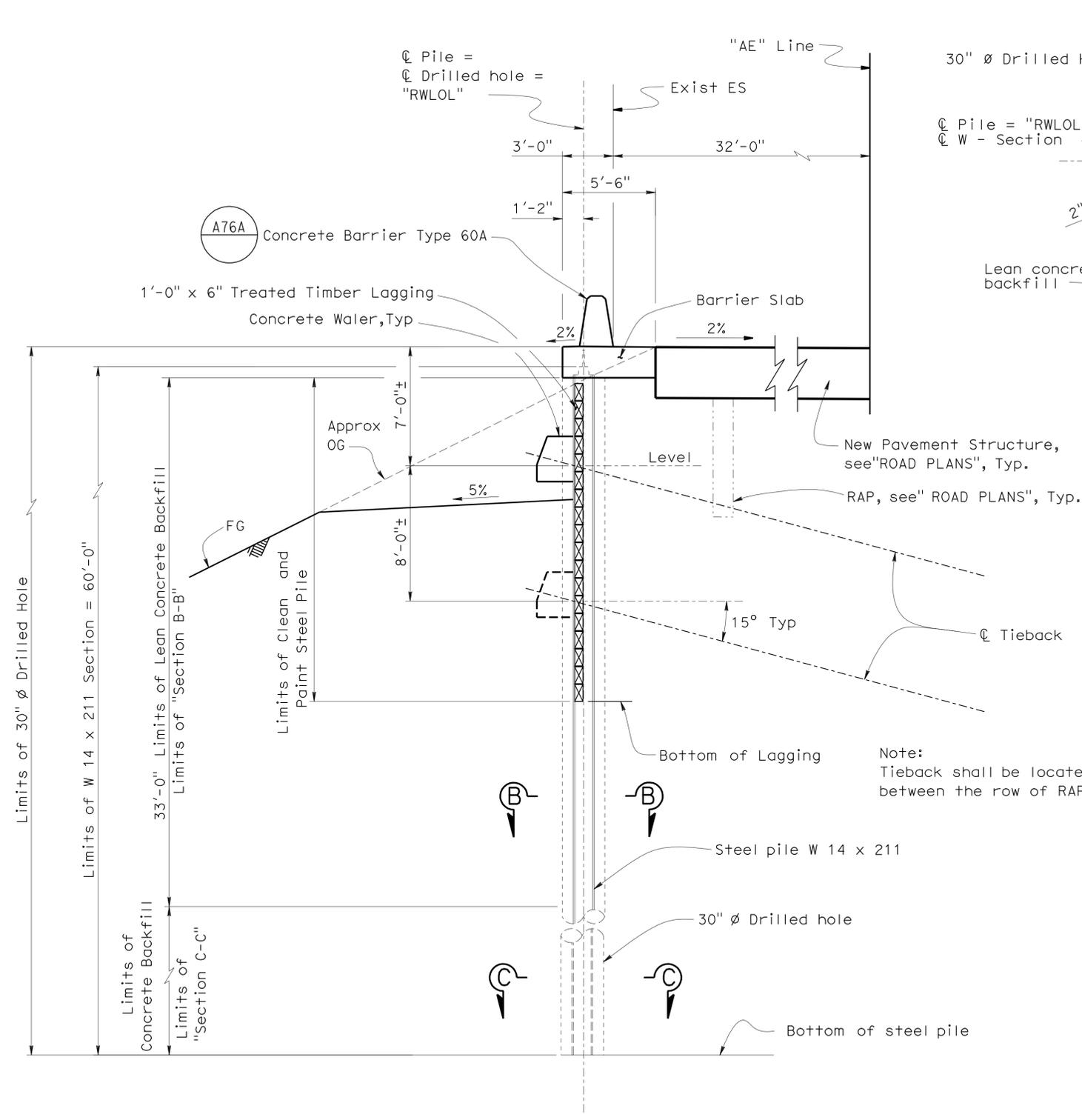
**NOTE:**  
 THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN BY Jay Quiogue CHECKED Linan Wang DETAILS BY Wei Zhang CHECKED Linan Wang QUANTITIES BY Jay Quiogue CHECKED Wei Zhang	<b>STATE OF CALIFORNIA</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>DIVISION OF ENGINEERING SERVICES</b> <b>STRUCTURE DESIGN</b> <b>DESIGN BRANCH 4</b>	BRIDGE NO. 33E0213	<b>RETAINING WALL NO.5</b> <b>STRUCTURE PLAN NO.2</b>
			POST MILE R5.44	
			DISREGARD PRINTS BEARING EARLIER REVISION DATES	
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A07U1	REVISION DATES 7-27-10 9-8-10 9-13-10 10-26-10	SHEET 3 OF 12

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:43

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Alameda	580	R4.7/R8.2	410	457

REGISTERED CIVIL ENGINEER DATE 12-7-10  
 1-23-12  
 PLANS APPROVAL DATE  
 LINAN WANG No. 54714 Exp. 12-31-11 CIVIL  
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**SOLDIER PILE SECTION A-A (TYP)**

**LIMITS OF STRUCTURE EXCAVATION AND BACKFILL**

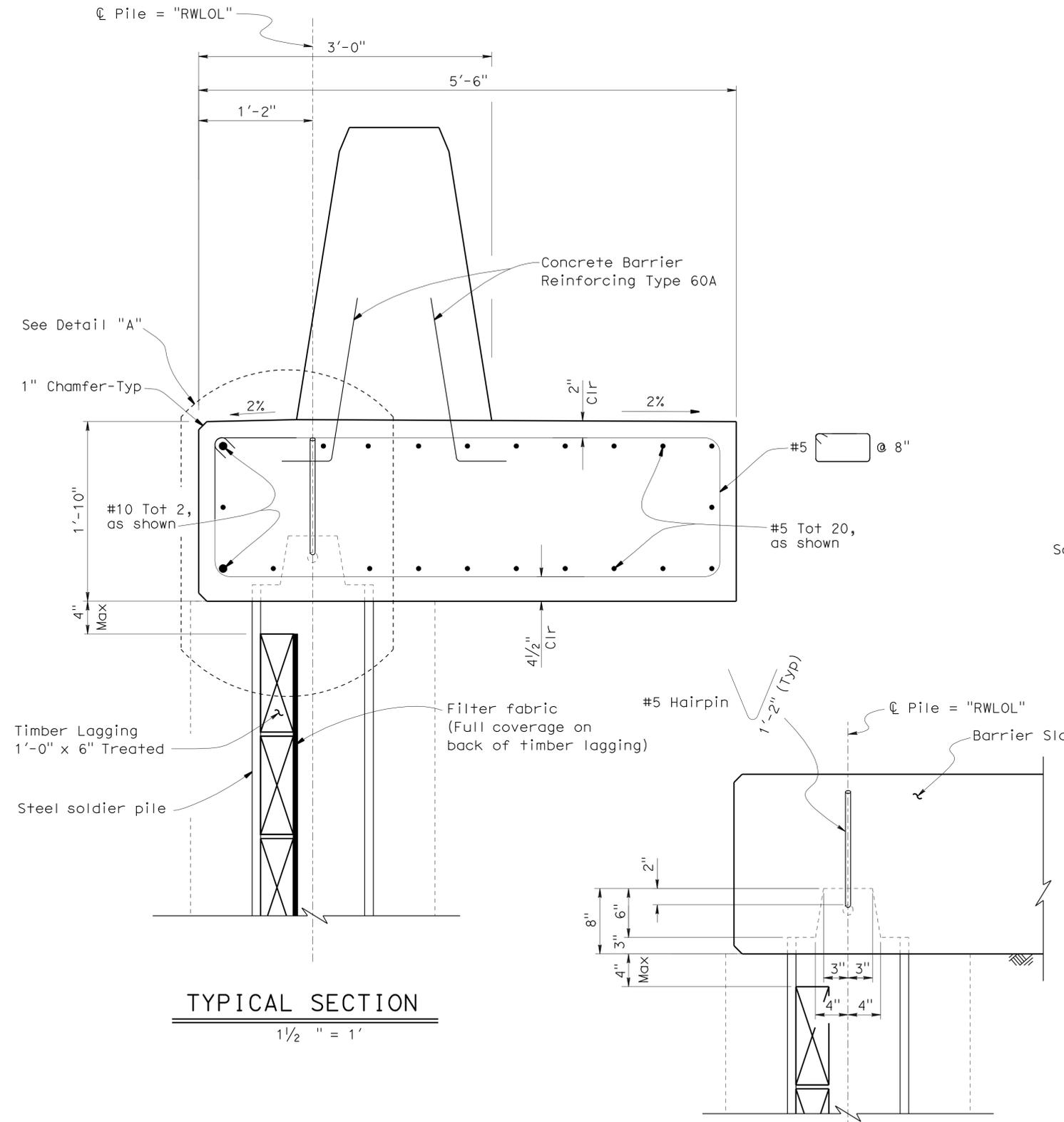
NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

- LEGEND
- Indicates Structure Excavation
  - Indicates Structure Backfill
  - Indicates Structure Excavation (TYPE Y-1) Aerially Deposited Lead (ADL)

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	DESIGN	BY Jay Quiogue	CHECKED Sergio Damian	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO.	RETAINING WALL NO.5	
	DETAILS	BY Wei Zhang	CHECKED Linan Wang			33E0213	RETAINING WALL DETAILS NO.1	
	QUANTITIES	BY Jay Quiogue	CHECKED Wei Zhang			R5.44		
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS				CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES	
0 1 2 3				7-30-10 9-1-10 9-7-10 9-8-10 9-14-10 10-26-10 11-8-10 11-11-10 3-10-11		SHEET 4 OF 12		

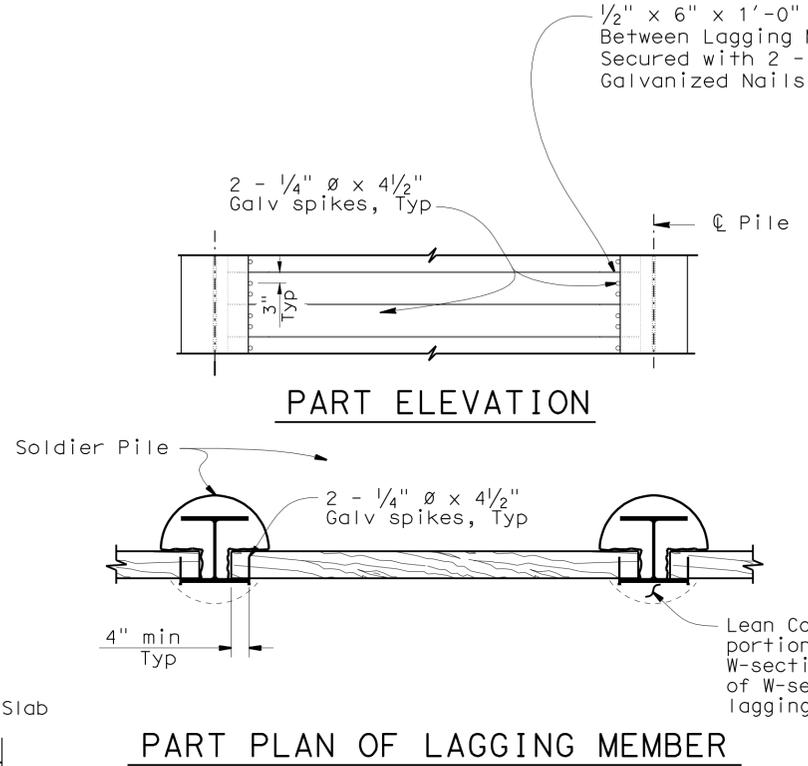
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	411	457
			12-7-10	REGISTERED CIVIL ENGINEER DATE	
			1-23-12	PLANS APPROVAL DATE	
			REGISTERED PROFESSIONAL ENGINEER LINAN WANG No. 54714 Exp. 12-31-11 CIVIL STATE OF CALIFORNIA		
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.					

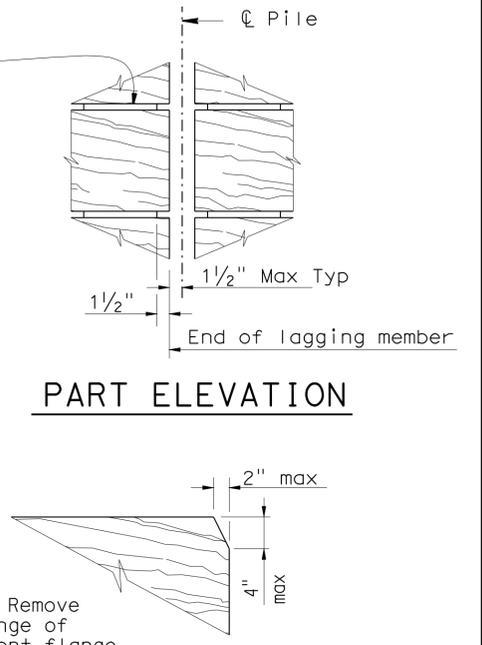


**TYPICAL SECTION**  
1/2" = 1'

**DETAIL "A"**  
1/2" = 1'



**PART PLAN OF LAGGING MEMBER**



**ALTERNATIVE INSTALLATION DETAIL**

**LAGGING DETAILS**  
No Scale

- Note:
1. Place lagging members parallel to the top of wall;
  2. Spikes shall not be bent.
  3. Exposed steel surface shall be cleaned and painted (Undercoat and finish coats).

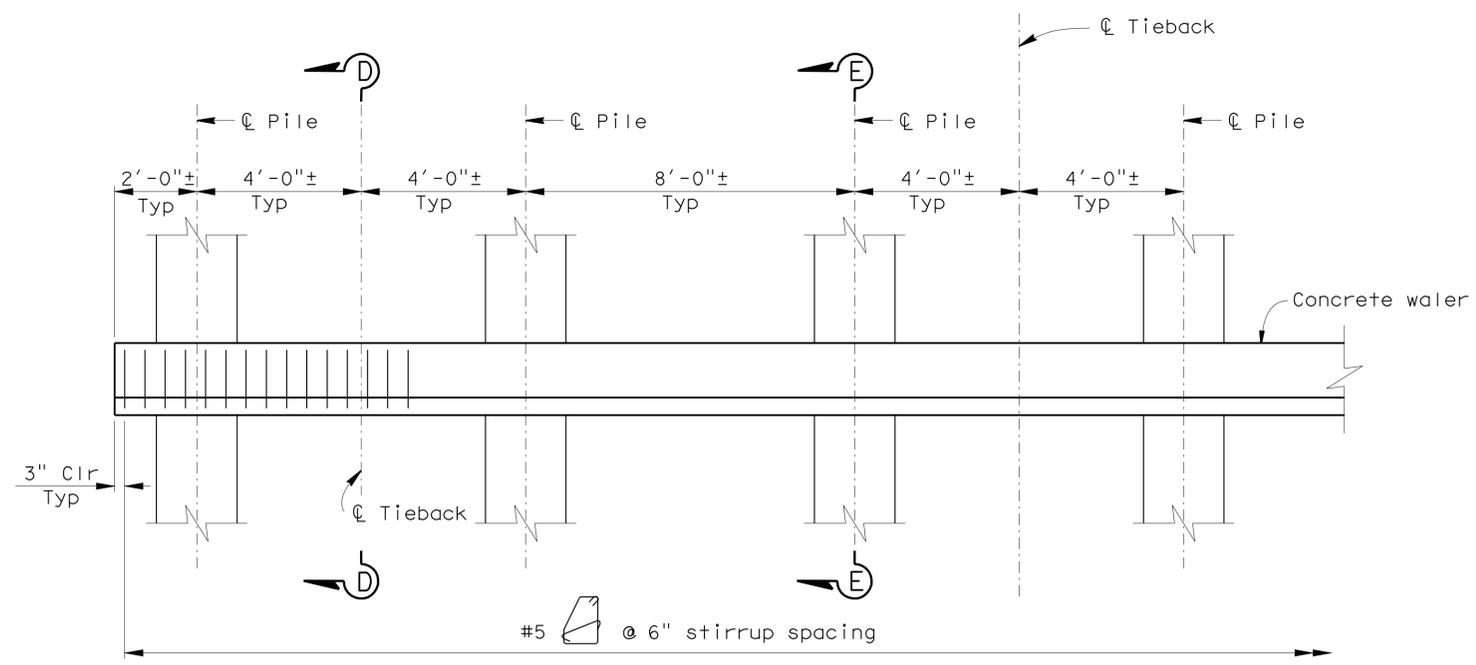
NOTE:  
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

DESIGN	BY Jay Quiogue	CHECKED Linan Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO. 33E0213	RETAINING WALL NO.5
	DETAILS BY Wei Zhang	CHECKED Linan Wang			POST MILE R5.44	
QUANTITIES	BY Jay Quiogue	CHECKED Wei Zhang	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 5 OF 12

FILE => 04-4a0701-rw05-g-d+s01.dgn

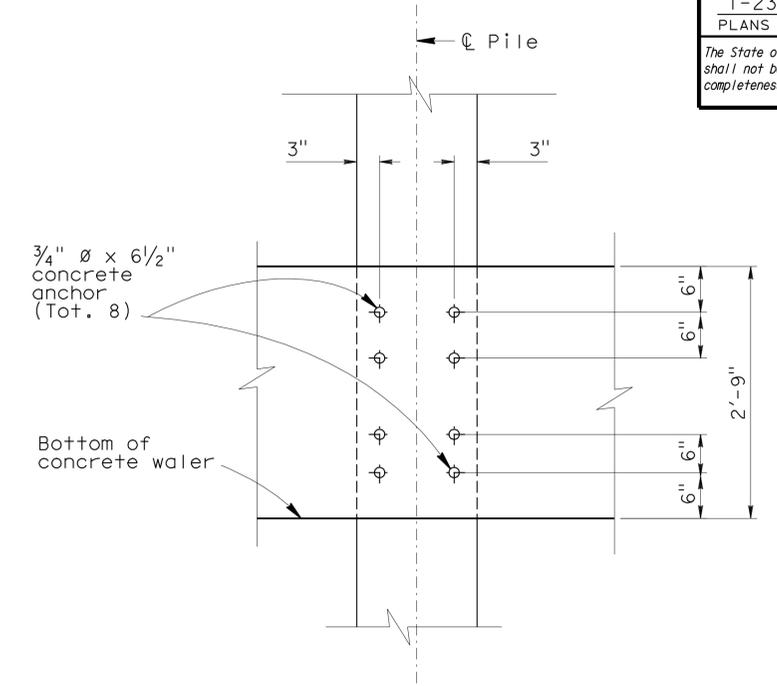
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	412	457

12-7-10  
 REGISTERED CIVIL ENGINEER DATE  
 1-23-12  
 PLANS APPROVAL DATE  
 LINAN WANG  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA  
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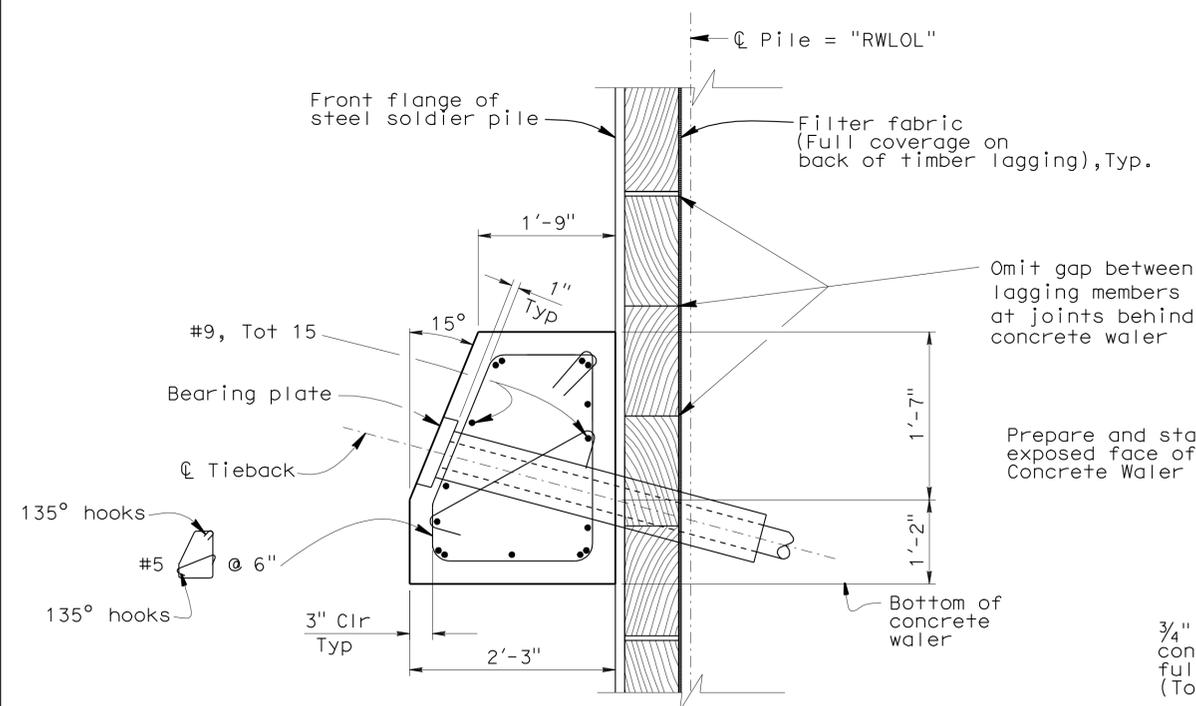


**PART ELEVATION**  
No scale

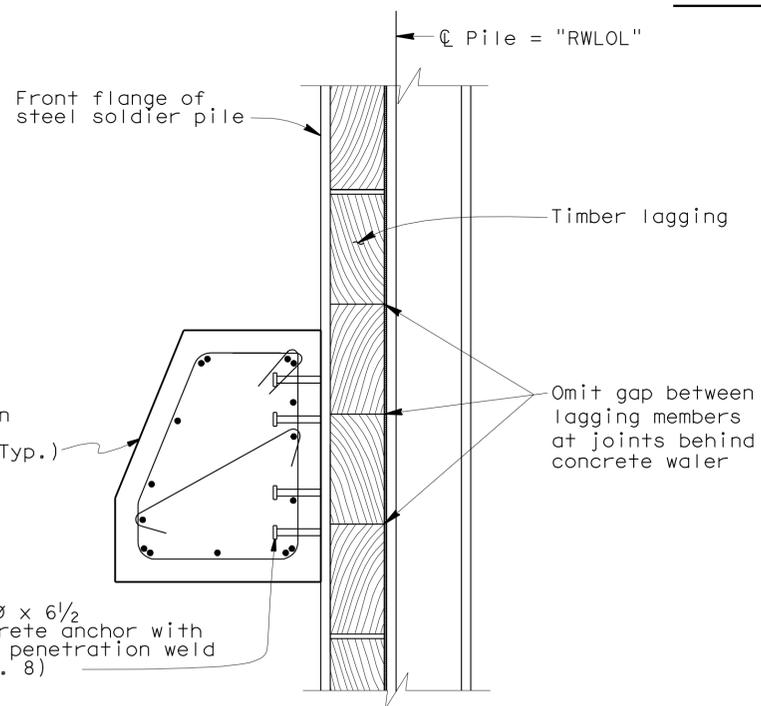
Note: Timber lagging not shown



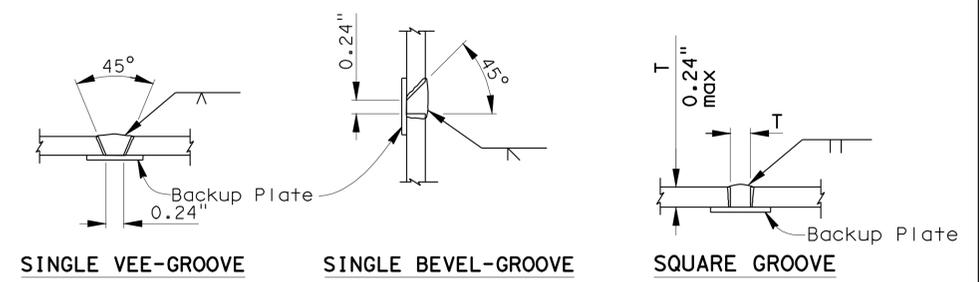
**CONCRETE ANCHOR PLACEMENT**  
No Scale



**SECTION D-D**  
No scale



**SECTION E-E**  
No scale



**PILE WELDING DETAIL - BUTT JOINTS**  
No Scale

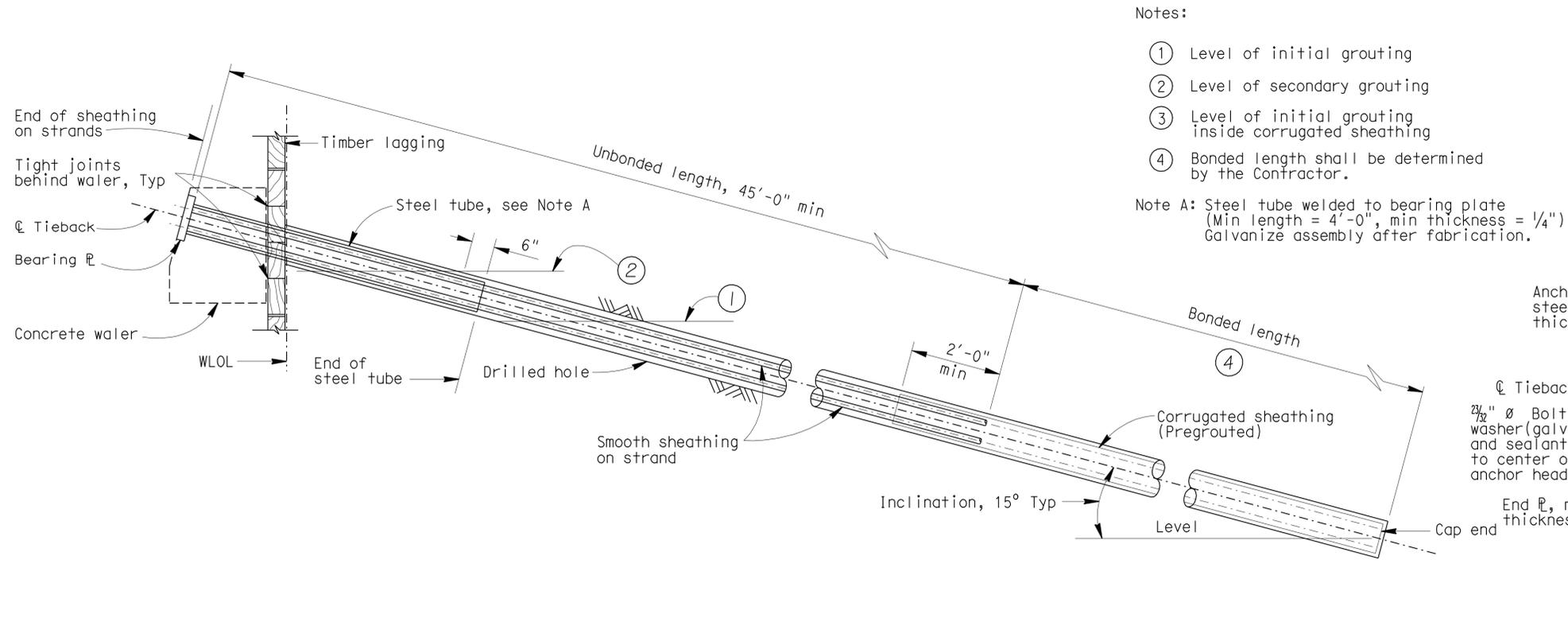
- Notes :
1. Single Vee-Groove permitted for all positions.
  2. Single Bevel-Groove permitted for horizontal joints only

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

DESIGN	BY Jay Quiogue	CHECKED Linan Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO.	33E0213	RETAINING WALL NO.5 RATAINING WALL DETAILS NO.3
DETAILS	BY Wei Zhang	CHECKED Linan Wang			POST MILE	R5.44	
QUANTITIES	BY Jay Quiogue	CHECKED Wei Zhang			CU 04 EA 4A07U1	REVISION DATES	

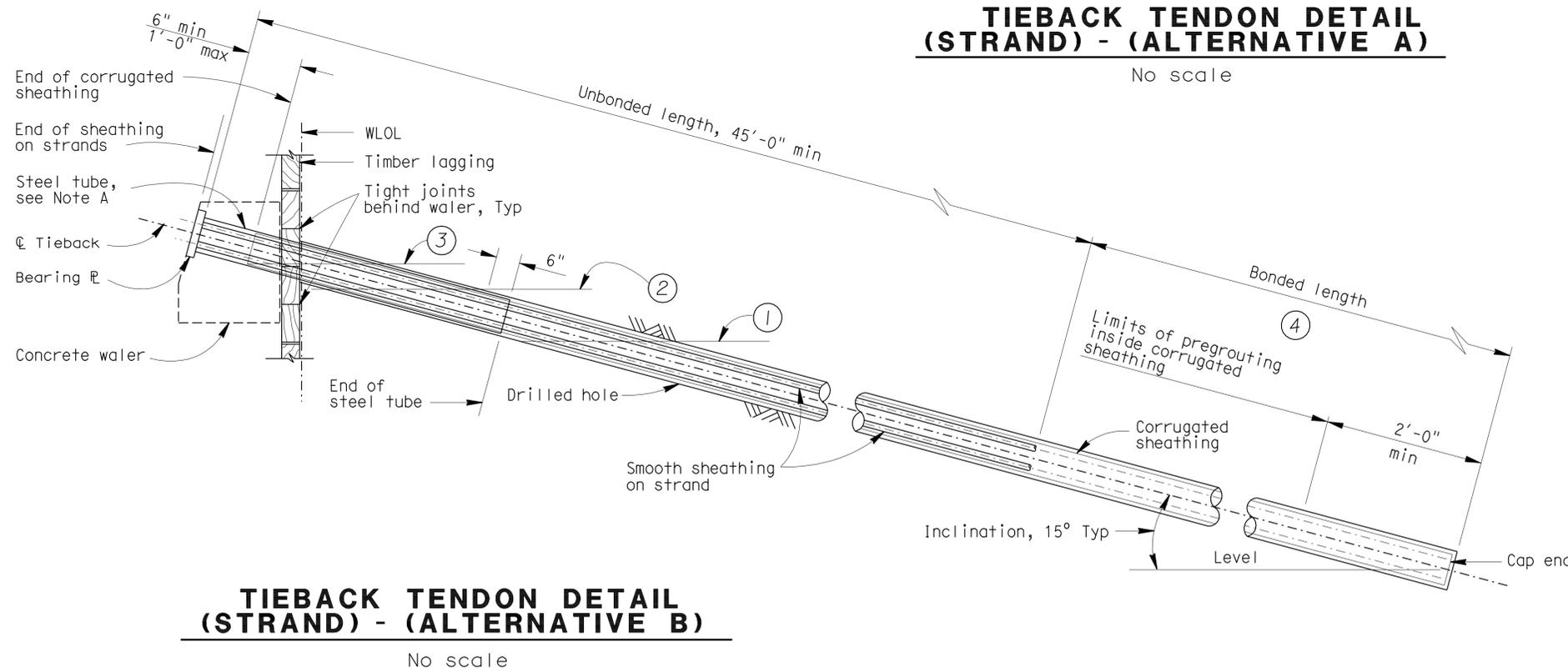
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	413	457
			12-7-10	DATE	
REGISTERED CIVIL ENGINEER			1-23-12	PLANS APPROVAL DATE	
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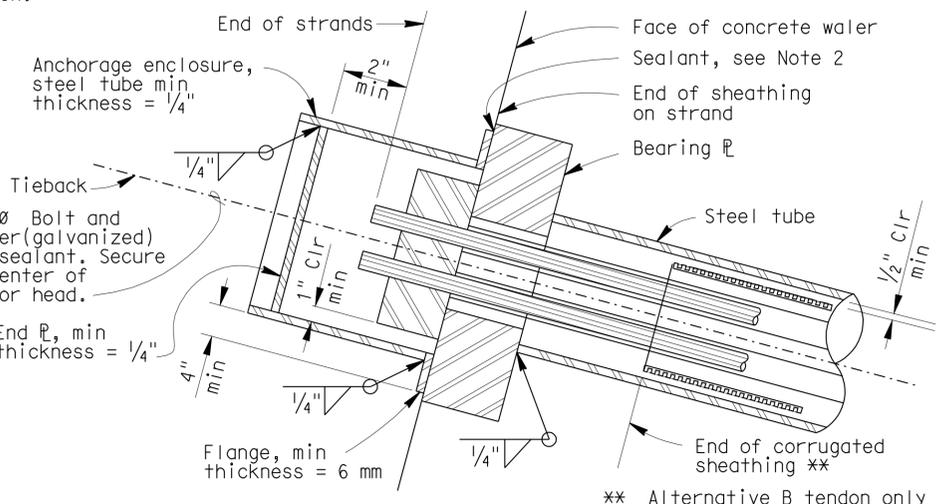
**TIEBACK TENDON DETAIL (STRAND) - (ALTERNATIVE A)**

No scale



**TIEBACK TENDON DETAIL (STRAND) - (ALTERNATIVE B)**

No scale

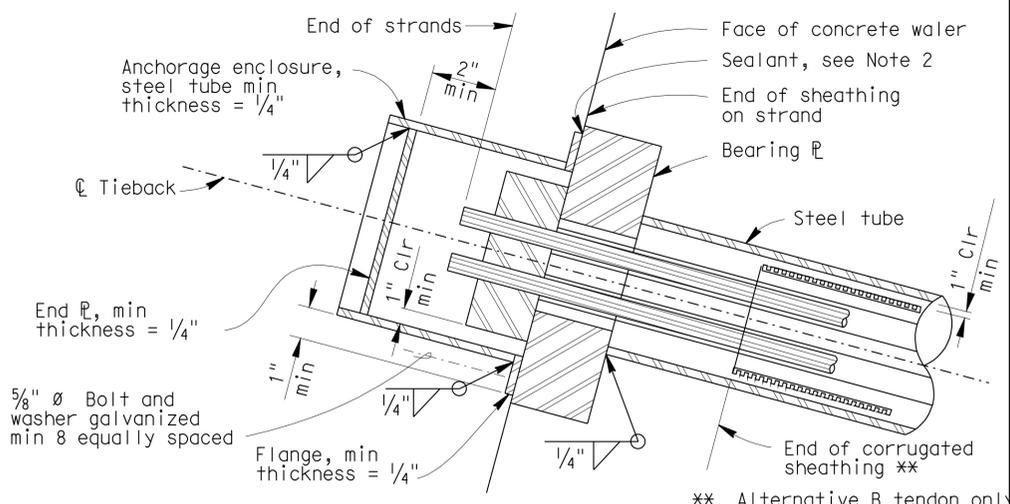


**ALTERNATIVE 2**

\*\* Alternative B tendon only

NOTE:

- Anchorage enclosure shall have provisions to allow injecting grout at low end and venting at high end. Galvanize after fabrication.
- Silicone sealant to cover full width of flange.



**ALTERNATIVE 1**

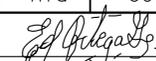
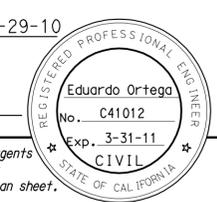
\*\* Alternative B tendon only

**ANCHORAGE ENCLOSURE DETAILS**

No scale

NOTE:  
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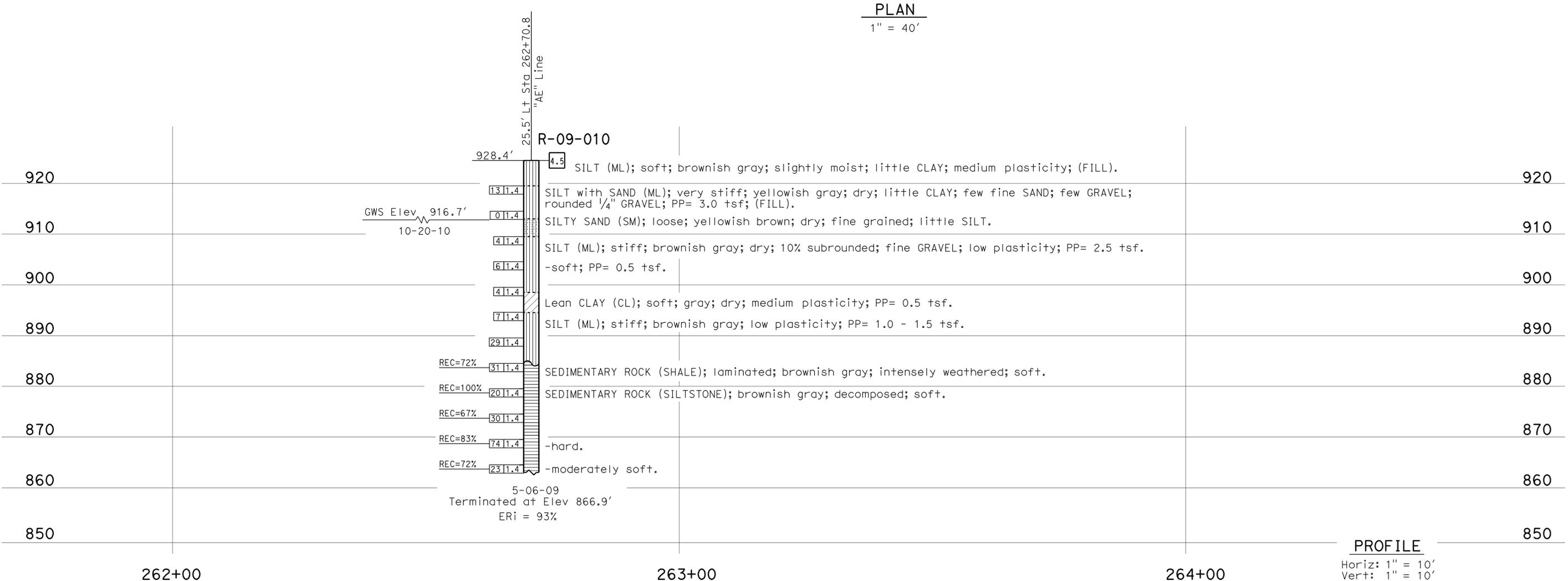
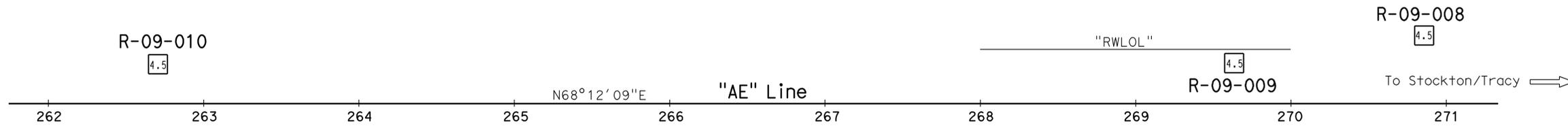
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	DESIGN	BY Jay quiogue	CHECKED Linan Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH <b>4</b>	BRIDGE NO.	33E0213	RETAINING WALL NO.5 RETAINING WALL DETAILS NO.4
	DETAILS	BY Wei Zhang	CHECKED Linan Wang			POST MILE	R5.44	
	QUANTITIES	BY Jay Quiogue	CHECKED Wei Zhang			CU 04 EA 4A07U1	REVISION DATES	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS				0 1 2 3	FILE => 04-4a0701-rw05-g-d+s03.dgn	DISREGARD PRINTS BEARING EARLIER REVISION DATES		

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	414	457
 REGISTERED CIVIL ENGINEER			12-29-10		
1-23-12 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>					

**BENCH MARK**

CT 253 (NAVD88)

Fnd a Mag nail and shiner in the AC shoulder along SR 580 EB. It is about 155' east of PM marker 5.5  
 N 2087123.730  
 E 6228028.262  
 Elev = 926.262'



**PLAN**  
1" = 40'

**PROFILE**  
Horiz: 1" = 10'  
Vert: 1" = 10'

<b>ENGINEERING SERVICES</b>		<b>GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA</b>		<b>DIVISION OF ENGINEERING SERVICES</b>		<b>BRIDGE NO.</b>		<b>RETAINING WALL NO. 5</b>	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 8/10		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		33E0213		<b>LOG OF TEST BORINGS 1 OF 5</b>	
NAME: M. Momenzadeh		CHECKED BY: R. Nashed		C. Koepke, R. Karpowicz		<b>DESIGN BRANCH</b>		POST MILES			
								R5.44			
06S CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU EA		04 4A0701		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES	
				0 1 2 3				10-06-10 11-05-10 12-29-10		SHEET 8 OF 12	

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:43

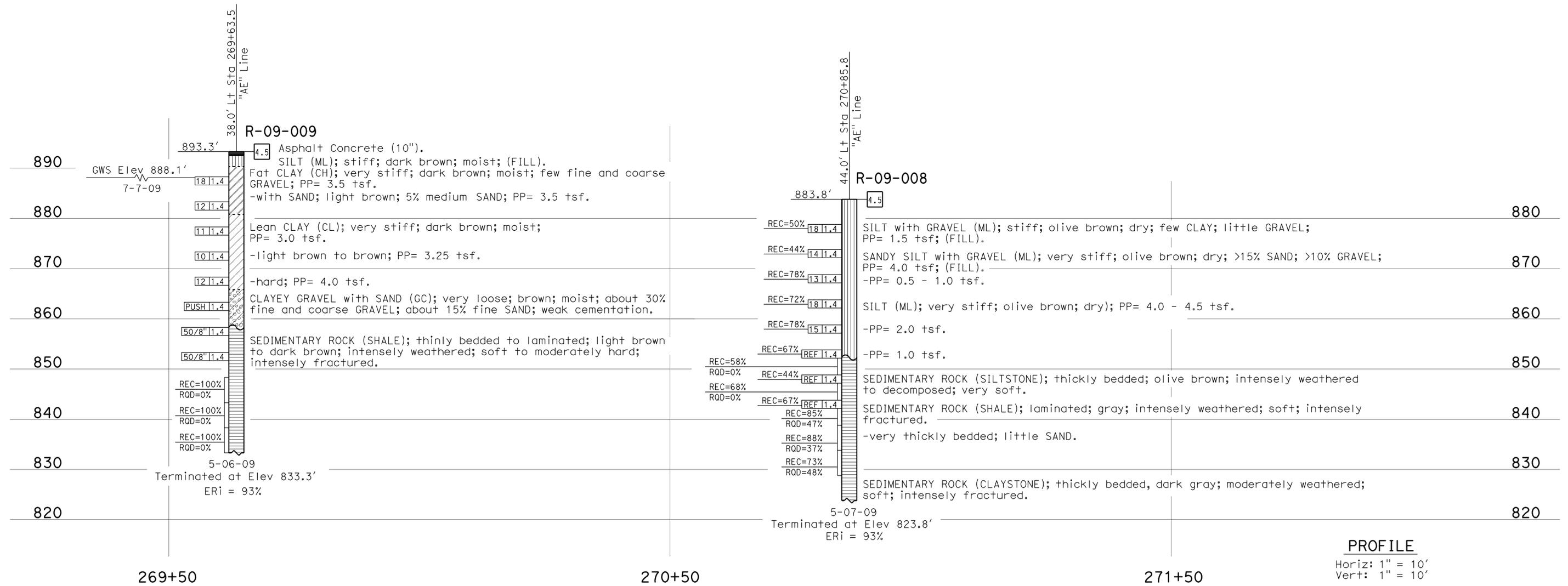
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	415	457

12-29-10  
 REGISTERED CIVIL ENGINEER  
 Eduardo Ortega  
 No. C41012  
 Exp. 3-31-11  
 CIVIL  
 STATE OF CALIFORNIA

1-23-12  
 PLANS APPROVAL DATE

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



<b>ENGINEERING SERVICES</b>		<b>GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA</b>		<b>DIVISION OF ENGINEERING SERVICES</b>		<b>BRIDGE NO.</b>		<b>RETAINING WALL NO. 5</b>	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 8/10		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		33E0213		<b>LOG OF TEST BORINGS 2 OF 5</b>	
NAME: M. Momenzadeh		CHECKED BY: R. Nashed		C. Koepke, R. Karpowicz		<b>DESIGN BRANCH</b>		POST MILES			
065 CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU 04 EA 4A0701		R5.44		REVISION DATES		SHEET 9 OF 12	

DISREGARD PRINTS BEARING EARLIER REVISION DATES

FILE => 04-4a0701-rw05-k-lotb\_2of5.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	416	457

12-29-10  
 REGISTERED CIVIL ENGINEER  
 Eduardo Ortega  
 No. C41012  
 Exp. 3-31-11  
 CIVIL  
 STATE OF CALIFORNIA

1-23-12  
 PLANS APPROVAL DATE

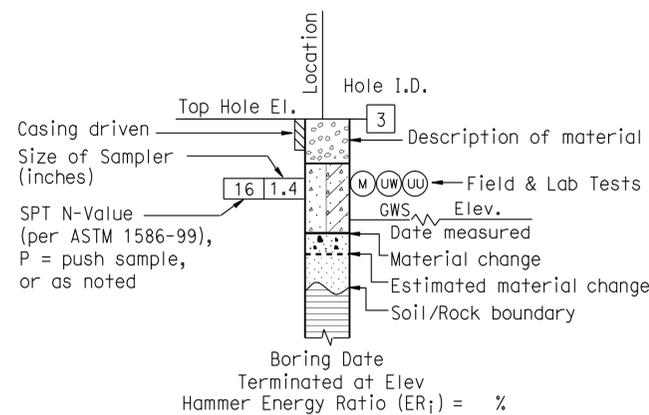
*The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.*

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.

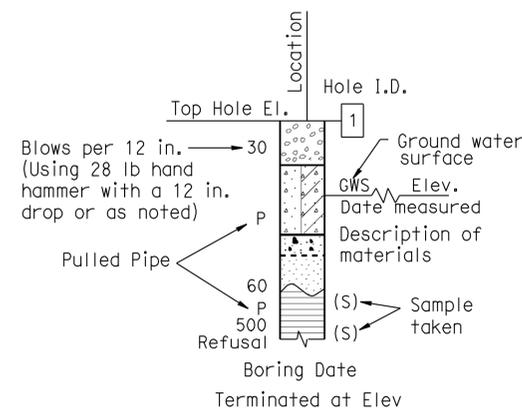
BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring (hollow or solid stem bucket)
	R	Rotary drilled boring (conventional)
	RW	Rotary drilled with self-casing wire-line
	RC	Rotary core with continuously-sampled, self-casing wire-line
	P	Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778)
	O	Other (note on LOTB)

Note: Size in inches.

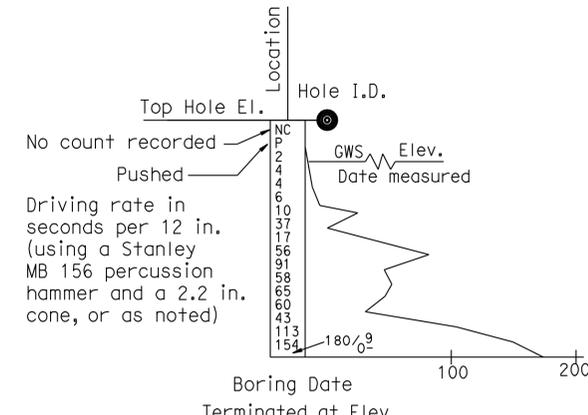
CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



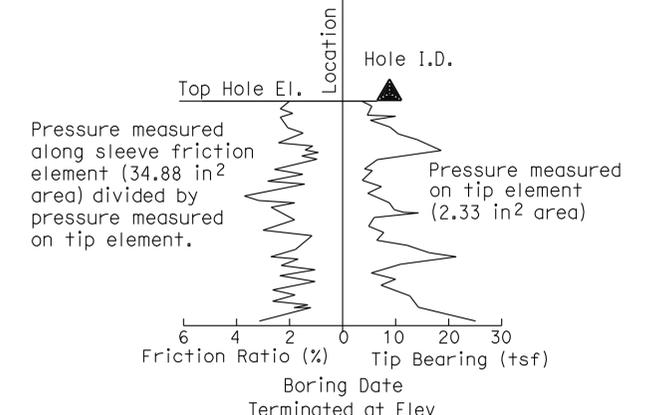
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) BORING

ENGINEERING SERVICES	GEOTECHNICAL SERVICES PREPARED BY: F. Nguyen	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33E0213	RETAINING WALL NO. 5 LOG OF TEST BORINGS 3 OF 5
				POST MILE R5.44	
GS LOTB SOIL LEGEND	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 10 OF 12

FILE => 04-4a0701-rw05-k-lotb\_3of5.dgn

DATE PLOTTED => 25-JAN-2012  
 USERNAME => s128843  
 TIME PLOTTED => 16:44

12-29-10

REGISTERED CIVIL ENGINEER

Eduardo Ortega  
No. C41012  
Exp. 3-31-11  
CIVIL  
STATE OF CALIFORNIA

1-23-12  
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		SANDY lean CLAY with GRAVEL
	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)		SANDY SILTY CLAY with GRAVEL
	Poorly-graded GRAVEL with SILT		SILT
	Poorly-graded GRAVEL with SILT and SAND		SILT with SAND
	Poorly-graded GRAVEL with CLAY (or SILTY CLAY)		SANDY SILT
	Poorly-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SANDY SILT with GRAVEL
	SILTY GRAVEL		ORGANIC lean CLAY
	SILTY GRAVEL with SAND		ORGANIC lean CLAY with SAND
	CLAYEY GRAVEL		ORGANIC lean CLAY with GRAVEL
	CLAYEY GRAVEL with SAND		SANDY ORGANIC lean CLAY
	SILTY, CLAYEY GRAVEL		SANDY ORGANIC lean CLAY with GRAVEL
	SILTY, CLAYEY GRAVEL with SAND		GRAVELLY ORGANIC lean CLAY
	Well-graded SAND		GRAVELLY ORGANIC lean CLAY with SAND
	Well-graded SAND with GRAVEL		
	Poorly-graded SAND		Fat CLAY
	Poorly-graded SAND with GRAVEL		Fat CLAY with SAND
	Well-graded SAND with SILT		SANDY fat CLAY
	Well-graded SAND with SILT and GRAVEL		SANDY fat CLAY with GRAVEL
	Well-graded SAND with CLAY (or SILTY CLAY)		GRAVELLY fat CLAY
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		GRAVELLY fat CLAY with SAND
	Poorly-graded SAND with SILT		Elastic SILT
	Poorly-graded SAND with SILT and GRAVEL		Elastic SILT with SAND
	Poorly-graded SAND with CLAY (or SILTY CLAY)		SANDY elastic SILT
	Poorly-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		SANDY elastic SILT with GRAVEL
	SILTY SAND		GRAVELLY elastic SILT
	SILTY SAND with GRAVEL		GRAVELLY elastic SILT with SAND
	CLAYEY SAND		ORGANIC fat CLAY
	CLAYEY SAND with GRAVEL		ORGANIC fat CLAY with SAND
	SILTY, CLAYEY SAND		ORGANIC fat CLAY with GRAVEL
	SILTY, CLAYEY SAND with GRAVEL		SANDY ORGANIC fat CLAY
	PEAT		SANDY ORGANIC fat CLAY with GRAVEL
			GRAVELLY ORGANIC fat CLAY
	COBBLES		GRAVELLY ORGANIC fat CLAY with SAND
	COBBLES and BOULDERS		
			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
(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)
(UC)	Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
(UU)	Unconsolidated Undrained Triaxial (ASTM D 2850)
(UW)	Unit Weight (ASTM D 4767)

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N <sub>60</sub> (Blows / 12 in.)
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Greater than 50

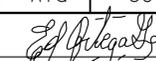
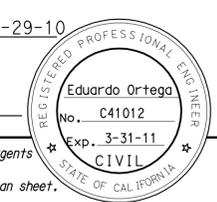
MOISTURE	
Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

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

PARTICLE SIZE		
Description	Size (in.)	
Boulder	Greater than 12	
Cobble	3 - 12	
Gravel	Coarse	3/4 - 3
	Fine	1/5 - 3/4
Sand	Coarse	1/16 - 1/5
	Medium	1/64 - 1/16
	Fine	1/300 - 1/64
Silt and Clay	Less than 1/300	

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33E0213	RETAINING WALL NO. 5 LOG OF TEST BORINGS 4 OF 5
				POST MILE R5.44	
PREPARED BY: F. Nguyen	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 11 OF 12

FILE => 04-4a0701-rw05-k-lotb\_4of5.dgn

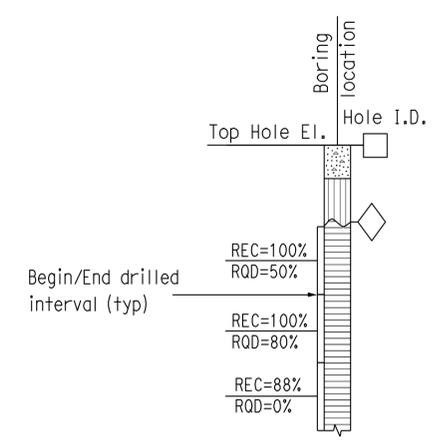
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	418	457
 REGISTERED CIVIL ENGINEER			12-29-10		
1-23-12			PLANS APPROVAL DATE		
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**PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)**

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

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

RQD\* Indicates soundness criteria not met.



**BEDDING SPACING**

Description	Thickness / Spacing
Massive	Greater than 10 ft
Very Thickly Bedded	3 ft - 10 ft
Thickly Bedded	1 ft - 3 ft
Moderately Bedded	4 in. - 1 ft
Thinly Bedded	1 in. - 4 in.
Very Thinly Bedded	1/4 in. - 1 in.
Laminated	Less than 1/4 in.

**LEGEND OF ROCK MATERIALS**

	IGNEOUS ROCK
	SEDIMENTARY ROCK
	METAMORPHIC ROCK

**ROCK HARDNESS**

Description	Criteria
Extremely Hard	Cannot be scratched with a pocketknife or sharp pick. Can only be chipped with repeated heavy hammer blows.
Very Hard	Cannot be scratched with a pocketknife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Can be scratched with a pocketknife or sharp pick with difficulty (heavy pressure). Breaks with heavy hammer blows.
Moderately Hard	Can be scratched with pocketknife or sharp pick with light or moderate pressure. Breaks with moderate hammer blows.
Moderately Soft	Can be grooved 1/16 in. deep with a pocketknife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Can be grooved or gouged easily by a pocketknife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Can be readily indented, grooved or gouged with fingernail, or carved with a pocketknife. Breaks with light manual pressure.

**WEATHERING DESCRIPTORS FOR INTACT ROCK**

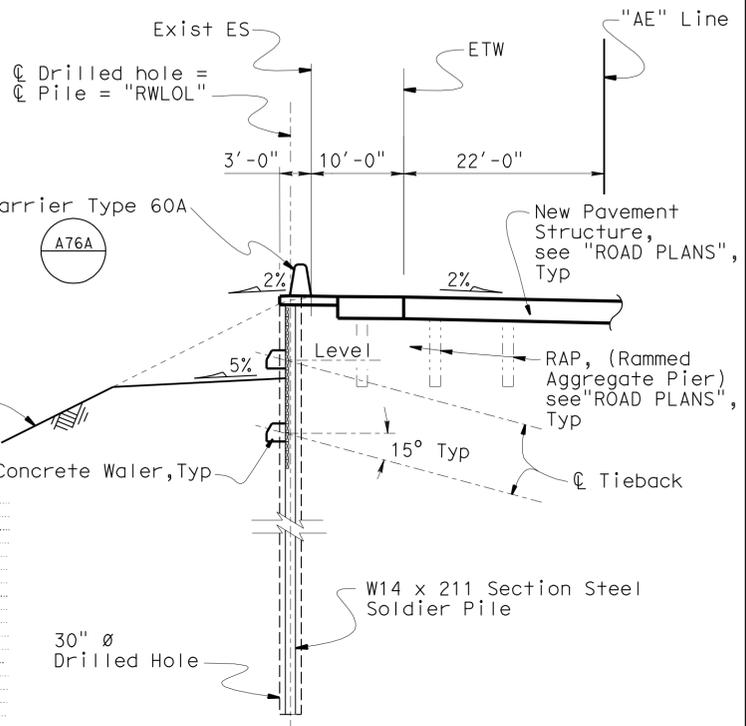
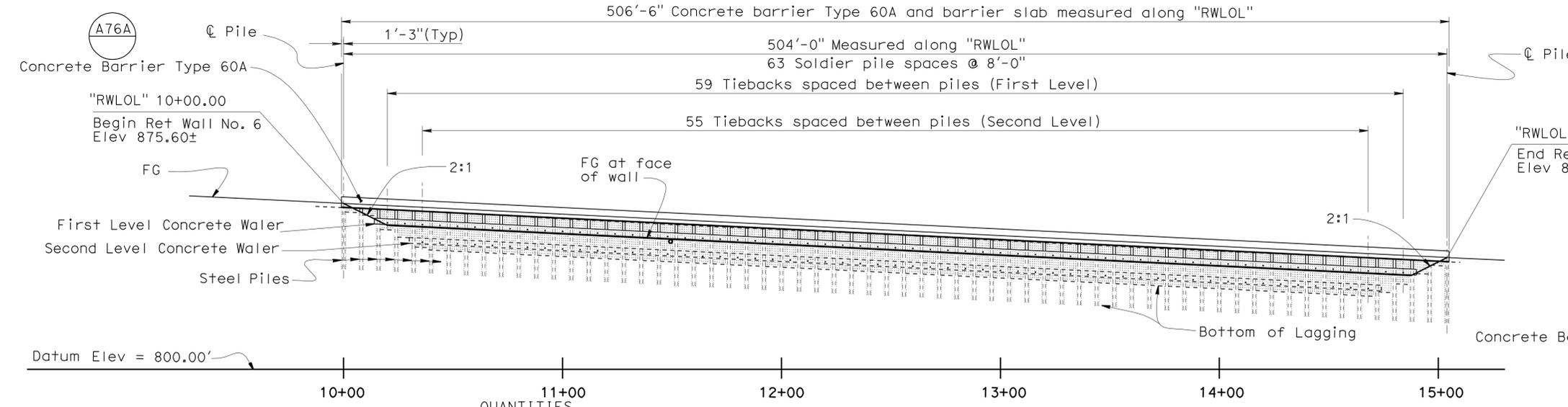
Description	Diagnostic Features					General Characteristics
	Chemical Weathering-Discoloration and/or Oxidation		Mechanical Weathering-Grain Boundary Conditions (Disaggregation) Primarily for Granitics and Some Coarse-Grained Sediments	Texture and Leaching		
	Body of Rock	Fracture Surfaces		Texture	Leaching	
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change	No leaching	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.	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."

**FRACTURE DENSITY**

Description	Observed Fracture Density
Unfractured	No fractures.
Very Slightly Fractured	Core lengths greater than 3 ft.
Slightly Fractured	Core lengths mostly from 1 to 3 ft.
Moderately Fractured	Core lengths mostly from 4 in. to 1 ft.
Intensely Fractured	Core lengths mostly from 1 to 4 in.
Very Intensely Fractured	Mostly chips and fragments.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	419	457

REGISTERED CIVIL ENGINEER DATE 12-7-10  
 1-23-12 PLANS APPROVAL DATE  
 LINAN WANG No. 54714 Exp. 12-31-11 CIVIL  
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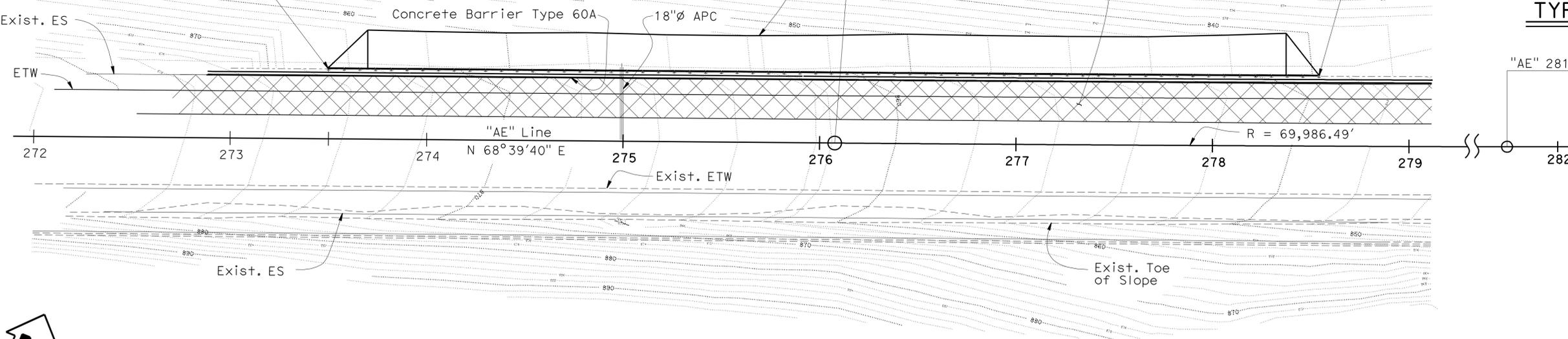


**MIRROR ELEVATION**  
1" = 30'

QUANTITIES			
STRUCTURE EXCAVATION (SOLDIER PILE WALL)	3,410	CY	
STRUCTURE EXCAVATION (TYPE Y-1) (AERIALY DEPOSITED LEAD)	240	CY	
STRUCTURE BACKFILL (SOLDIER PILE WALL)	2,420	CY	
CONCRETE BACKFILL (SOLDIER PILE WALL)	280	CY	
LEAN CONCRETE BACKFILL	350	CY	
30" DRILLED HOLE	3,840	LF	
STEEL SOLDIER PILE (W 14 X 211)	3,840	LF	
TIEBACK ANCHOR	114	EA	
STRUCTURAL CONCRETE, WALER	197	CY	
STRUCTURAL CONCRETE, BARRIER SLAB	189	CY	
BAR REINFORCING STEEL (RETAINING WALL)	124,200	LB	
TIMBER LAGGING	48	MFBM	
CLEAN AND PAINT STEEL SOLDIER PILE	LUMP	SUM	
PREPARE AND STAIN CONCRETE	6,250	SQFT	
MISCELLANEOUS METAL	665	LB	
CONCRETE BARRIER (TYPE 60A)	507	LF	

33'-10" L+ "AE" 273+50.00  
10+00.00 "RWLOL"  
Begin Ret Wall No. 6  
End Conc Barrier (Type 60C)  
Begin Conc Barrier (Type 60A)

33'-10" L+ "AE" 278+54.00 =  
15+04.00 "RWLOL"  
End Ret Wall No. 6  
End Conc Barrier (Type 60A)  
Begin Conc Barrier (Type 60C)



**TYPICAL SECTION**  
1" = 10'

**INDEX TO PLANS**

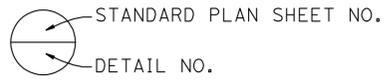
SHEET NO.	TITLE
1	GENERAL PLAN
2	STRUCTURE PLAN NO.1
3	STRUCTURE PLAN NO.2
4	STRUCTURE PLAN NO.3
5	RETAINING WALL DETAILS NO.1
6	RETAINING WALL DETAILS NO.2
7	RETAINING WALL DETAILS NO.3
8	RETAINING WALL DETAILS NO.4
9	LOG OF TEST BORINGS 1 OF 5
10	LOG OF TEST BORINGS 2 OF 5
11	LOG OF TEST BORINGS 3 OF 5
12	LOG OF TEST BORINGS 4 OF 5
13	LOG OF TEST BORINGS 5 OF 5

**"AE" Line**  
R = 69,986.49'  
Δ = 0°27'30"  
T = 279.98'  
L = 559.960'

**PLAN**  
1" = 30'

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

- Notes**
- For "General Notes" see "STRUCTURE PLAN NO.1" sheet
  - For details of "AE" Line, see "ROAD PLANS"



DESIGN	BY Amador Alcantara	CHECKED Linan Wang	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING:
DETAILS	BY W.Zhang/J.Thorne/M.Lang	CHECKED Linan Wang	LAYOUT	BY Linan Wang
QUANTITIES	BY Amador Alcantara	CHECKED Sergio Damian	SPECIFICATIONS	BY X

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN

DESIGN BRANCH 4

BRIDGE NO. 33E0212  
POST MILE R5.33

RETAINING WALL NO.6 GENERAL PLAN

CU 04 EA 4A07U1

REVISION DATES

3-22-10	3-4-11	3-9-11	3-16-11	3-18-11	11-8-10	11-18-10	12-13-10	12-14-11
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SHEET 1 OF 13

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:44

**GENERAL NOTES**

**DESIGN:**

AASHTO Standard Specifications for Highway Bridges dated 1995 with Interim Bridge Design Specifications (Caltrans) 2000.

**SOIL PARAMETERS:**

(For determination of design lateral earth pressures)  
 $\phi = 22^\circ$   $\gamma = 130$  pcf  $c = 0$

**REINFORCED CONCRETE:**

$f'_c = 4.0$  ksi (Concrete compressive strength at 28 days)  
 $f_y = 60$  ksi (Yield strength of reinforcement)

**STRUCTURAL STEEL:**

ASTM Designation: A709/A709M  
 $f_y = 50$  ksi

**GENERAL NOTES (Cont)**

**STRUCTURAL TIMBER:**

Treated Douglas Fir, Grade No. 1 or better.  
 Timber to be full sawn.

**PRESTRESS STEEL (TIEBACKS)**

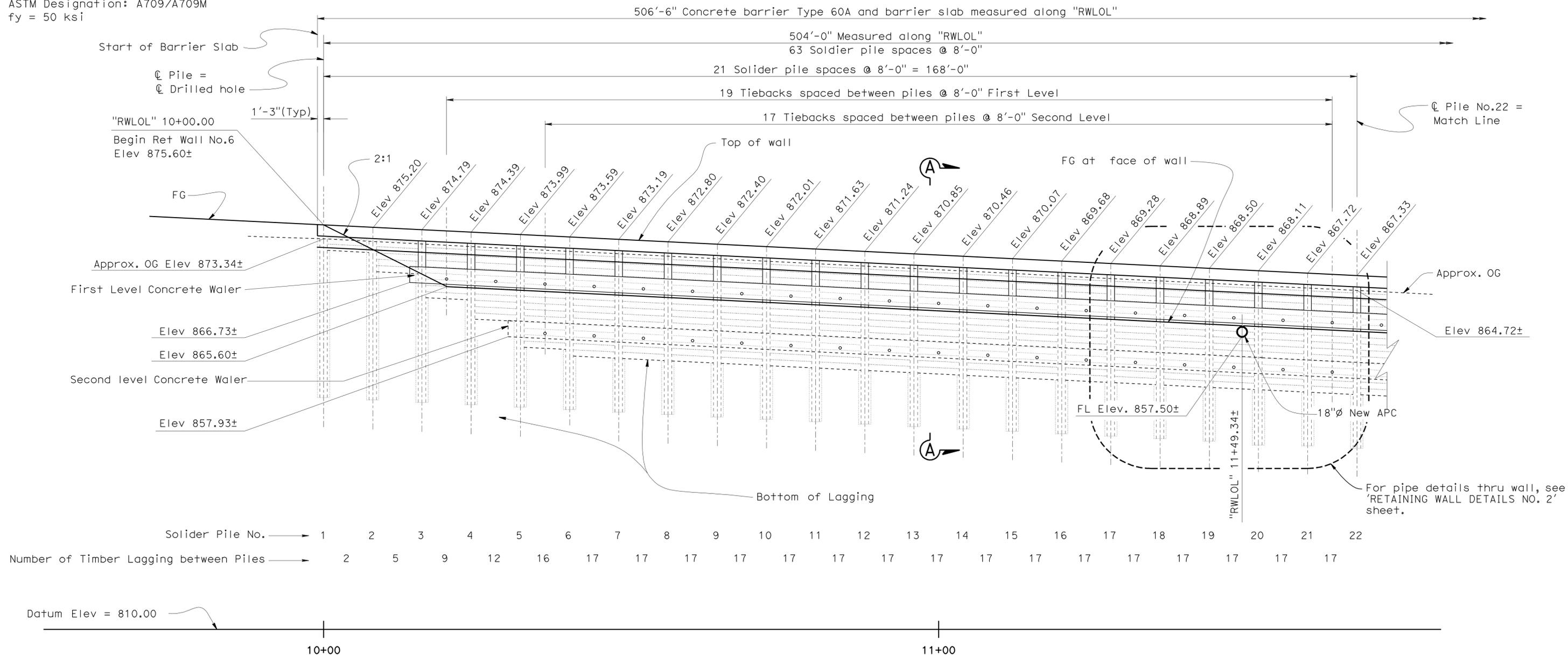
Strands - ASTM designation: A416  
 $T =$  Design force per Tieback = 196 kips  
 $f_{pu} =$  Minimum tensile strength of prestressing steel (kips per square inch)  
 $A_s$  (Min) = Minimum cross sectional area of prestressing steel in Tieback tendon. (square inch)  
 $A_s$  (Min) =  $\frac{1.5 T}{0.75 f_{pu}}$

**Notes:**

1. For "Section A-A" see "RETAINING WALL DETAILS NO.1" sheet.
2. The construction of soldier pile shall be staggered and no open holes adjacent.
3. Concrete barrier Type 60A not shown.
4. Remove lean concrete to bottom of laggings where it requires.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	420	457

REGISTERED CIVIL ENGINEER DATE 12-7-10  
 1-23-12 PLANS APPROVAL DATE  
 LINAN WANG No. 54714 Exp. 12-31-11 CIVIL  
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**MIRROR ELEVATION**  
 $\frac{1}{8}'' = 1'-0''$

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

DESIGN	BY Amador Alcantara	CHECKED Linan Wang
DETAILS	BY Wei Zhang	CHECKED Linan Wang
QUANTITIES	BY Amador Alcantara	CHECKED Sergio Damian

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
 STRUCTURE DESIGN  
 DESIGN BRANCH 4

BRIDGE NO. 33E0212  
 POST MILE R5.33

RETAINING WALL NO.6  
 STRUCTURE PLAN NO.1

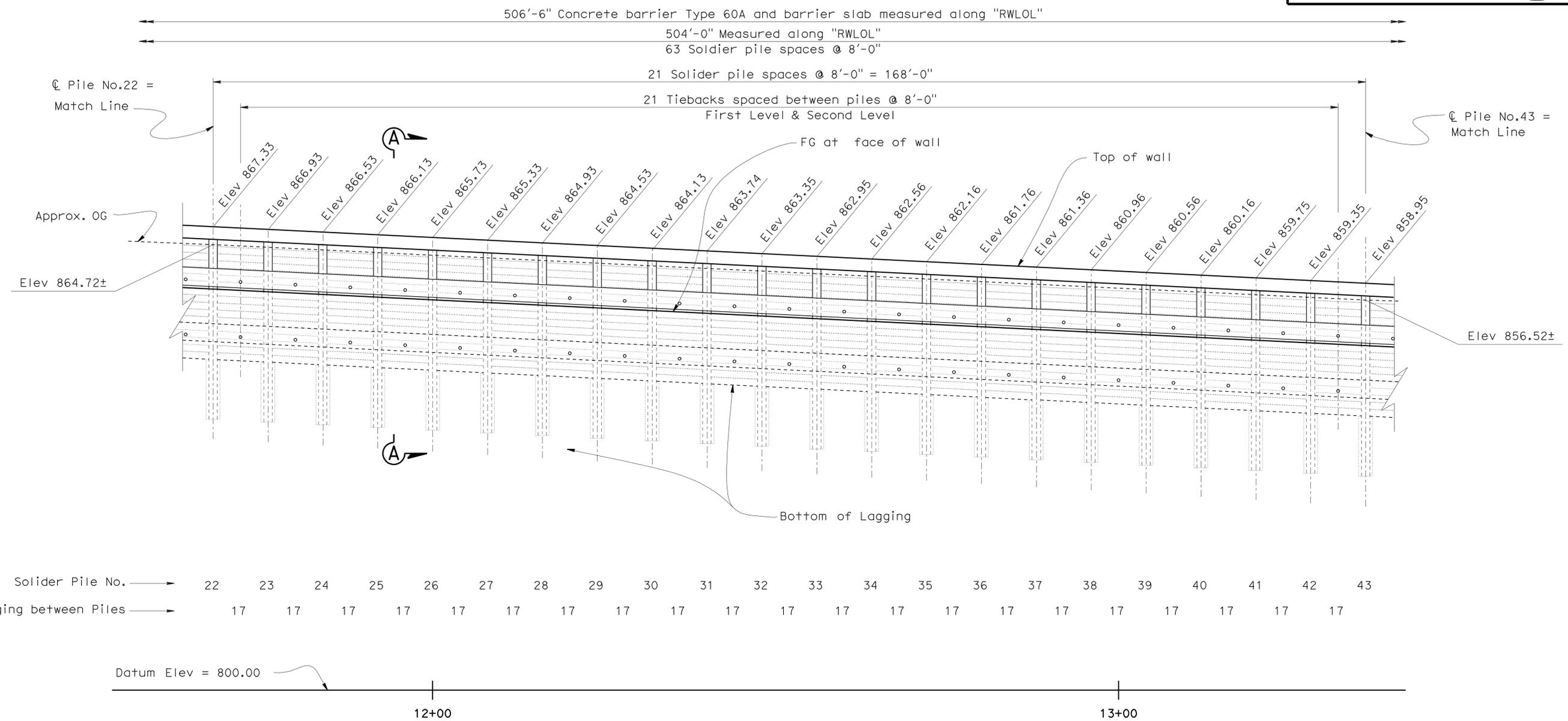
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	421	457

REGISTERED CIVIL ENGINEER DATE 12-7-10

PLANS APPROVAL DATE 1-23-12

REGISTERED PROFESSIONAL ENGINEER  
 LINAN WANG  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA

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**MIRROR ELEVATION**  
 1/8" = 1'-0"

- Notes:
- For "Section A-A" see "RETAINING WALL DETAILS NO.1" sheet.
  - The construction of soldier pile shall be staggered and no open holes adjacent.
  - Concrete barrier type 60A not shown.
  - Remove lean concrete to bottom of laggings where it requires.

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

DESIGN	BY	Amador Alcantara	CHECKED	Linan Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH <b>4</b>	BRIDGE NO.	33E0212	RETAINING WALL NO.6 STRUCTURE PLAN NO.2	
	DETAILS	BY	Wei Zhang	CHECKED			Linan Wang	POST MILE		R5.33
	QUANTITIES	BY	Amador Alcantara	CHECKED			Sergio Damian			

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

CU 04  
EA 4A07U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

7-27-10	9-9-10	9-18-10	11-8-10	11-19-10	3-4-11
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SHEET 3 OF 13

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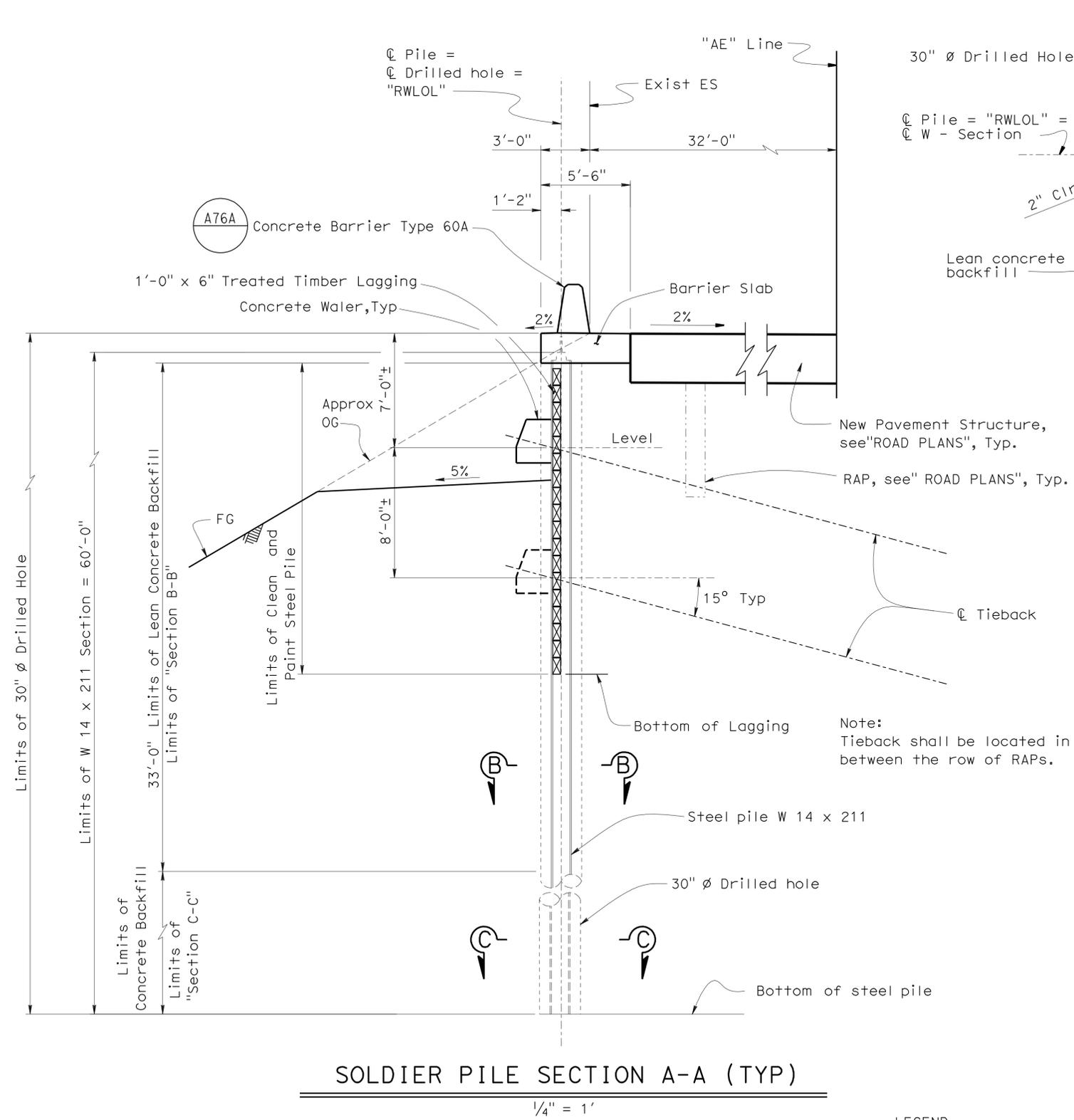
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 USERNAME => s128843 DATE PLOTTED => 25-JAN-2012



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	423	457

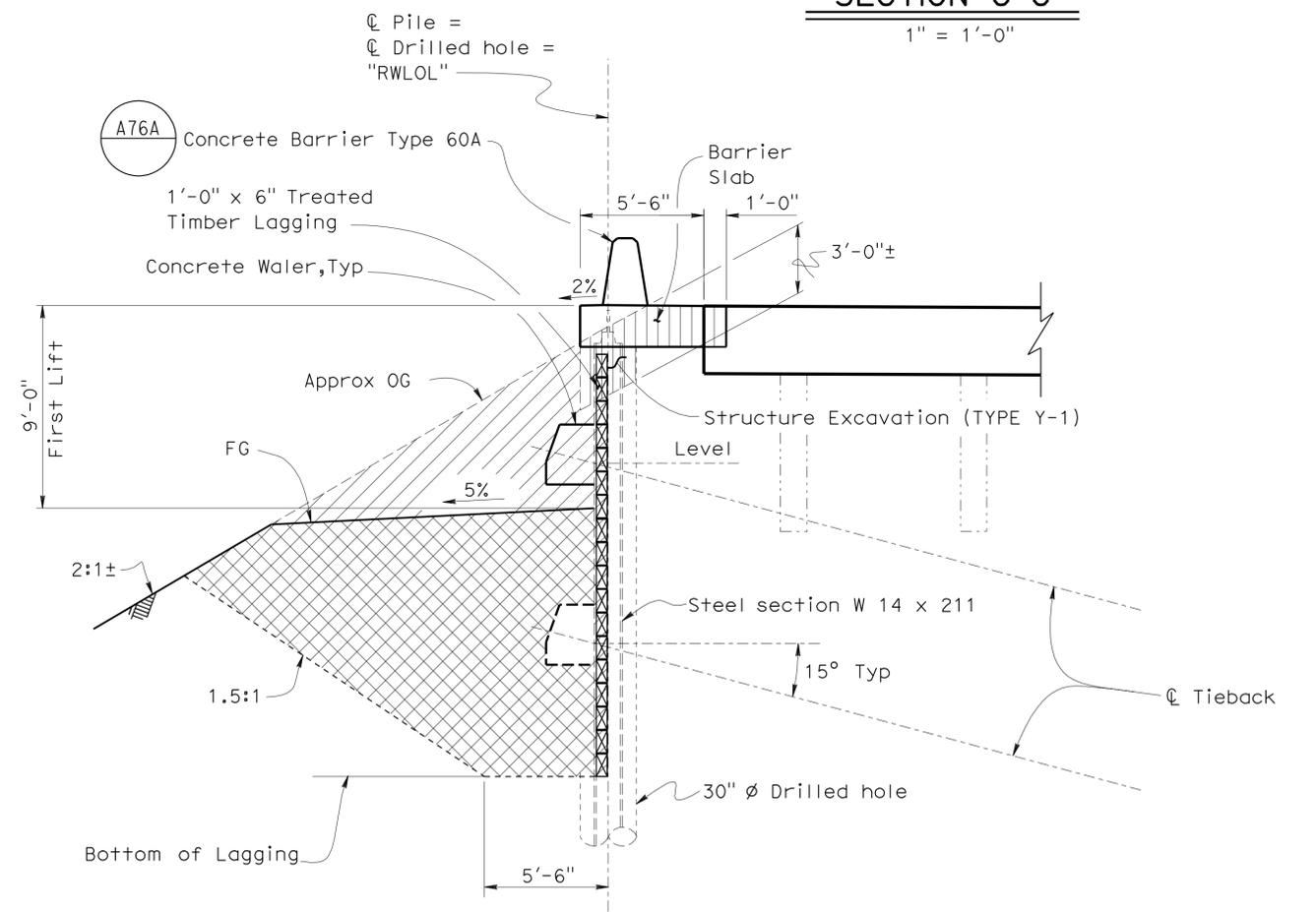
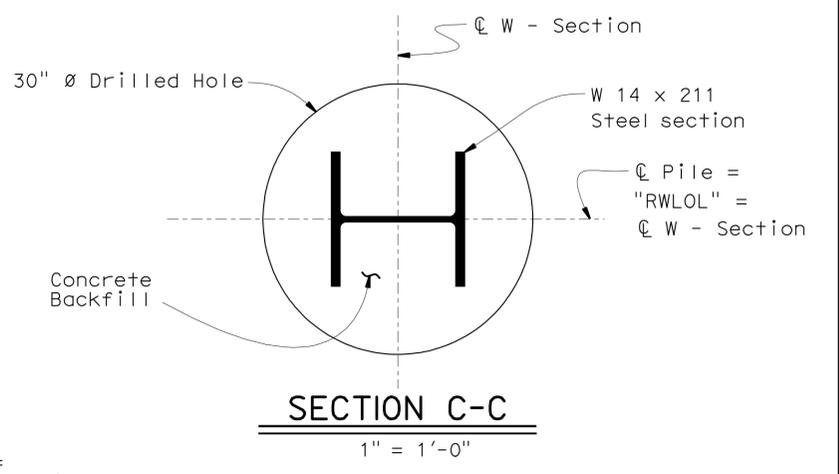
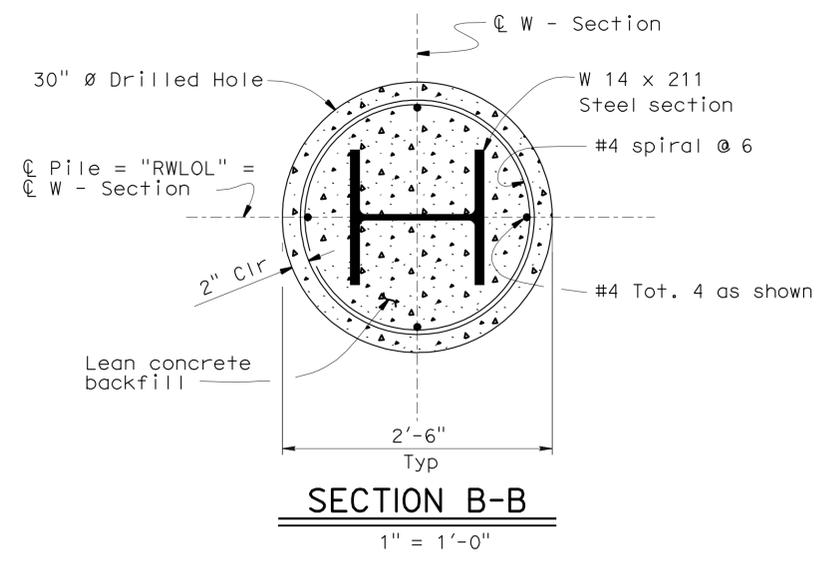
12-7-10  
 REGISTERED CIVIL ENGINEER DATE  
 1-23-12  
 PLANS APPROVAL DATE  
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REGISTERED PROFESSIONAL ENGINEER  
 LINAN WANG  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA



- LEGEND
- Indicates Structure Excavation
  - Indicates Structure Backfill
  - Indicates Structure Excavation (TYPE Y-1) Aerially Deposited Lead (ADL)

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



DESIGN BY Jay Quiogue DETAILS BY Wei Zhang QUANTITIES BY Amador Alcantara	CHECKED Sergio Damian CHECKED Linan Wang CHECKED Sergio Damian	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN <b>DESIGN BRANCH 4</b>	BRIDGE NO. 33E0212 POST MILE R5.33	<b>RETAINING WALL NO.6</b> <b>RETAINING WALL DETAILS NO.1</b>
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES 7-30-10 9-1-10 9-7-10 9-8-10 9-14-10 11-1-10 11-18-10 11-1-11 3-9-11 SHEET 5 OF 13

FILE => 04-4a0701-rw06-f-ts01.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	424	457

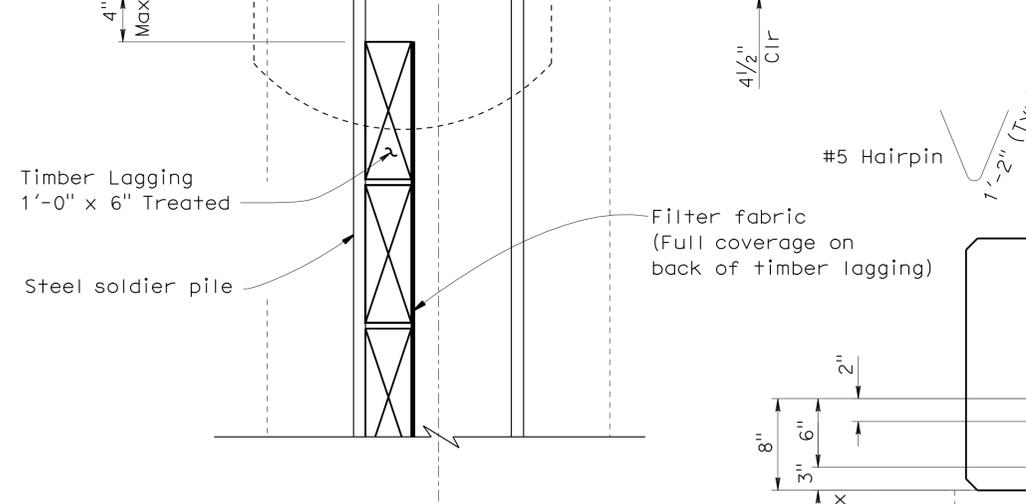
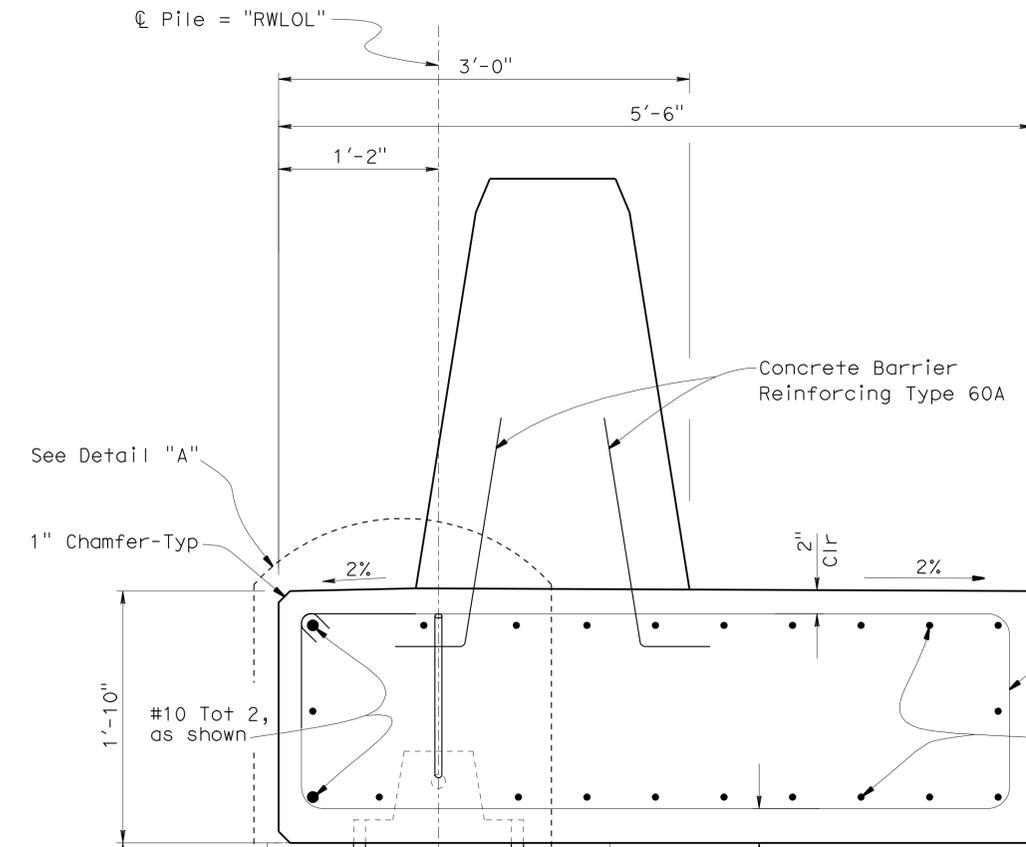
  

REGISTERED CIVIL ENGINEER DATE		12-7-10	
PLANS APPROVAL DATE		1-23-12	

REGISTERED PROFESSIONAL ENGINEER		LINAN WANG	
No.		54714	
Exp.		12-31-11	
CIVIL		STATE OF CALIFORNIA	

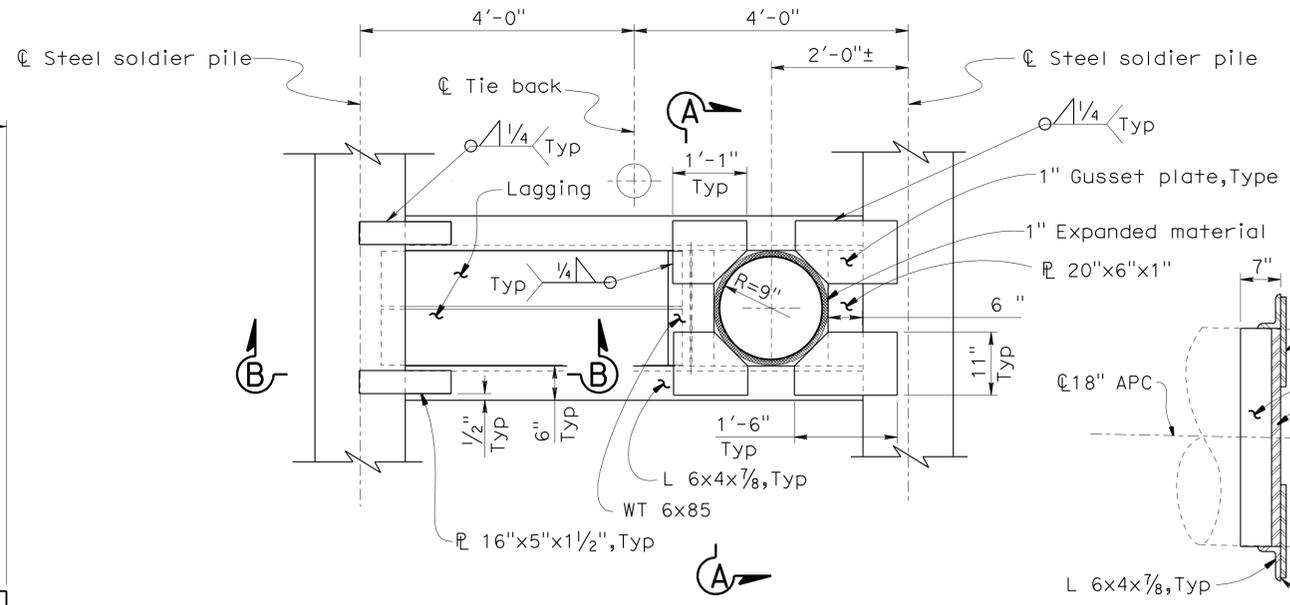
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**TYPICAL SECTION**  
1/2" = 1'-0"

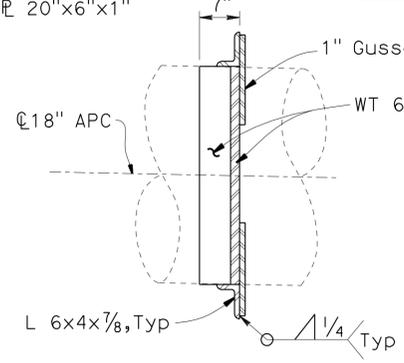
**DETAIL "A"**  
1/2" = 1'

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

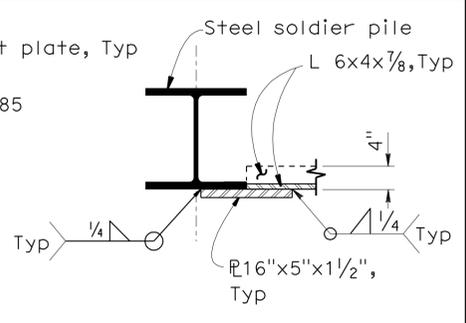


**ELEVATION @18" DIA PIPE OPENING**  
3/4" = 1'

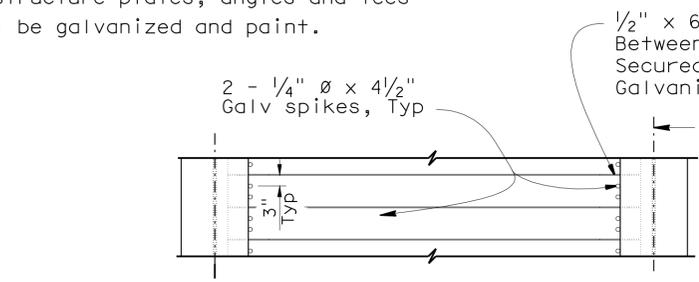
**Note:**  
All structure plates, angles and tees shall be galvanized and paint.



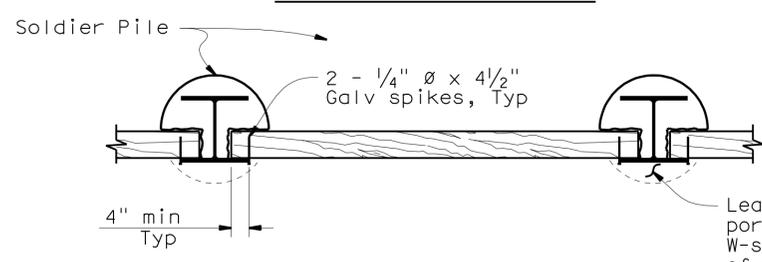
**SECTION A-A**  
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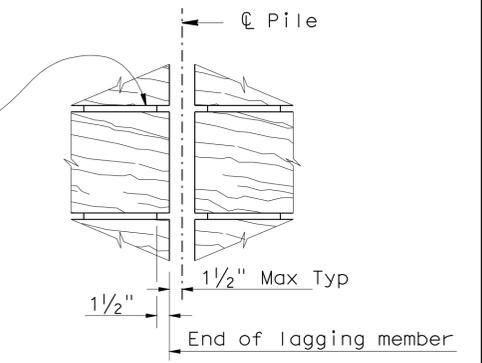
**SECTION B-B**  
3/4" = 1'



**PART ELEVATION**



**PART PLAN OF LAGGING MEMBER**



**PART ELEVATION**

**ALTERNATIVE INSTALLATION DETAIL**

**Note:**  
Diagonally opposite corners may be clipped to facilitate placement

**LAGGING DETAILS**  
No Scale

- Note:**
1. Place lagging members parallel to the top of wall;
  2. Spikes shall not be bent.
  3. Exposed Steel surface shall be cleaned and painted (Undercoat and finish coats).

DESIGN	BY Jay Quiogue	CHECKED Linan Wang
DETAILS	BY Wei Zhang	CHECKED Linan Wang
QUANTITIES	BY Amador Alcantara	CHECKED Sergio Damian

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 4

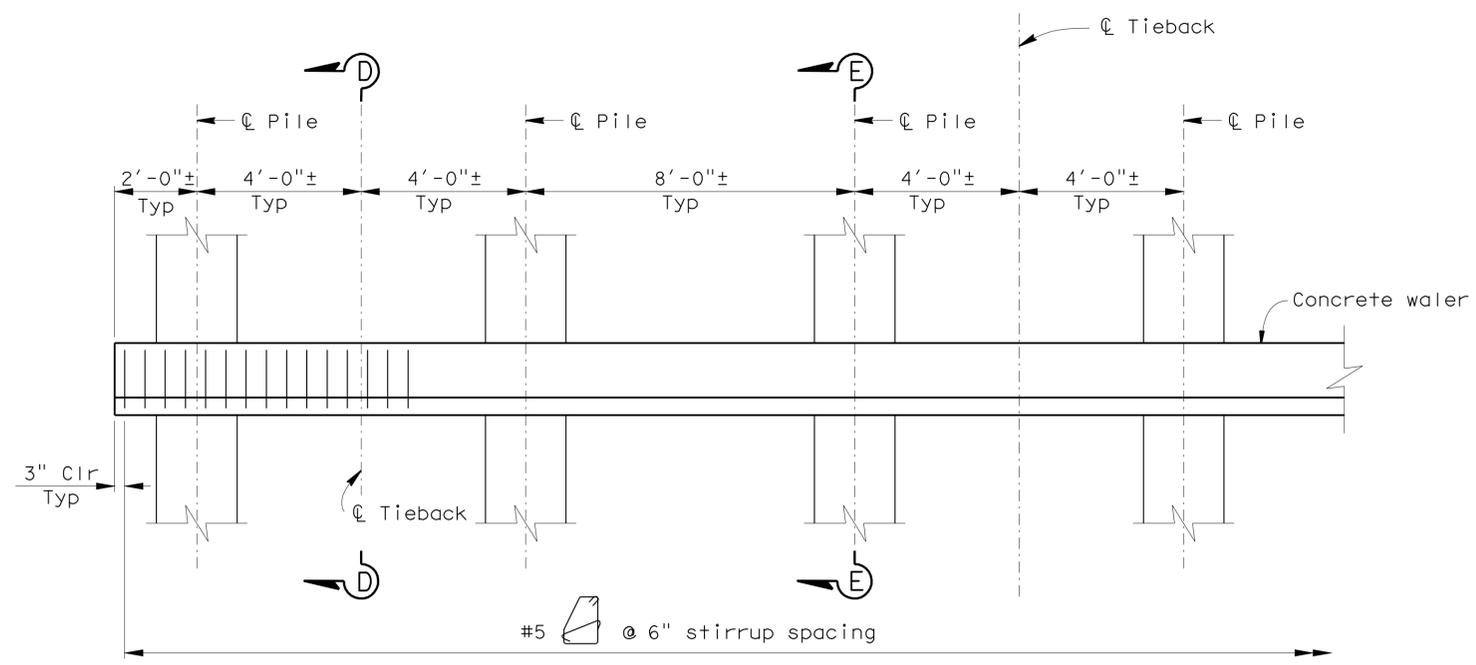
BRIDGE NO.	33E0212
POST MILE	R5.33

RETAINING WALL NO.6  
RETAINING WALL DETAILS NO.2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	425	457

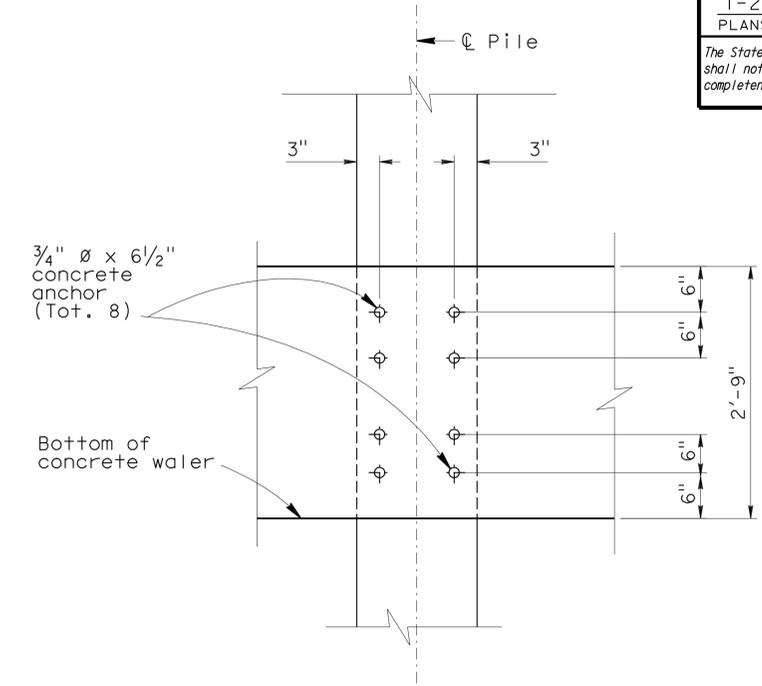
12-7-10  
 REGISTERED CIVIL ENGINEER DATE  
 1-23-12  
 PLANS APPROVAL DATE  
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REGISTERED PROFESSIONAL ENGINEER  
 LINAN WANG  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA

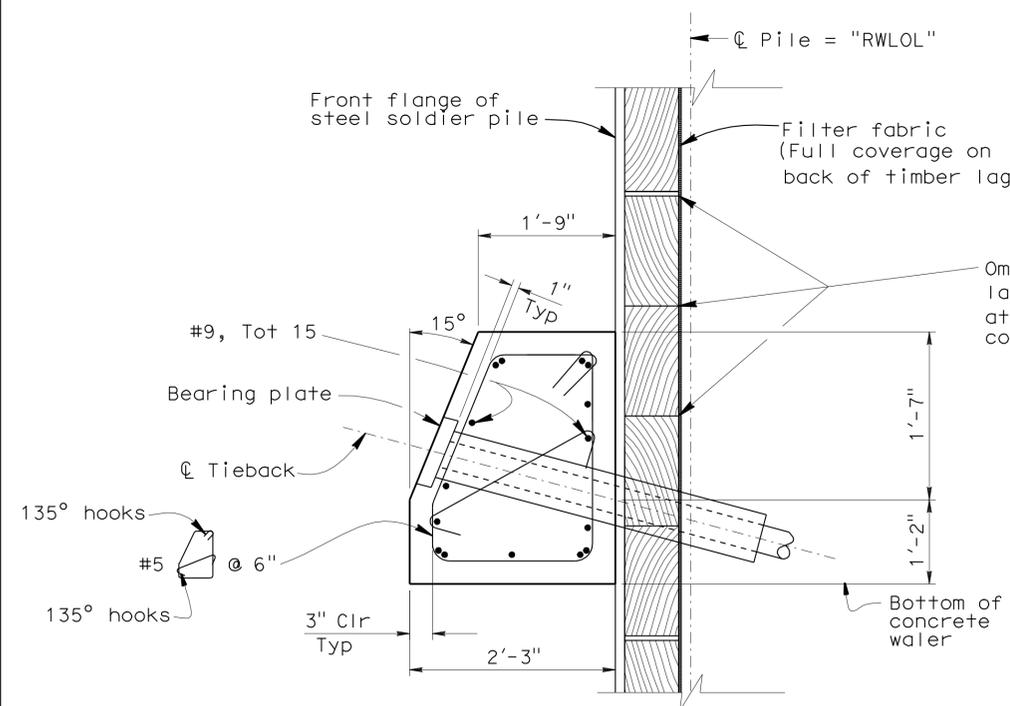


**PART ELEVATION**  
No scale

Note: Timber lagging not shown

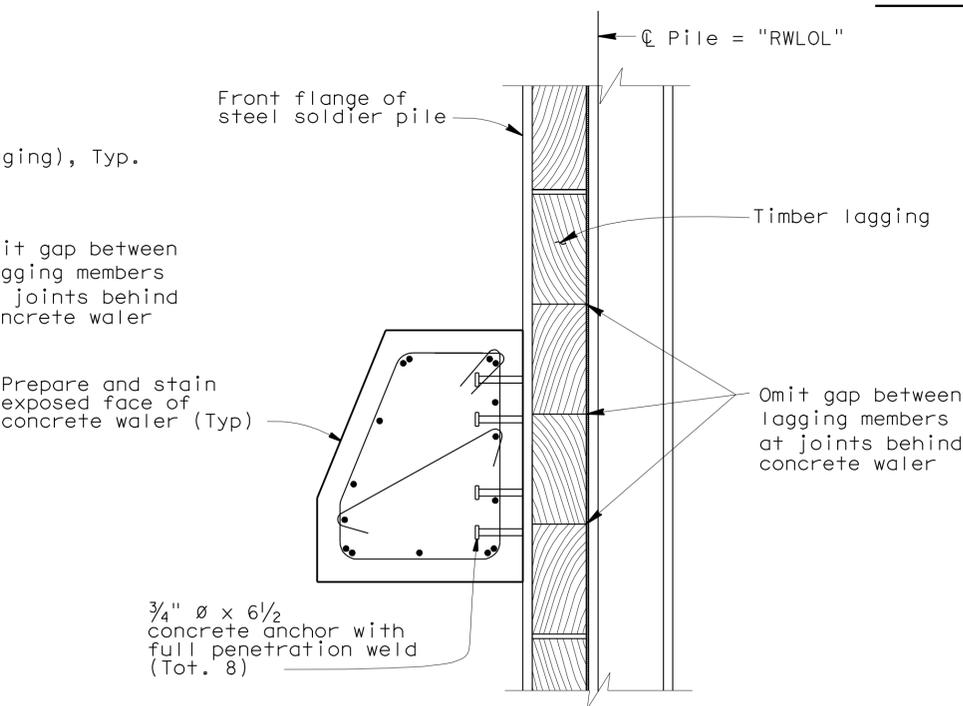


**CONCRETE ANCHOR PLACEMENT**  
No Scale



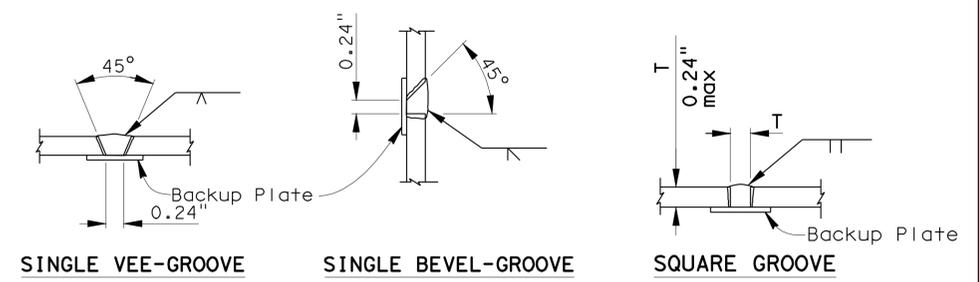
**SECTION D-D**  
No scale

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



**SECTION E-E**  
No scale

Note: For details and dimensions not shown. See "SECTION D-D"



**PILE WELDING DETAIL - BUTT JOINTS**  
No Scale

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

DESIGN	BY Jay Quiogue	CHECKED Linan Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH <b>4</b>	BRIDGE NO. 33E0212	RETAINING WALL NO.6
	DETAILS BY Wei Zhang	CHECKED Linan Wang			POST MILE R5.33	
QUANTITIES	BY Amador Alcantara	CHECKED Sergio Damian	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 7 OF 13

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:45

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Alc	580	R4.7/R8.2	426	457

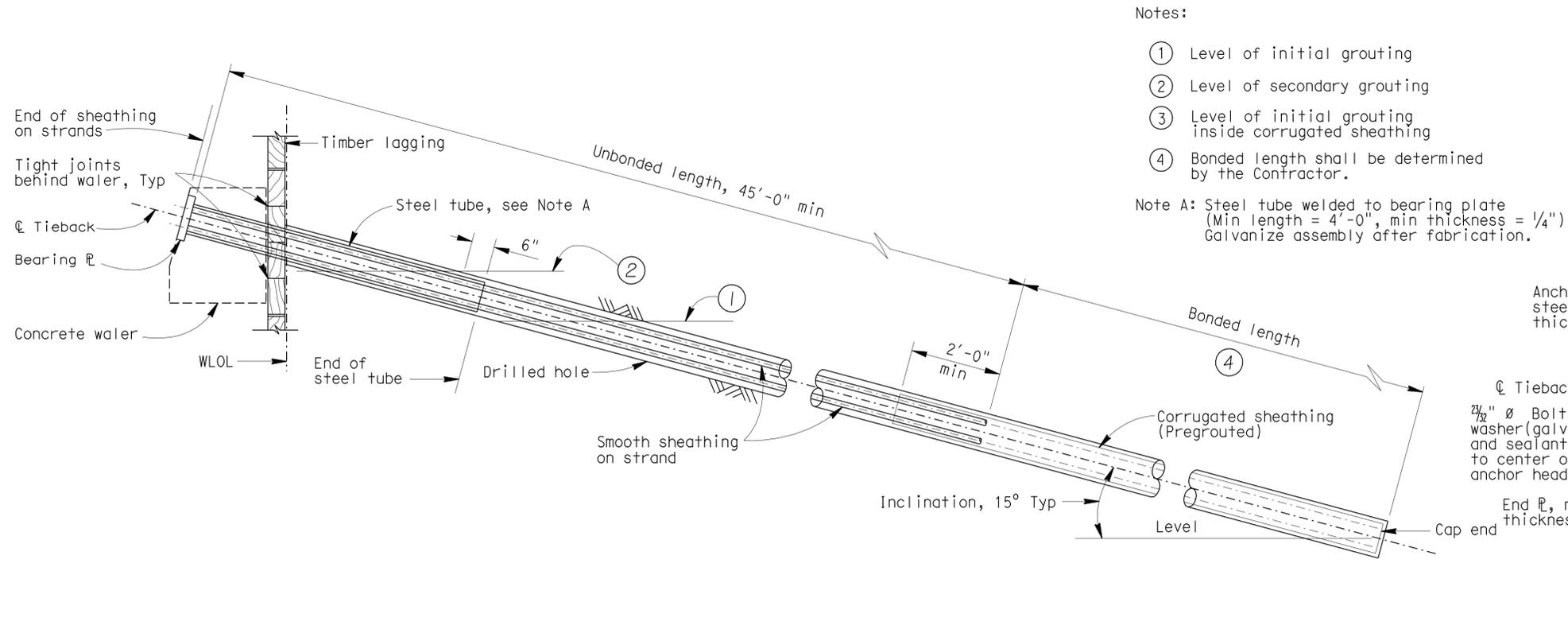
  

12-7-10	
REGISTERED CIVIL ENGINEER	DATE
1-23-12	
PLANS APPROVAL DATE	

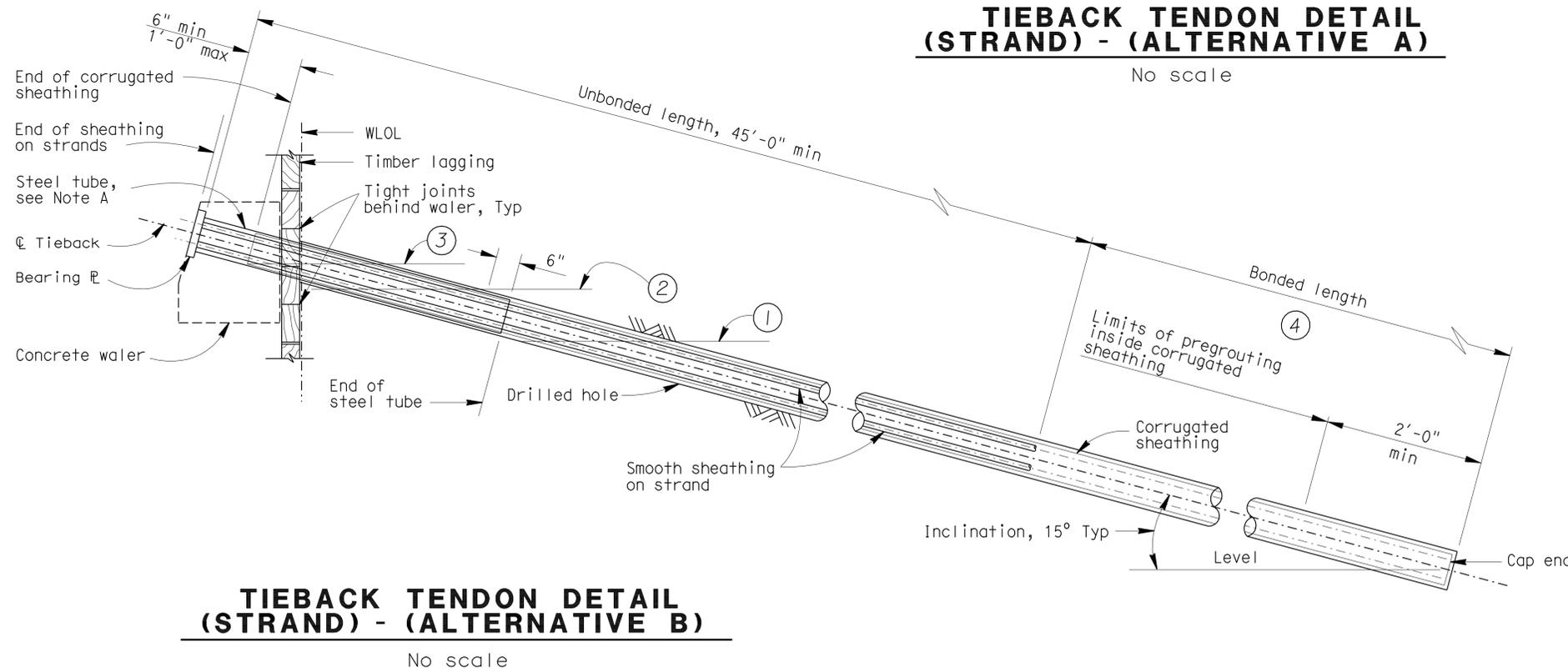
LINAN WANG	
No.	54714
Exp.	12-31-11
CIVIL	
STATE OF CALIFORNIA	

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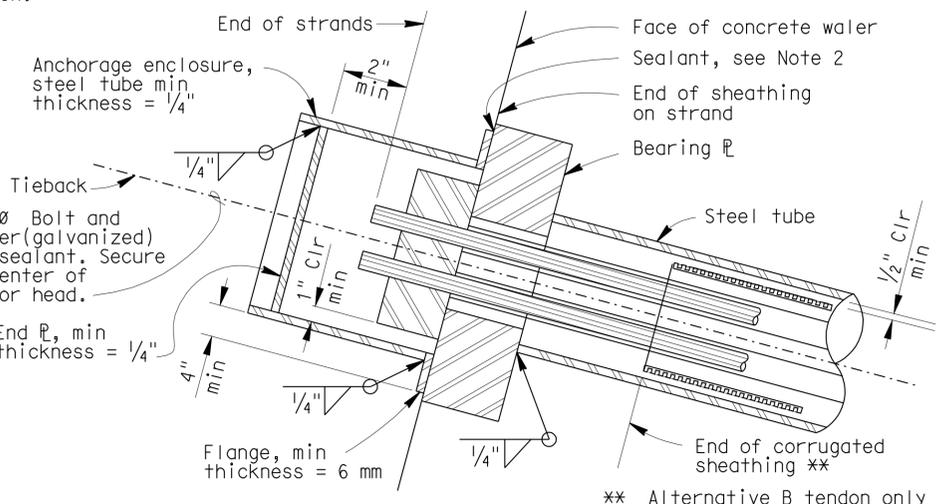
**TIEBACK TENDON DETAIL (STRAND) - (ALTERNATIVE A)**

No scale



**TIEBACK TENDON DETAIL (STRAND) - (ALTERNATIVE B)**

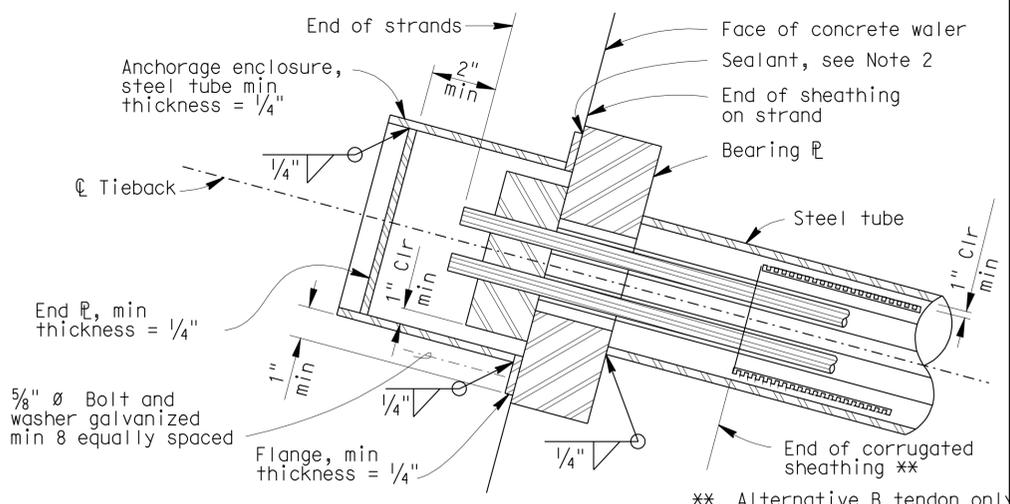
No scale



**ALTERNATIVE 2**

NOTE:

- Anchorage enclosure shall have provisions to allow injecting grout at low end and venting at high end. Galvanize after fabrication.
- Silicone sealant to cover full width of flange.



**ALTERNATIVE 1**

**ANCHORAGE ENCLOSURE DETAILS**

No scale

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DESIGN	BY Jay Quiogue	CHECKED Linan Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO. 33E0212	RETAINING WALL NO.6 RETAINING WALL DETAILS NO.4
	DETAILS BY Wei Zhang	CHECKED Linan Wang			POST MILE R5.33	
	QUANTITIES BY Amador Alcantara	CHECKED Sergio Damiam				

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 8 OF 13
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	427	457

12-29-10  
REGISTERED CIVIL ENGINEER

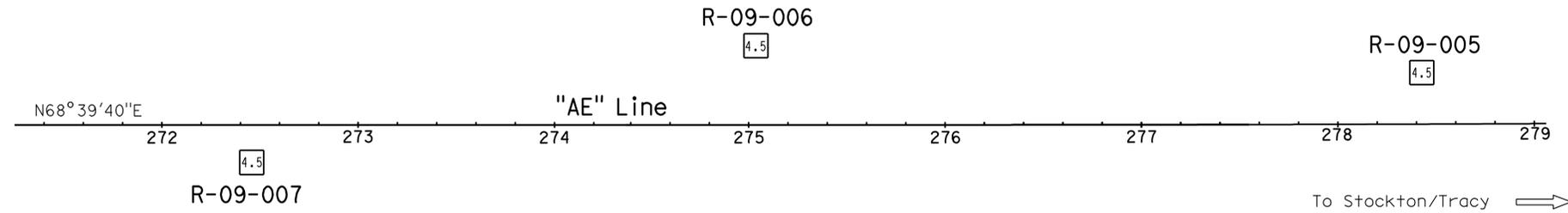
Eduardo Ortega  
No. C41012  
Exp. 3-31-11  
CIVIL

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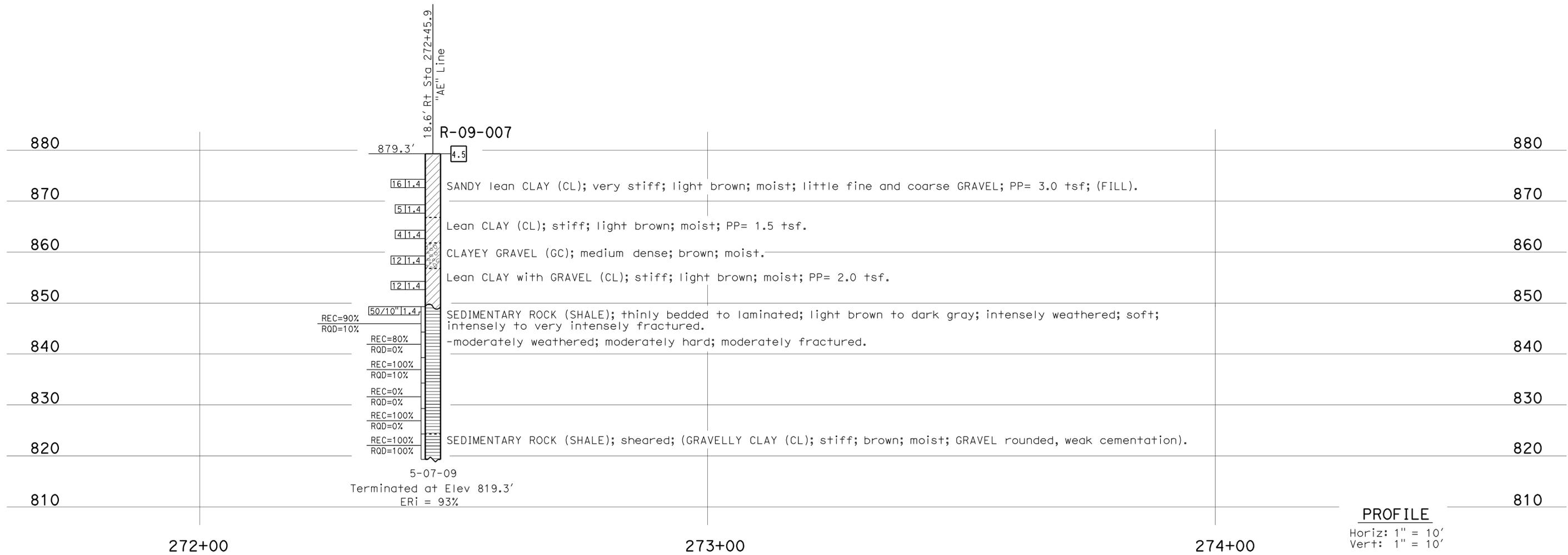
This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (June 2007).

**BENCH MARK**

Find a Mag nail and shiner in the AC shoulder along SR 580 EB. It is about 560' west of Call Box-ALA-580-52. N 2087803.746 E 6229752.842 Elev = 833.569'



**PLAN**  
1" = 40'



**PROFILE**  
Horiz: 1" = 10'  
Vert: 1" = 10'

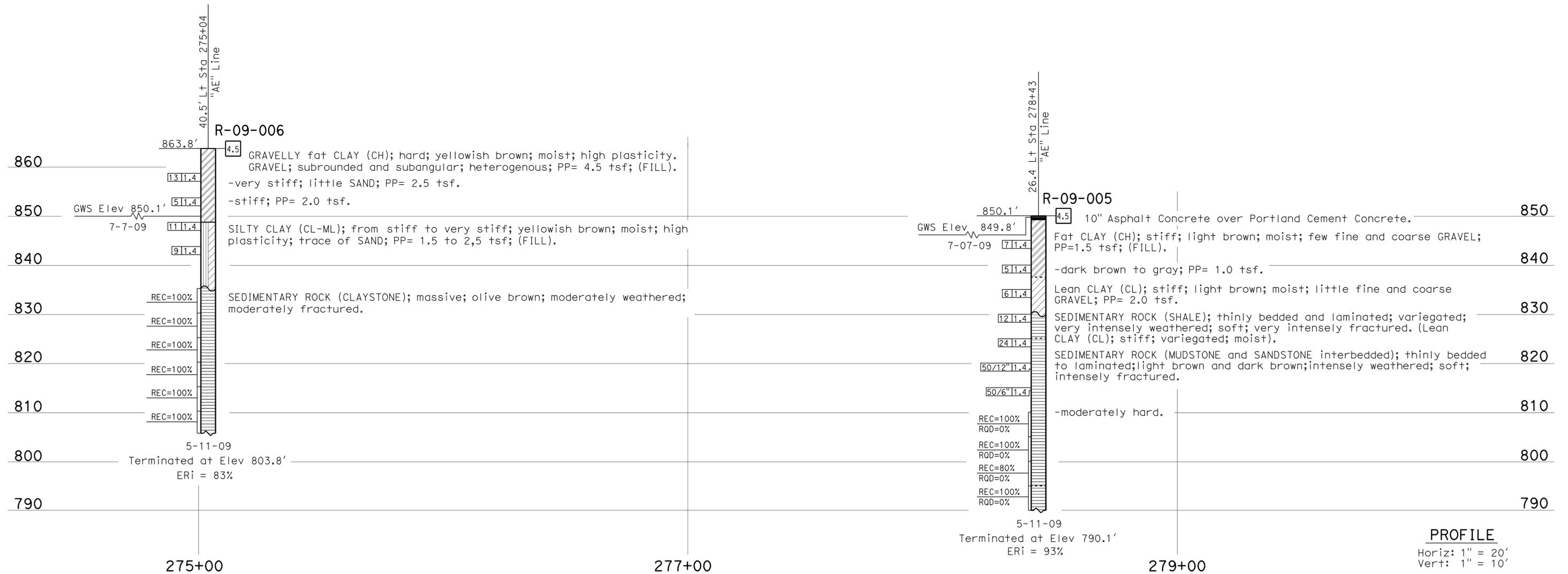
<b>ENGINEERING SERVICES</b>		<b>GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA</b>		<b>DIVISION OF ENGINEERING SERVICES</b>		<b>BRIDGE NO.</b>		<b>RETAINING WALL NO. 6</b>	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 8/10		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		33E0212		<b>LOG OF TEST BORINGS 1 OF 5</b>	
NAME: M. Momenzadeh		CHECKED BY: R. Nashed		C. Koepke, R. Karpowicz		DESIGN BRANCH		POST MILES			
065 CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		0 1 2 3		CU 04 EA 4A0701		R5.33		REVISION DATES	
								DISREGARD PRINTS BEARING EARLIER REVISION DATES		SHEET OF	
								10-04-10 11-05-10 12-29-10		9 13	

FILE => 04-4a0701-rw06-k-lotb 1of5.dgn

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:46

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	428	457
			12-29-10		
REGISTERED CIVIL ENGINEER					
1-23-12			PLANS APPROVAL DATE		
Eduardo Ortega			REGISTERED PROFESSIONAL ENGINEER		
No. C41012			Exp. 3-31-11		
CIVIL			STATE OF CALIFORNIA		
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FOR PLAN VIEW, SEE  
"LOG OF TEST BORINGS 1 OF 5"



<b>ENGINEERING SERVICES</b>		<b>GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA</b>		<b>DIVISION OF ENGINEERING SERVICES</b>		<b>BRIDGE NO.</b>		<b>RETAINING WALL NO. 6</b>	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 8/10		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		33E0212		<b>LOG OF TEST BORINGS 2 OF 5</b>	
NAME: M. Momenzadeh		CHECKED BY: R. Nashed		C. Koepke, R. Karpowicz		DESIGN BRANCH		POST MILES			
065 CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		0 1 2 3		CU 04 EA 4A0701		R5.33		REVISION DATES	
										SHEET 10 OF 13	

FILE => 04-4a0701-rw06-k-lotb 2of5.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	429	457

12-29-10  
 REGISTERED CIVIL ENGINEER  
 Eduardo Ortega  
 No. C41012  
 Exp. 3-31-11  
 CIVIL  
 STATE OF CALIFORNIA

1-23-12  
 PLANS APPROVAL DATE

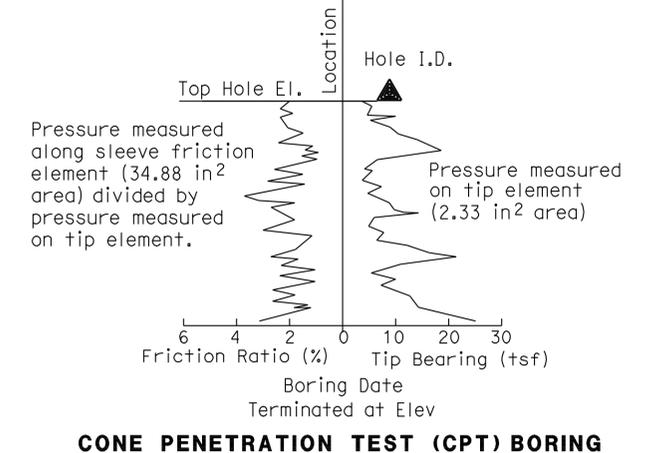
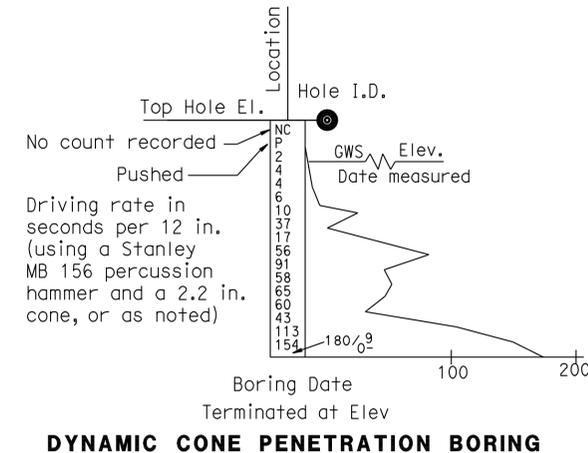
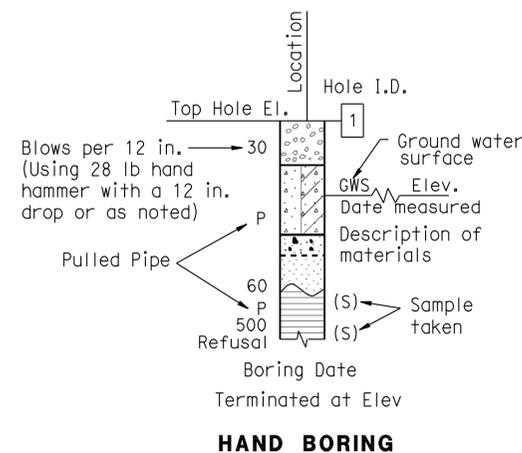
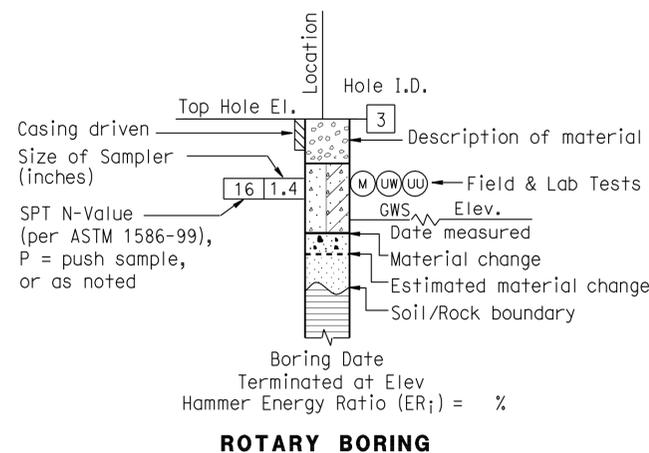
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CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring (hollow or solid stem bucket)
	R	Rotary drilled boring (conventional)
	RW	Rotary drilled with self-casing wire-line
	RC	Rotary core with continuously-sampled, self-casing wire-line
	P	Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778)
	O	Other (note on LOTB)

Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



ENGINEERING SERVICES	GEOTECHNICAL SERVICES PREPARED BY: F. Nguyen	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33E0212	RETAINING WALL NO. 6 LOG OF TEST BORINGS 3 OF 5
				POST MILE R5.33	
GS LOTB SOIL LEGEND	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 11 OF 13

FILE => 04-4a0701-rw06-k-lotb\_3of5.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	430	457

12-29-10  
REGISTERED CIVIL ENGINEER

Eduardo Ortega  
No. C41012  
Exp. 3-31-11  
CIVIL  
STATE OF CALIFORNIA

1-23-12  
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		Lean CLAY with GRAVEL
	Poorly-graded GRAVEL with SAND		SANDY lean CLAY
	Well-graded GRAVEL with SILT		SANDY lean CLAY with GRAVEL
	Well-graded GRAVEL with SILT and SAND		GRAVELLY lean CLAY
	Well-graded GRAVEL with CLAY (or SILTY CLAY)		GRAVELLY lean CLAY with SAND
	Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SILTY CLAY
	Poorly-graded GRAVEL with SILT		SILTY CLAY with SAND
	Poorly-graded GRAVEL with SILT and SAND		SILTY CLAY with GRAVEL
	Poorly-graded GRAVEL with CLAY (or SILTY CLAY)		SANDY SILTY CLAY
	Poorly-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SANDY SILTY CLAY with GRAVEL
	SILTY GRAVEL		GRAVELLY SILTY CLAY
	SILTY GRAVEL with SAND		GRAVELLY SILTY CLAY with SAND
	CLAYEY GRAVEL		SILT
	CLAYEY GRAVEL with SAND		SILT with SAND
	SILTY, CLAYEY GRAVEL		SILT with GRAVEL
	SILTY, CLAYEY GRAVEL with SAND		SANDY SILT
	Well-graded SAND		SANDY SILT with GRAVEL
	Well-graded SAND with GRAVEL		GRAVELLY SILT
	Poorly-graded SAND		GRAVELLY SILT with SAND
	Poorly-graded SAND with GRAVEL		ORGANIC lean CLAY
	Well-graded SAND with SILT		ORGANIC lean CLAY with SAND
	Well-graded SAND with SILT and GRAVEL		ORGANIC lean CLAY with GRAVEL
	Well-graded SAND with CLAY (or SILTY CLAY)		SANDY ORGANIC lean CLAY
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		GRAVELLY ORGANIC lean CLAY
	Poorly-graded SAND with SILT		GRAVELLY ORGANIC lean CLAY with SAND
	Poorly-graded SAND with SILT and GRAVEL		ORGANIC fat CLAY
	Poorly-graded SAND with CLAY (or SILTY CLAY)		ORGANIC fat CLAY with SAND
	Poorly-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		ORGANIC fat CLAY with GRAVEL
	SILTY SAND		SANDY ORGANIC fat CLAY
	SILTY SAND with GRAVEL		SANDY ORGANIC fat CLAY with GRAVEL
	CLAYEY SAND		GRAVELLY ORGANIC fat CLAY
	CLAYEY SAND with GRAVEL		GRAVELLY ORGANIC fat CLAY with SAND
	SILTY, CLAYEY SAND		ORGANIC elastic SILT
	SILTY, CLAYEY SAND with GRAVEL		ORGANIC elastic SILT with SAND
	PEAT		ORGANIC elastic SILT with GRAVEL
	COBBLES		SANDY ORGANIC elastic SILT
	COBBLES and BOULDERS		GRAVELLY ORGANIC elastic SILT
			GRAVELLY ORGANIC elastic SILT 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
(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)
(UC)	Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
(UU)	Unconsolidated Undrained Triaxial (ASTM D 2850)
(UW)	Unit Weight (ASTM D 4767)

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N <sub>60</sub> (Blows / 12 in.)
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Greater than 50

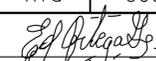
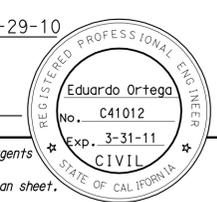
MOISTURE	
Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

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

PARTICLE SIZE		
Description	Size (in.)	
Boulder	Greater than 12	
Cobble	3 - 12	
Gravel	Coarse	3/4 - 3
	Fine	1/5 - 3/4
Sand	Coarse	1/16 - 1/5
	Medium	1/64 - 1/16
	Fine	1/300 - 1/64
Silt and Clay	Less than 1/300	

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33E0212	RETAINING WALL NO. 6 LOG OF TEST BORINGS 4 OF 5
				POST MILE R5.33	
PREPARED BY: F. Nguyen	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 12 OF 13

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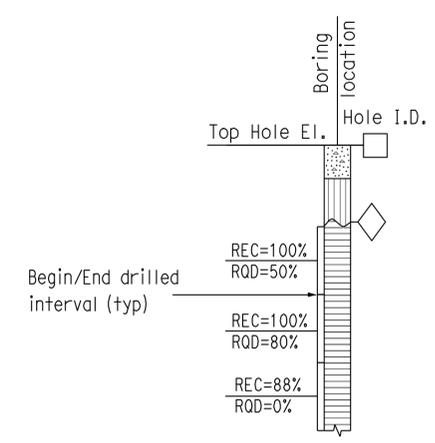
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	431	457
 REGISTERED CIVIL ENGINEER			12-29-10		
1-23-12			PLANS APPROVAL DATE		
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**PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)**

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

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

RQD\* Indicates soundness criteria not met.



**BEDDING SPACING**

Description	Thickness / Spacing
Massive	Greater than 10 ft
Very Thickly Bedded	3 ft - 10 ft
Thickly Bedded	1 ft - 3 ft
Moderately Bedded	4 in. - 1 ft
Thinly Bedded	1 in. - 4 in.
Very Thinly Bedded	1/4 in. - 1 in.
Laminated	Less than 1/4 in.

**LEGEND OF ROCK MATERIALS**

	IGNEOUS ROCK
	SEDIMENTARY ROCK
	METAMORPHIC ROCK

**ROCK HARDNESS**

Description	Criteria
Extremely Hard	Cannot be scratched with a pocketknife or sharp pick. Can only be chipped with repeated heavy hammer blows.
Very Hard	Cannot be scratched with a pocketknife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Can be scratched with a pocketknife or sharp pick with difficulty (heavy pressure). Breaks with heavy hammer blows.
Moderately Hard	Can be scratched with pocketknife or sharp pick with light or moderate pressure. Breaks with moderate hammer blows.
Moderately Soft	Can be grooved 1/16 in. deep with a pocketknife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Can be grooved or gouged easily by a pocketknife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Can be readily indented, grooved or gouged with fingernail, or carved with a pocketknife. 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 Leaching		
	Body of Rock	Fracture Surfaces		Texture	Leaching	
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change	No leaching	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.	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."

**FRACTURE DENSITY**

Description	Observed Fracture Density
Unfractured	No fractures.
Very Slightly Fractured	Core lengths greater than 3 ft.
Slightly Fractured	Core lengths mostly from 1 to 3 ft.
Moderately Fractured	Core lengths mostly from 4 in. to 1 ft.
Intensely Fractured	Core lengths mostly from 1 to 4 in.
Very Intensely Fractured	Mostly chips and fragments.

QUANTITIES		
STRUCTURE EXCAVATION (SOLDIER PILE WALL)	7,435	CY
STRUCTURE EXCAVATION (TYPE Y-1)	570	CY
(AERIALY DEPOSITED LEAD)		
STRUCTURE BACKFILL (SOLDIER PILE WALL)	5,300	CY
CONCRETE BACKFILL (SOLDIER PILE WALL)	741	CY
LEAN CONCRETE BACKFILL	905	CY
30" DRILLED HOLE	9,060	LF
STEEL SOLDIER PILE (W 14 X 211)	9,060	LF
TIEBACK ANCHOR	290	EA
STRUCTURAL CONCRETE, WALER	493	CY
STRUCTURAL CONCRETE, BARRIER SLAB	448	CY
BAR REINFORCING STEEL (RETAINING WALL)	245,800	LB
TIMBER LAGGING	120	MFBM
CLEAN AND PAINT STEEL SOLDIER PILE	LUMP	SUM
PREPARE AND STAIN CONCRETE	15,865	SQFT
MISCELLANEOUS METAL	1,902	LB
CONCRETE BARRIER (TYPE 60A)	1,200	LF

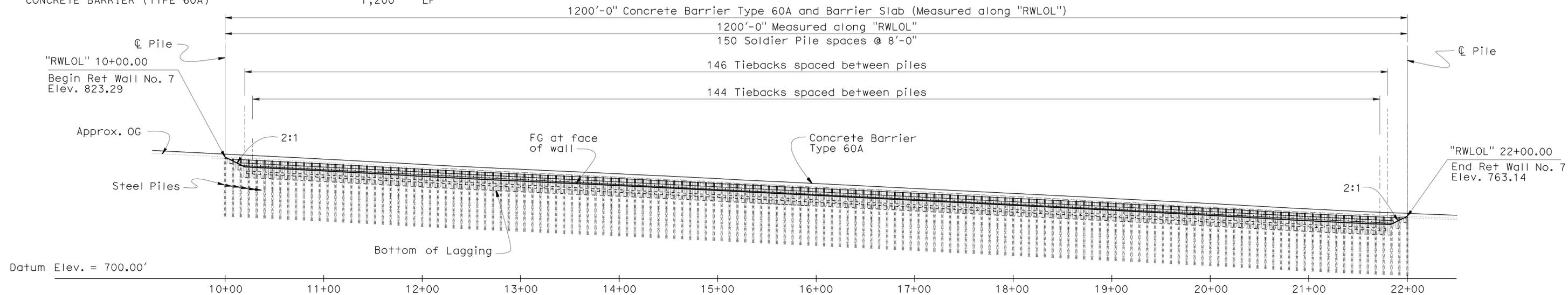
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REGISTERED CIVIL ENGINEER DATE 12-7-10

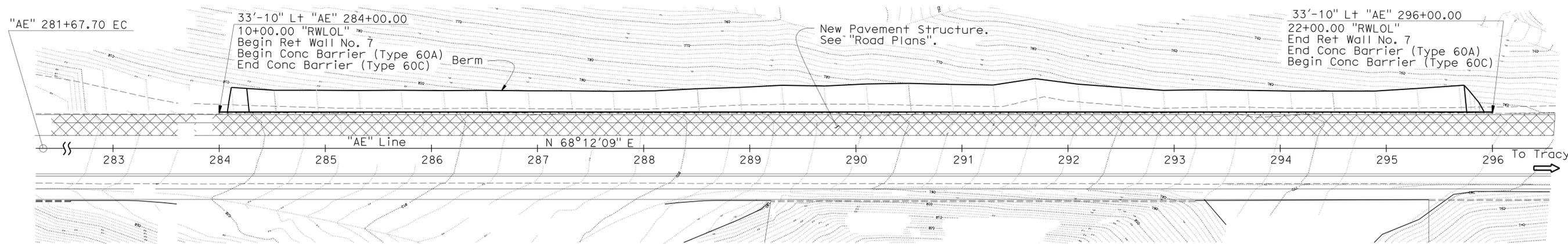
PLANS APPROVAL DATE 1-23-12

REGISTERED PROFESSIONAL ENGINEER LINAN WANG No. 54714 Exp. 12-31-11 CIVIL STATE OF CALIFORNIA

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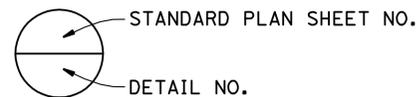


**MIRROR ELEVATION**  
1" = 50'



**PLAN**  
1" = 50'

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



Notes:  
1. For "General Notes" see "GENERAL PLAN NO. 2" sheet.  
2. For details of "AE" Line see "ROAD PLANS"

Minh Ha DESIGN ENGINEER	DESIGN	BY B. Li Zhou	CHECKED L. Wang	LOAD FACTOR DESIGN	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO.	RETAINING WALL NO. 7 GENERAL PLAN NO. 1		
	DETAILS	BY J. Thorne/M. Lane	CHECKED B. Li Zhou	LAYOUT			BY L. Wang		CHECKED B. Li Zhou	33E0211
	QUANTITIES	BY M. Lane	CHECKED B. Li Zhou	SPECIFICATIONS			BY John Jiang		PLANS AND SPECS COMPARED L. Wang	R5.13

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

CU 04  
EA 4A07U1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES

3-22-10	7-6-10	7-27-10	9-7-10	9-8-10	10-28-10	11-9-10	11-18-10	3-9-11	3-16-11
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SHEET 1 OF 17

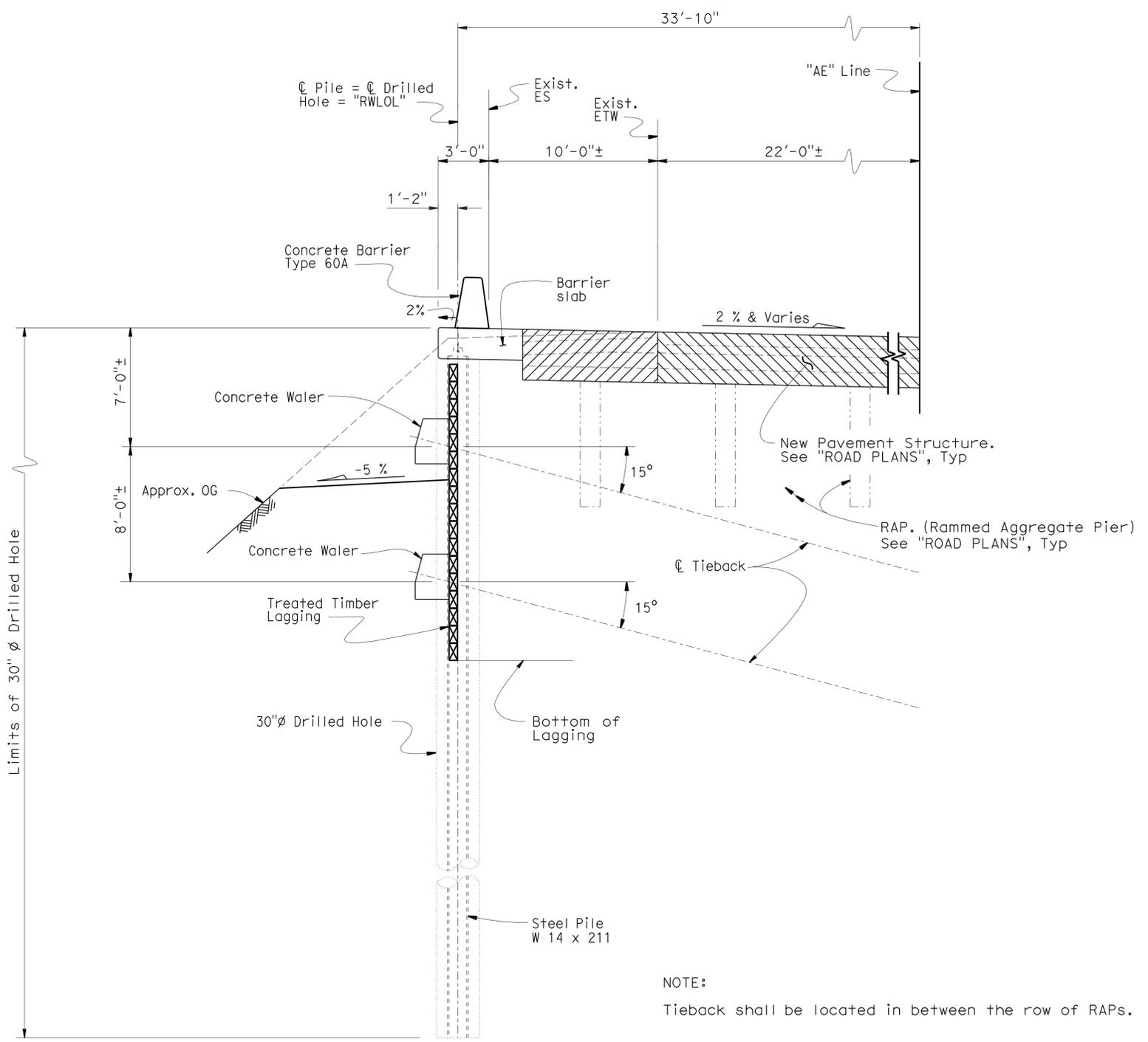
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			1-23-12	PLANS APPROVAL DATE	
			REGISTERED PROFESSIONAL ENGINEER No. 54714 Exp. 12-31-11 CIVIL STATE OF CALIFORNIA		
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INDEX TO PLANS

Sheet No.	Title
1	GENERAL PLAN NO. 1
2	GENERAL PLAN NO. 2
3	STRUCTURE PLAN NO. 1
4	STRUCTURE PLAN NO. 2
5	STRUCTURE PLAN NO. 3
6	STRUCTURE PLAN NO. 4
7	STRUCTURE PLAN NO. 5
8	STRUCTURE PLAN NO. 6
9	RETAINING WALL DETAILS NO.1
10	RETAINING WALL DETAILS NO.2
11	RETAINING WALL DETAILS NO.3
12	RETAINING WALL DETAILS NO.4
13	LOG OF TEST BORINGS 1 OF 5
14	LOG OF TEST BORINGS 2 OF 5
15	LOG OF TEST BORINGS 3 OF 5
16	LOG OF TEST BORINGS 4 OF 5
17	LOG OF TEST BORINGS 5 OF 5

SYANDARD PLANS DATED MAY 2006

A10A	ACRONYMS AND ABBREVIATIONS (A - L)
A10B	ACRONYMS AND ABBREVIATIONS (M - Z)
A10C	SYMBOLS (SHEET 1 OF 2)
A10D	SYMBOLS (SHEET 2 OF 2)
A76A	CONCRETE BARRIER TYPE 60



**TYPICAL SECTION**  
 $\frac{1}{4}'' = 1'-0''$

**GENERAL NOTES**

**DESIGN:**  
 AASHTO Standard Specifications for Highway Bridges dated 1995 with Interim Bridge Design Specifications (Caltrans) 2000

**SOIL PARAMETERS:**  
 (For determination of design lateral earth pressures)  
 $\phi = 22^\circ$        $\gamma_m = 130$  pcf  
 $C = 0$  psf

**REINFORCED CONCRETE:**  
 $f'_c = 4.0$  ksi (Concrete compressive strength at 28 days)  
 $f_y = 60$  ksi (Yield strength of reinforcement)

**STRUCTURAL STEEL:**  
 $f_y$  ASTM Designation: A709 / A709 M  
 $f_y = 50$  ksi

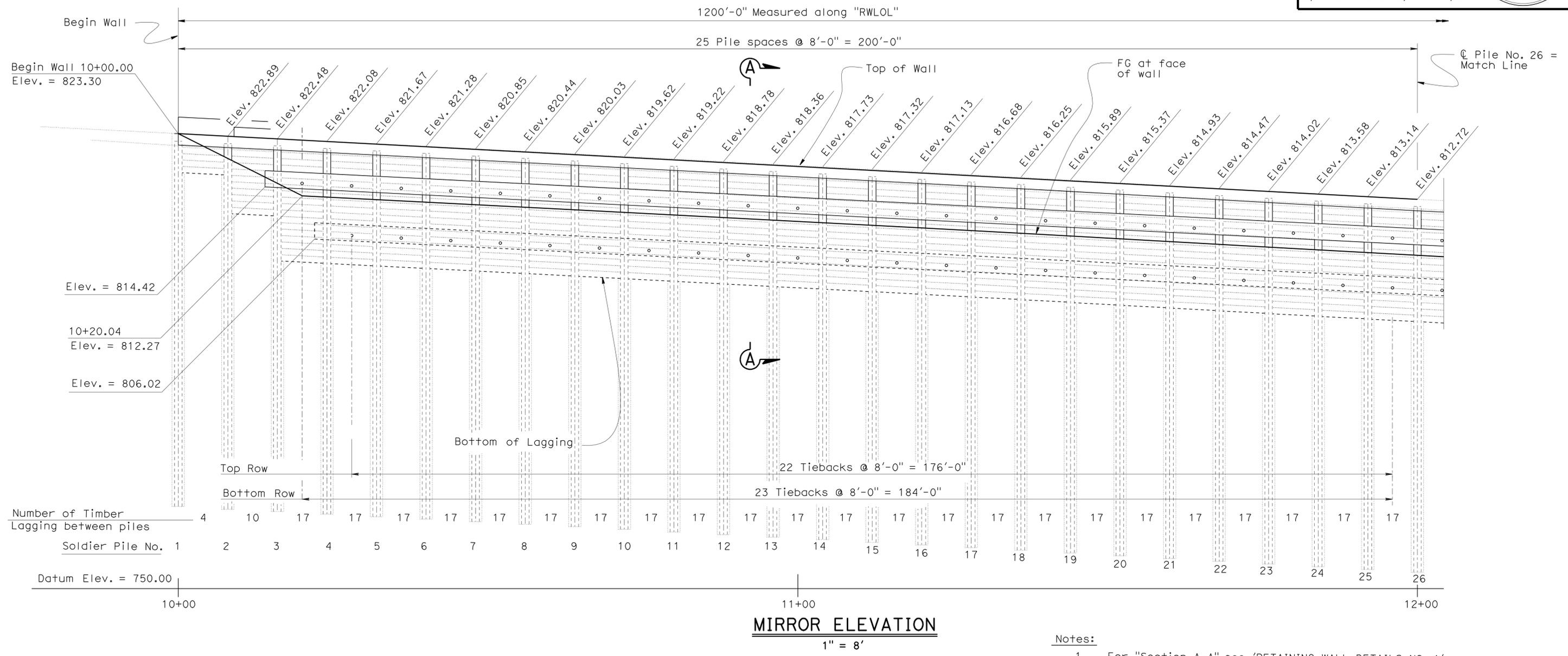
**STRUCTURAL TIMBER:**  
 Treated Douglas Fir, Grade No. 1 or better.  
 Timber to be full sawn.

**PRESTRESS STEEL ( TIEBACKS )**  
 Strands - ASTM designation: A416  
 $T =$  Design force per Tieback = 196 k  
 $f_{pu} =$  Minimum tensile strength of prestressing steel (kips per square inch)  
 $A_s$  (Min) = Minimum cross sectional area of prestressing steel in Tieback tendon. (square inch)  
 $A_s$  (Min) =  $\frac{1.5 T}{0.75 f_{pu}}$

X DESIGN ENGINEER	DESIGN	BY B. Li Zhou	CHECKED L. Wang	LOAD FACTOR DESIGN	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO.	RETAINING WALL NO. 7 GENERAL PLAN NO. 2		
	DETAILS	BY J. Thorne/M. Lane	CHECKED B. Li Zhou	LAYOUT			BY L. Wang		CHECKED B. Li Zhou	33E0211
	QUANTITIES	BY M. Lane	CHECKED B. Li Zhou	SPECIFICATIONS			BY John Jiang		PLANS AND SPECS COMPARED L. Wang	POST MILE R5.13
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS					0 1 2 3	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 2 OF 17	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	434	457

REGISTERED CIVIL ENGINEER DATE 12-7-10  
 PLANS APPROVAL DATE 1-23-12  
 REGISTERED PROFESSIONAL ENGINEER  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA  
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- Notes:
- For "Section A-A" see 'RETAINING WALL DETAILS NO. 1' sheet.
  - The construction of soldier pile shall be staggered and no open holes adjacent.
  - Concrete Barrier Type 60A not shown.
  - Remove lean concrete to bottom of lagging where required.

DESIGN	BY B. Li Zhou	CHECKED L. Wang
DETAILS	BY J. Thorne/M. Lane	CHECKED B. Li Zhou
QUANTITIES	BY M. Lane	CHECKED B. Li Zhou

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 4

BRIDGE NO.	33E0211
POST MILE	R5.13

RETAINING WALL NO. 7  
STRUCTURE PLAN NO. 1

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED =>





DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	437	457

<i>L. Wang</i>	12-7-10
REGISTERED CIVIL ENGINEER	DATE
1-23-12	
PLANS APPROVAL DATE	

LINAN WANG
No. 54714
Exp. 12-31-11
CIVIL
STATE OF CALIFORNIA

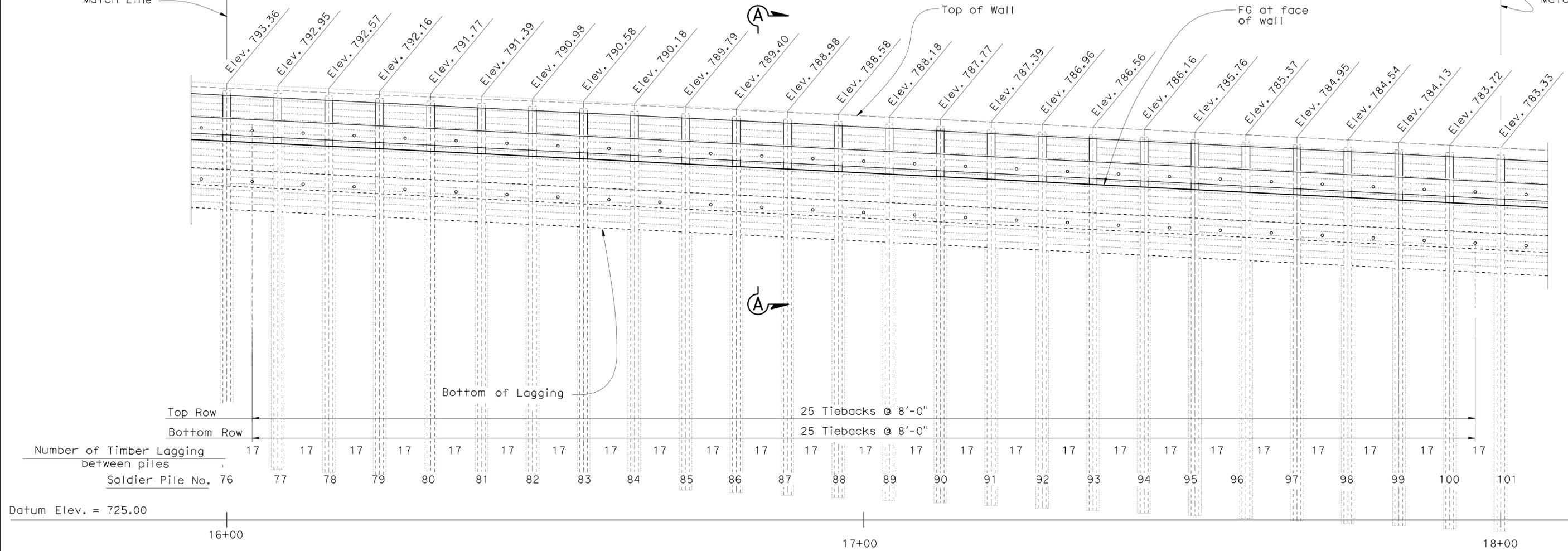
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1200'-0" Measured along "RWLOL"

25 Pile spaces @ 8'-0" = 200'-0"

☉ Pile No. 76 = Match Line

☉ Pile No. 101 = Match Line



**MIRROR ELEVATION**  
1" = 8'

- Notes:
1. For "Section A-A" see 'RETAINING WALL DETAILS NO. 1' sheet.
  2. The construction of soldier pile shall be staggered and no open holes adjacent.
  3. Concrete Barrier Type 60A not shown.
  4. Remove lean concrete to bottom of lagging where required.

DESIGN BY B. Li Zhou CHECKED L. Wang DETAILS BY J. Thorne/M. Lane CHECKED B. Li Zhou QUANTITIES BY M. Lane CHECKED B. Li Zhou	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN <b>DESIGN BRANCH 4</b>	BRIDGE NO. 33E0211	<b>RETAINING WALL NO. 7</b> <b>STRUCTURE PLAN NO. 4</b>
			POST MILE R5.13	
			DISREGARD PRINTS BEARING EARLIER REVISION DATES	
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A07U1	REVISION DATES 3-26-10 8-26-10 9-7-10 10-28-10 11-9-10 11-19-10 3-9-11	SHEET 6 OF 17

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	438	457

12-7-10  
REGISTERED CIVIL ENGINEER DATE

1-23-12  
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER

LINAN WANG

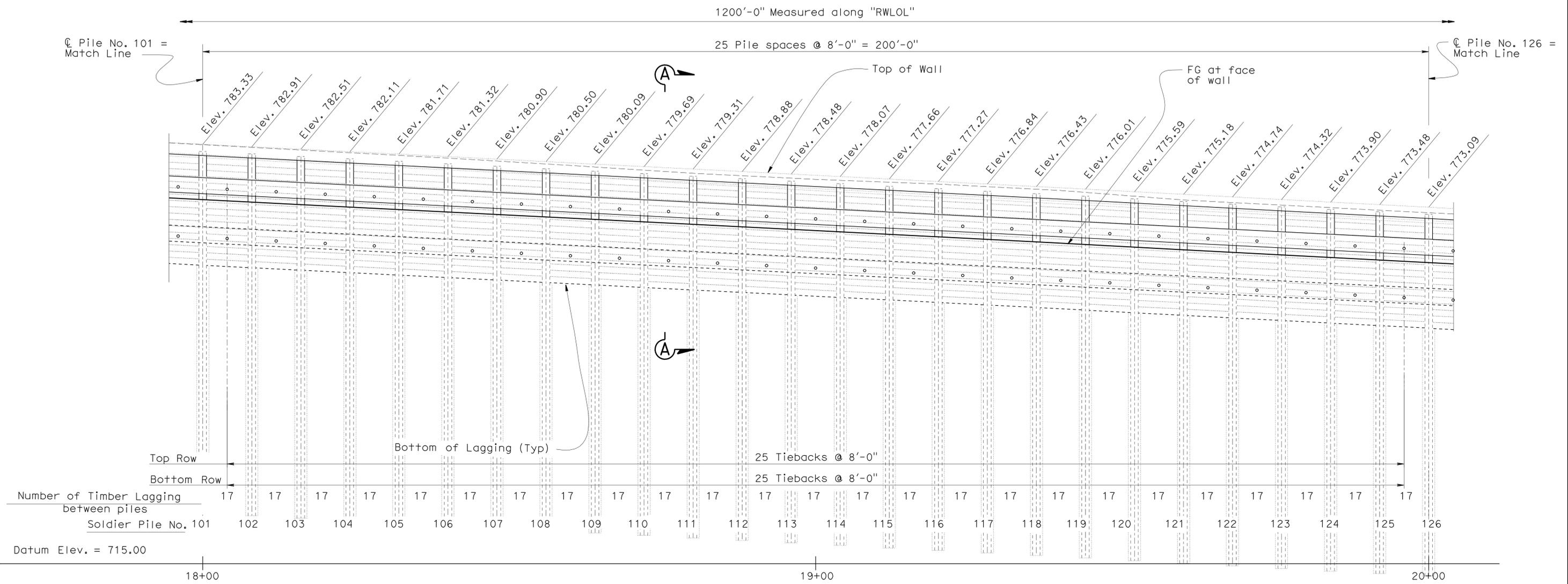
No. 54714

Exp. 12-31-11

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**MIRROR ELEVATION**

1" = 8'

**Notes:**

1. For "Section A-A" see 'RETAINING WALL DETAILS NO. 1' sheet.
2. The construction of soldier pile shall be staggered and no open holes adjacent.
3. Concrete Barrier Type 60A not shown.
4. Remove lean concrete to bottom of lagging where required.

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DESIGN	BY B. Li Zhou	CHECKED L. Wang																														
DETAILS	BY J. Thorne/M. Lane	CHECKED B. Li Zhou																														
QUANTITIES	BY M. Lane	CHECKED B. Li Zhou																														
BRIDGE NO.	33E0211																															
POST MILE	R5.13																															
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">0</td> <td style="width: 10%;">1</td> <td style="width: 10%;">2</td> <td style="width: 10%;">3</td> </tr> </table>	0	1	2	3	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="7">REVISION DATES</th> </tr> <tr> <td style="width: 10%;">3-29-10</td> <td style="width: 10%;">7-27-10</td> <td style="width: 10%;">8-26-10</td> <td style="width: 10%;">9-8-10</td> <td style="width: 10%;">10-28-10</td> <td style="width: 10%;">11-9-10</td> <td style="width: 10%;">11-18-10</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	REVISION DATES							3-29-10	7-27-10	8-26-10	9-8-10	10-28-10	11-9-10	11-18-10								SHEET 7 OF 17
0	1	2	3																													
REVISION DATES																																
3-29-10	7-27-10	8-26-10	9-8-10	10-28-10	11-9-10	11-18-10																										

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:47

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	439	457

12-7-10  
 REGISTERED CIVIL ENGINEER DATE

1-23-12  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER

LINAN WANG

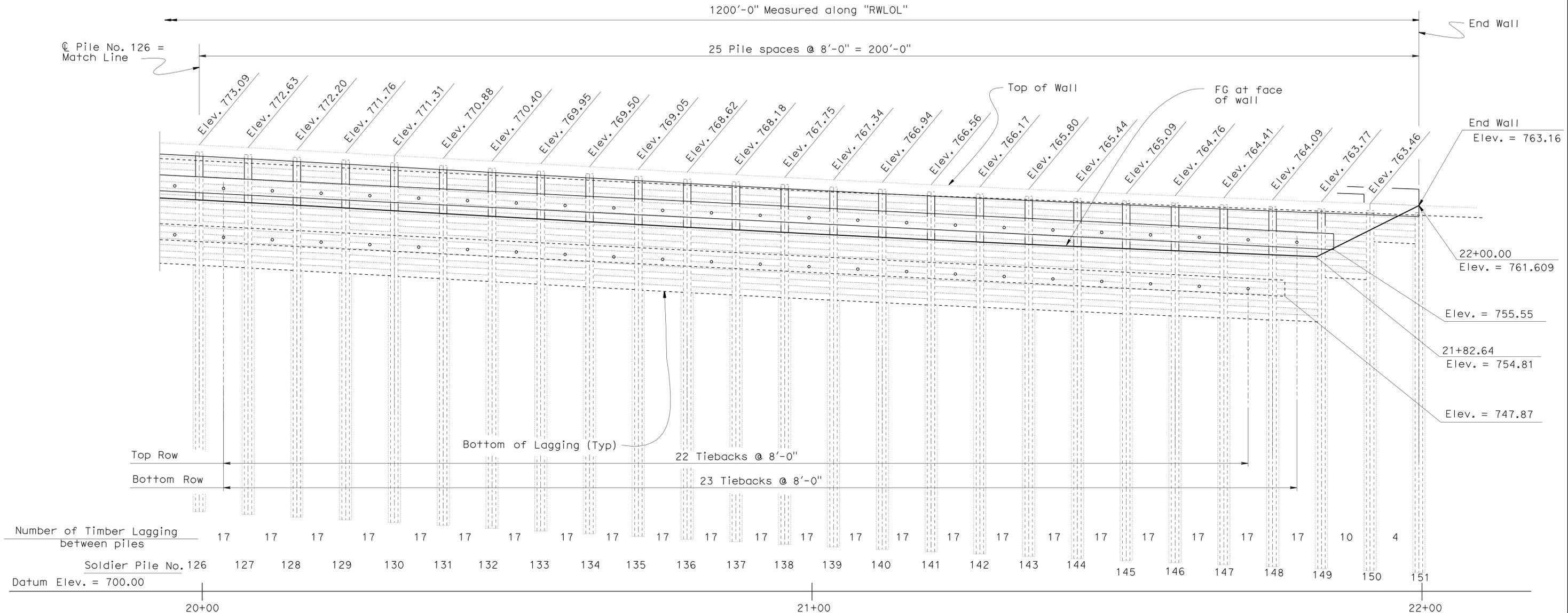
No. 54714

Exp. 12-31-11

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STATE OF CALIFORNIA

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**MIRROR ELEVATION**  
1" = 8'

- Notes:**
1. For "Section A-A" see 'RETAINING WALL DETAILS NO. 1' sheet.
  2. The construction of soldier pile shall be staggered and no open holes adjacent.
  3. Concrete Barrier Type 60A not shown.
  4. Remove lean concrete to bottom of lagging where required.

DESIGN	BY B. Li Zhou	CHECKED L. Wang
DETAILS	BY J. Thorne/M. Lane	CHECKED B. Li Zhou
QUANTITIES	BY M. Lane	CHECKED B. Li Zhou

**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
 STRUCTURE DESIGN  
**DESIGN BRANCH 4**

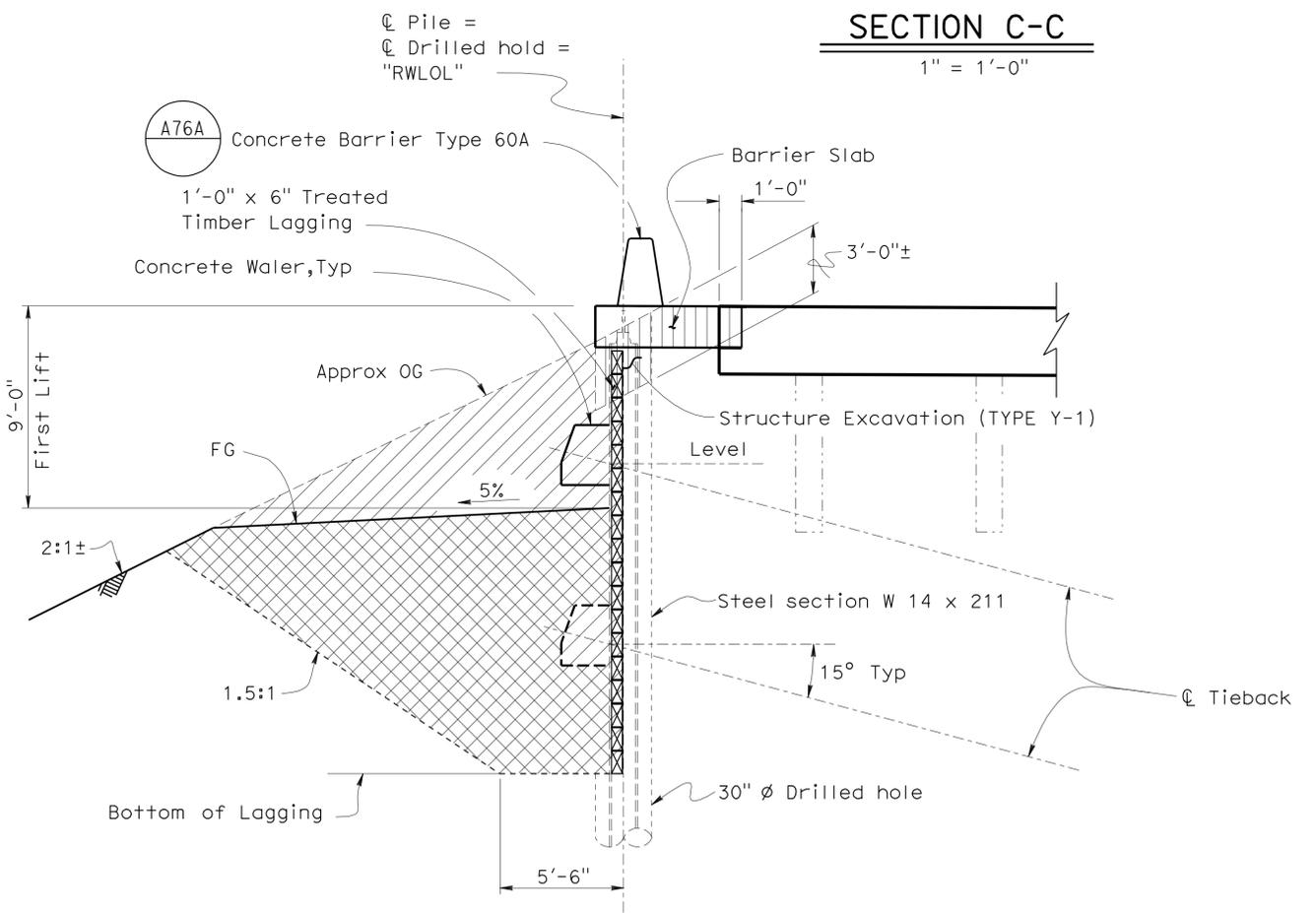
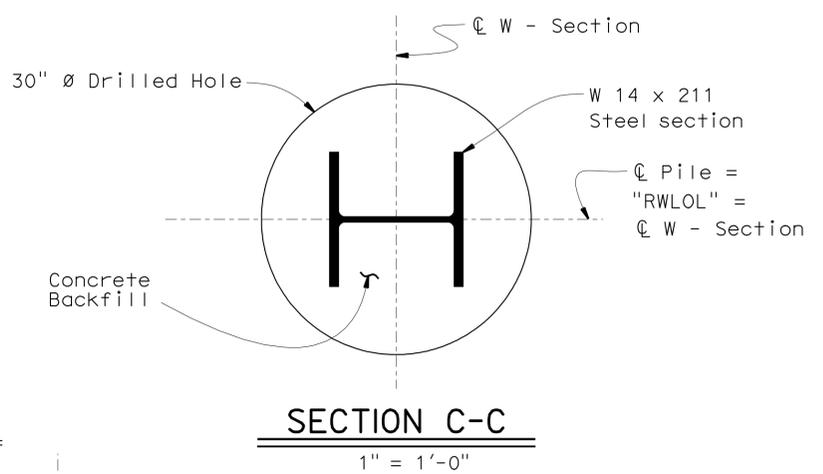
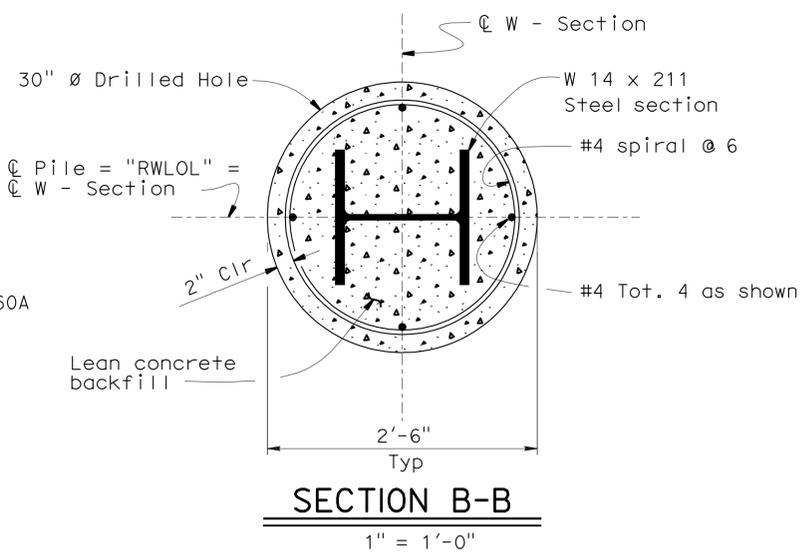
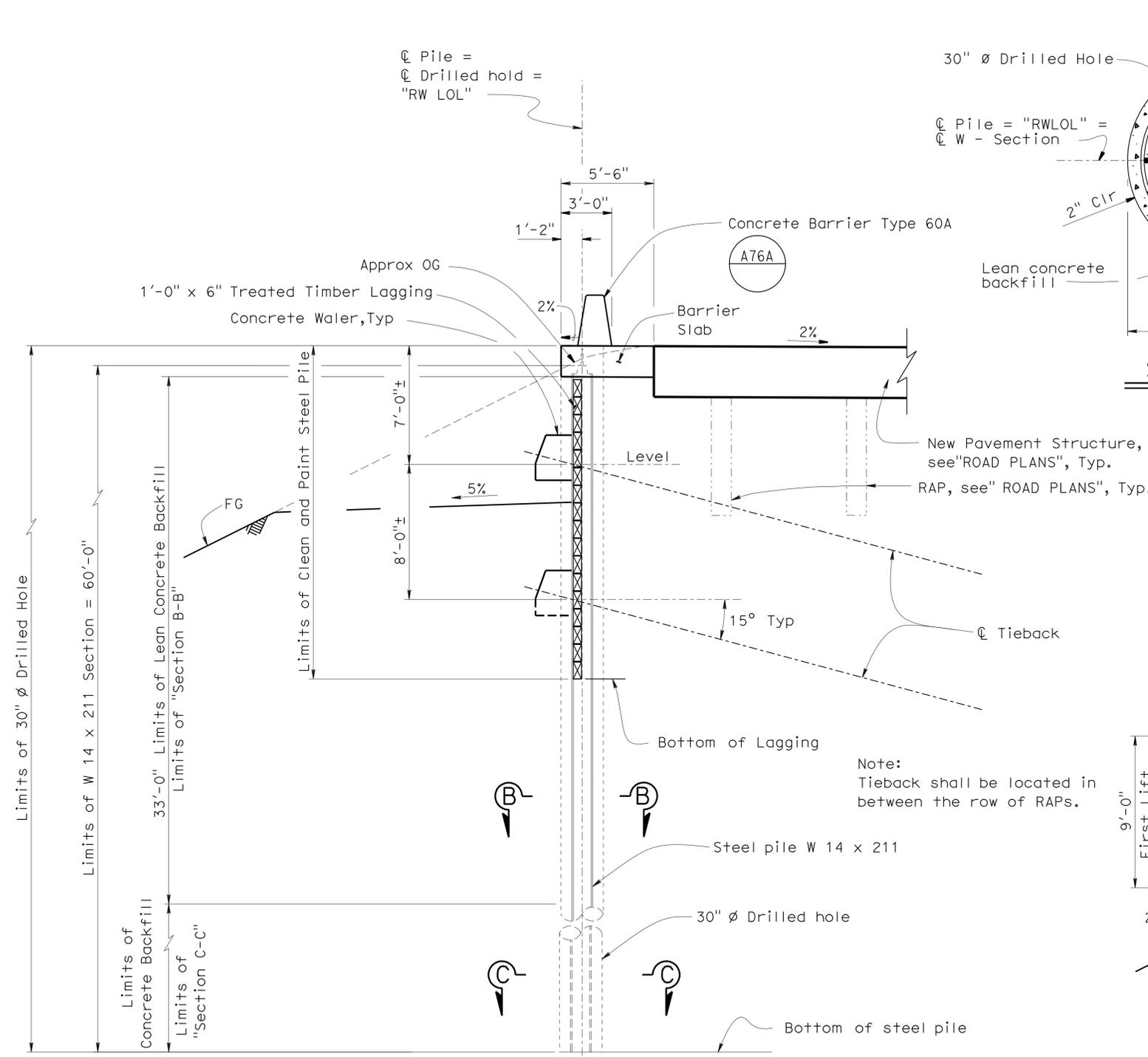
BRIDGE NO.	33E0211
POST MILE	R5.13

**RETAINING WALL NO. 7**  
**STRUCTURE PLAN NO. 6**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	440	457

REGISTERED CIVIL ENGINEER DATE 12-7-10  
 Linan Wang  
 No. 54714  
 Exp. 12-31-11  
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PLANS APPROVAL DATE 1-23-12  
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**SOLDIER PILE SECTION A-A (TYP)**  
 1/4" = 1'-0"

**LIMITS OF STRUCTURE EXCAVATION AND BACKFILL**  
 1/4" = 1'-0"

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

LEGEND

	Indicates Structure Excavation
	Indicates Structure Backfill
	Indicates Structure Excavation (TYPE Y-1) Aerially Deposited Lead (ADL)

DESIGN BY B. Li Zhou CHECKED L. Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO. 33E0211	RETAINING WALL NO. 7 RETAINING WALL DETAILS NO. 1	
DETAILS BY Wei Zhang CHECKED B. Li Zhou			POST MILE R5.13		
QUANTITIES BY M. Lane CHECKED B. Li Zhou					
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 9 OF 17

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
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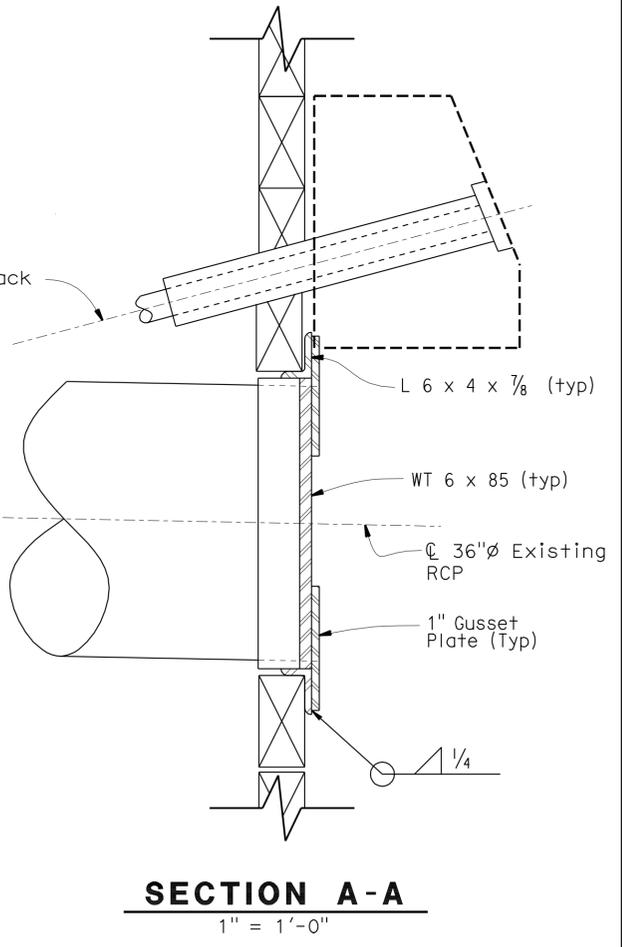
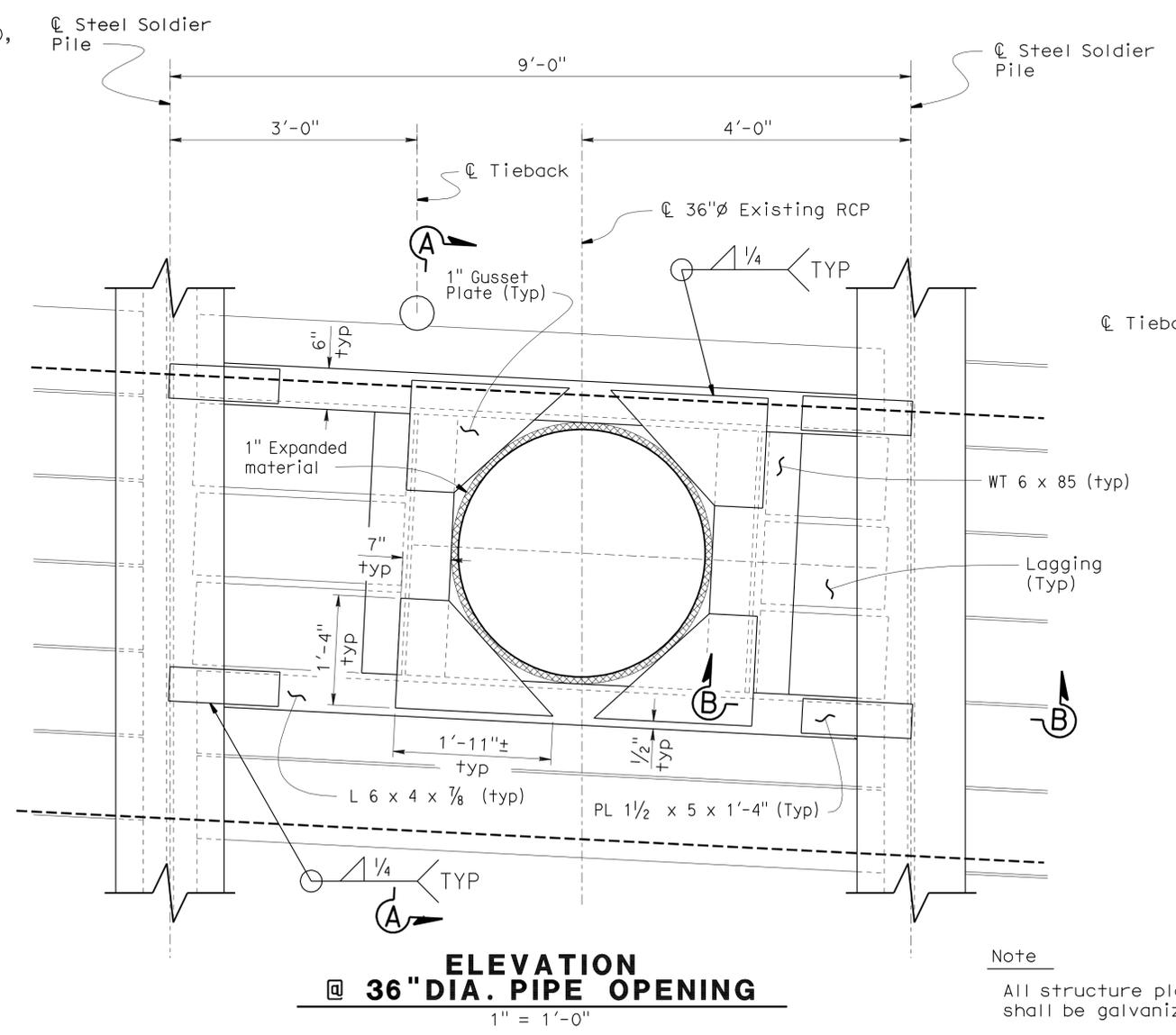
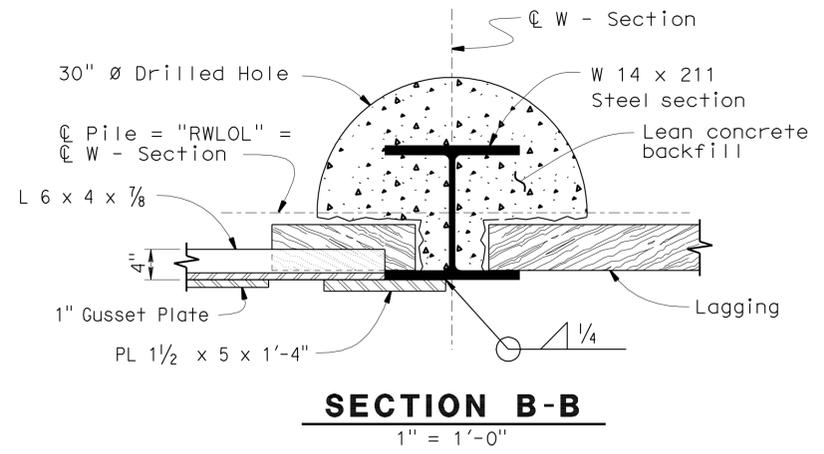
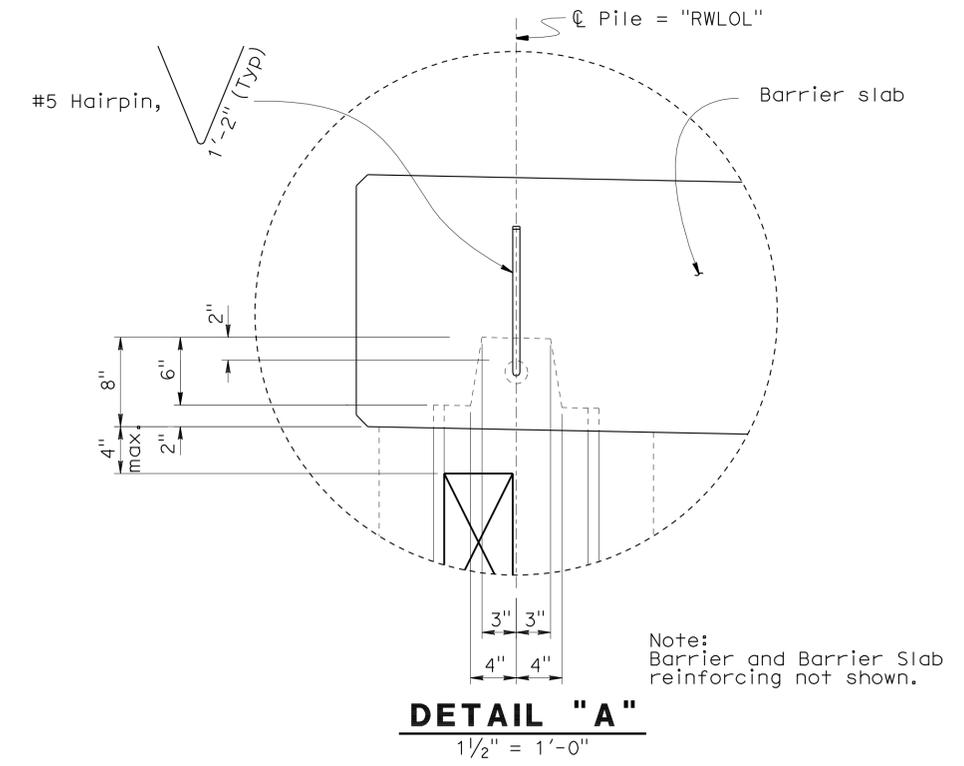
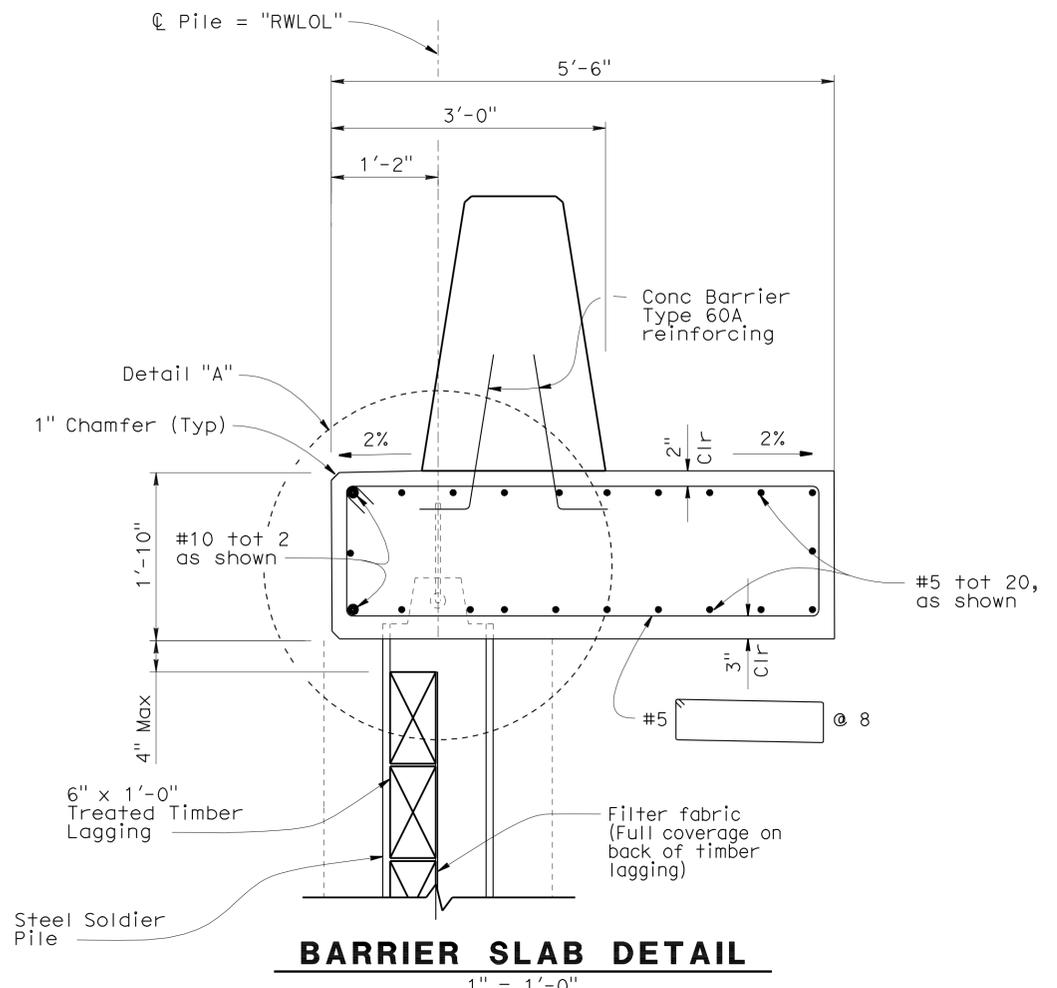
  

REGISTERED CIVIL ENGINEER		DATE
12-7-10		
PLANS APPROVAL DATE		
1-23-12		

REGISTERED PROFESSIONAL ENGINEER		DATE
LINAN WANG		
No. 54714		
Exp. 12-31-11		
CIVIL		

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Note  
All structure plates, angles and tees shall be galvanized and painted.

DESIGN	BY B. Li Zhou	CHECKED L. Wang
DETAILS	BY M. Lane / J. Thorne	CHECKED B. Li Zhou
QUANTITIES	BY M. Lane	CHECKED B. Li Zhou

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
STRUCTURE DESIGN  
DESIGN BRANCH 4

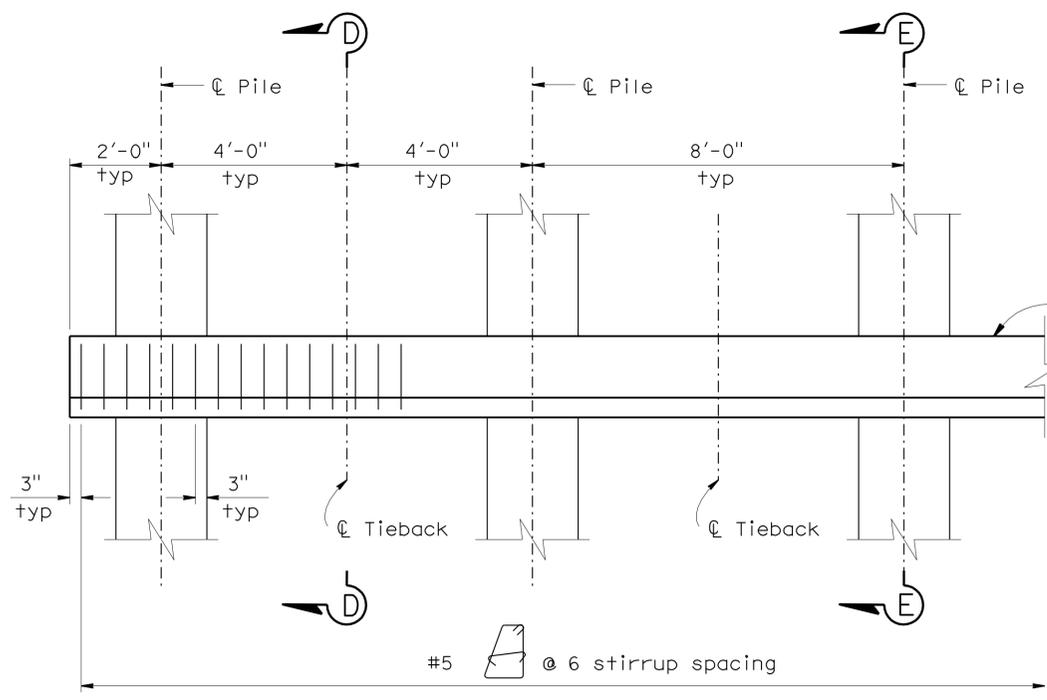
BRIDGE NO. 33E0211  
POST MILE R5.13

RETAINING WALL NO. 7  
RETAINING WALL DETAILS NO. 2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	442	457

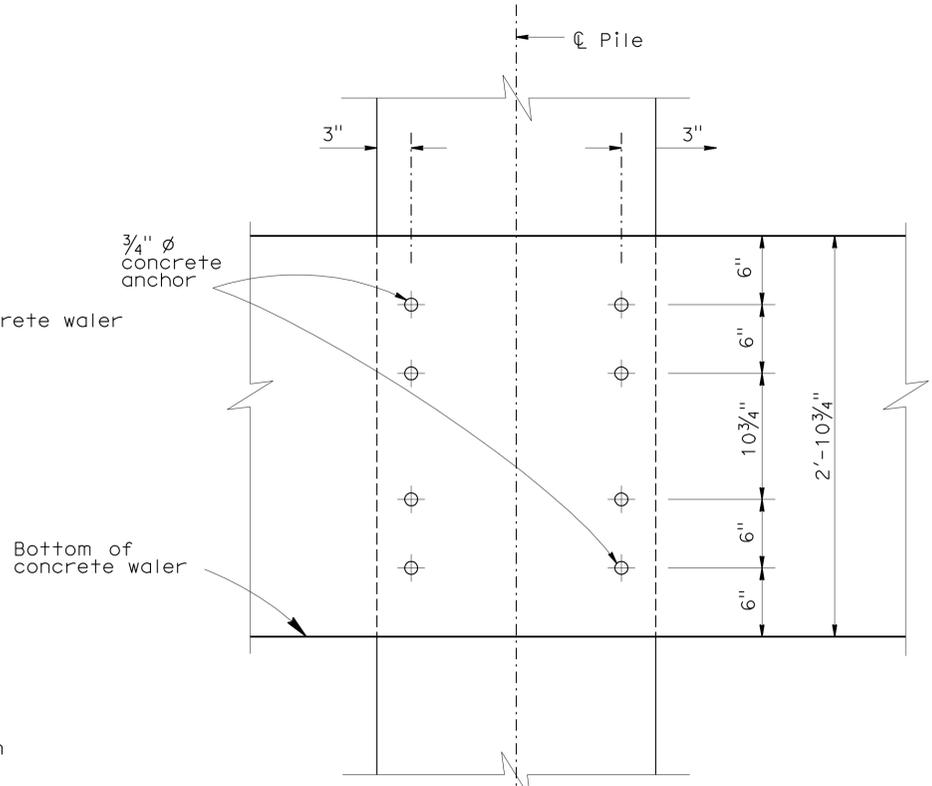
12-7-10  
 REGISTERED CIVIL ENGINEER DATE  
 1-23-12  
 PLANS APPROVAL DATE  
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REGISTERED PROFESSIONAL ENGINEER  
 LINAN WANG  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA

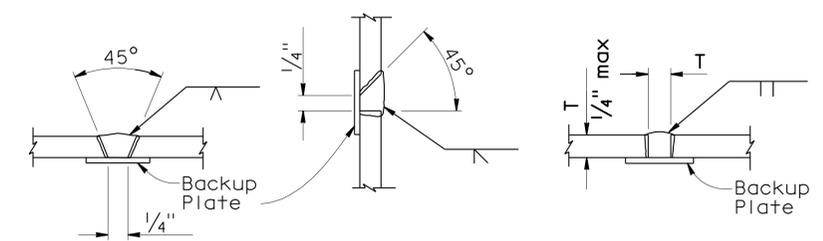


**PART ELEVATION**  
No Scale

Note: Timber lagging not shown

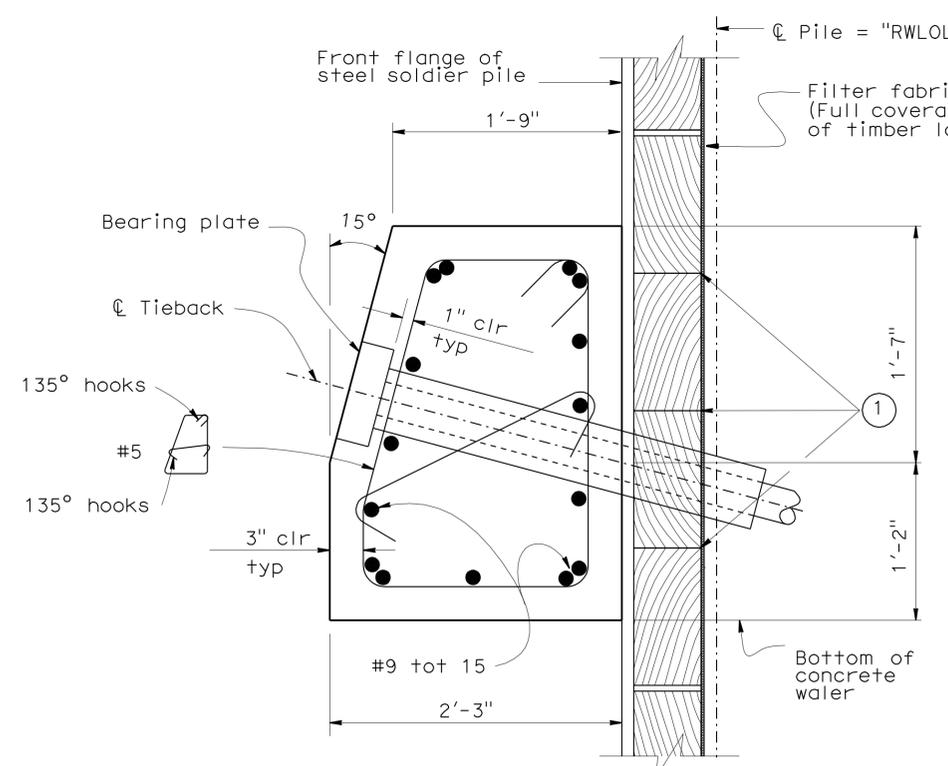


**CONCRETE ANCHOR PLACEMENT**  
No Scale

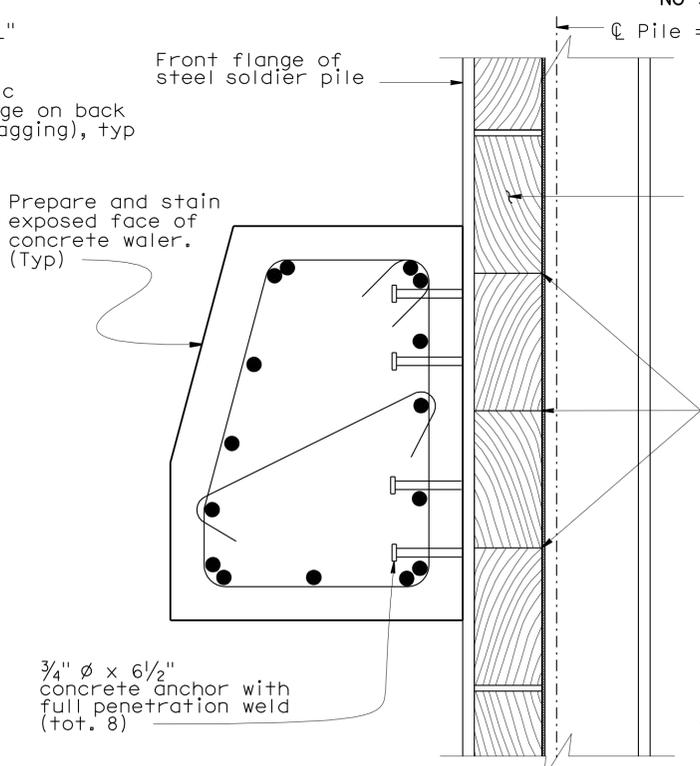


**SINGLE VEE-GROOVE SINGLE BEVEL-GROOVE SQUARE GROOVE  
PILE WELDING DETAIL - BUTT JOINTS**  
No Scale

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

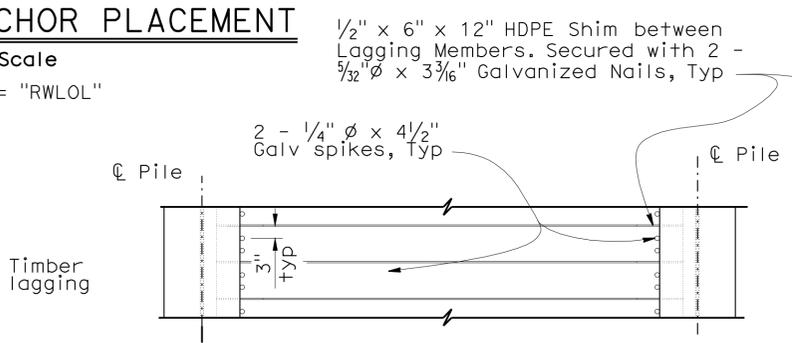


**SECTION D-D**  
No Scale

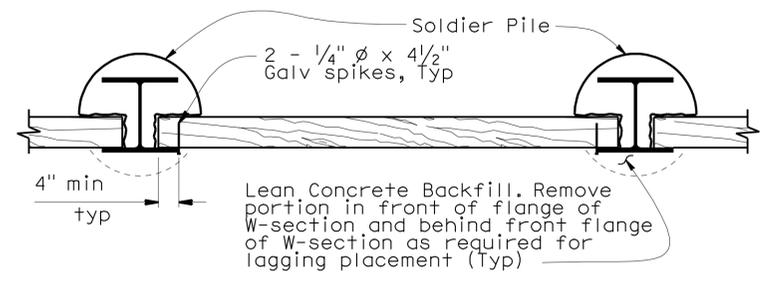


**SECTION E-E**  
No Scale

- ① Omit gap between lagging members at joints behind concrete water.



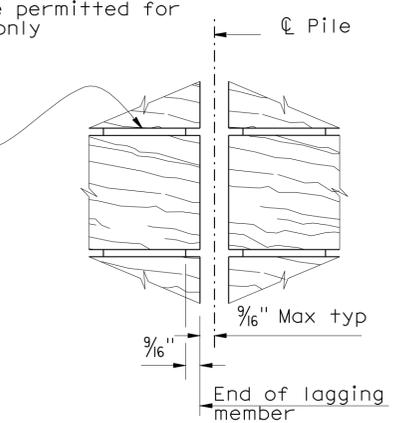
**PART ELEVATION**



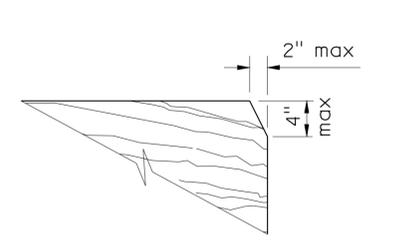
**PART PLAN OF LAGGING MEMBER**

- Notes:
1. Place lagging members parallel to the top of wall.
  2. Spikes shall not be bent.
  3. Exposed steel pile surface shall be cleaned and painted (undercoat and finish coat)

**LAGGING DETAILS**  
No Scale



**PART ELEVATION**



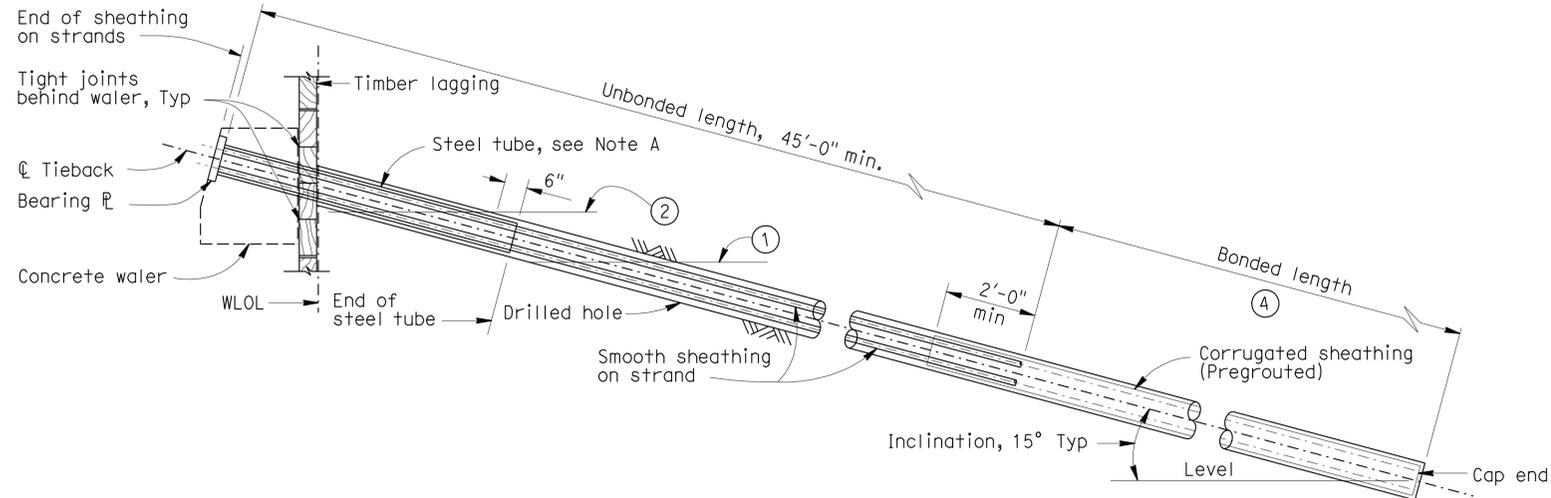
**ALTERNATIVE INSTALLATION DETAIL**

- Note:  
Diagonally opposite corners may be clipped to facilitate placement

DESIGN BY B. Li Zhou CHECKED L. Wang DETAILS BY M. Lane CHECKED B. Li Zhou QUANTITIES BY M. Lane CHECKED B. Li Zhou	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN <b>DESIGN BRANCH 4</b>	BRIDGE NO. 33E0211	<b>RETAINING WALL NO. 7</b>					
			POST MILE R5.13	<b>RETAINING WALL DETAILS NO. 3</b>					
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES	SHEET 11 OF 17

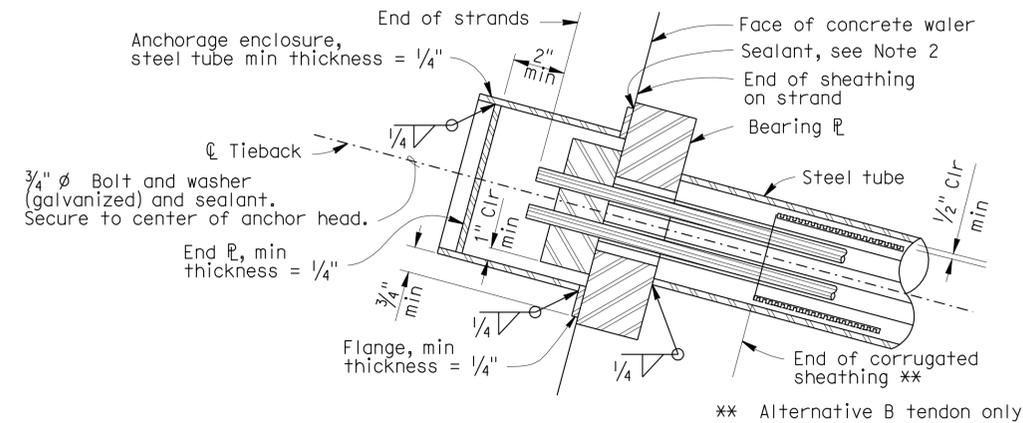
USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:48

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	443	457
			12-7-10	REGISTERED CIVIL ENGINEER DATE	
			1-23-12	PLANS APPROVAL DATE	
			REGISTERED PROFESSIONAL ENGINEER LINAN WANG No. 54714 Exp. 12-31-11 CIVIL STATE OF CALIFORNIA		
<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>					



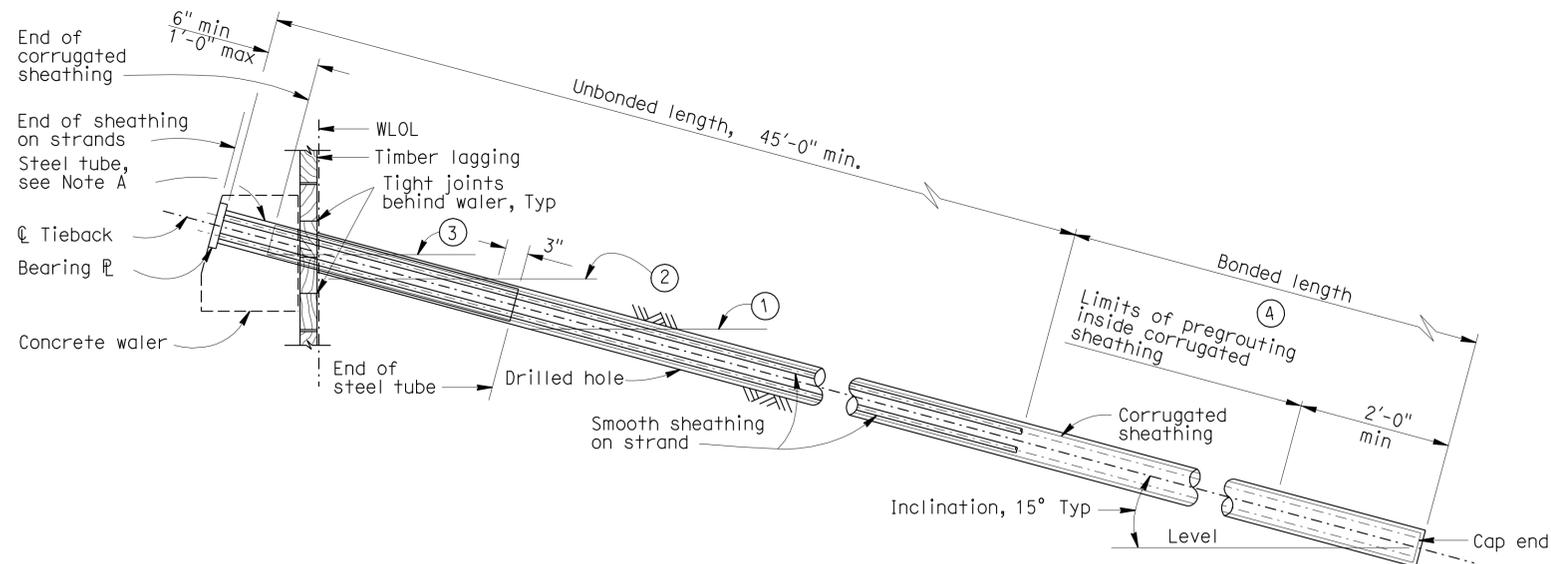
**TIEBACK TENDON DETAIL (STRAND) - (ALTERNATIVE A)**  
No Scale

- Notes:
- ① Level of initial grouting
  - ② Level of secondary grouting
  - ③ Level of initial grouting inside corrugated sheathing
  - ④ Bonded length shall be determined by the Contractor.
- Note A: Steel tube welded to bearing plate (Min length = 4'-0", min thickness = 3/16") Galvanize assembly after fabrication.

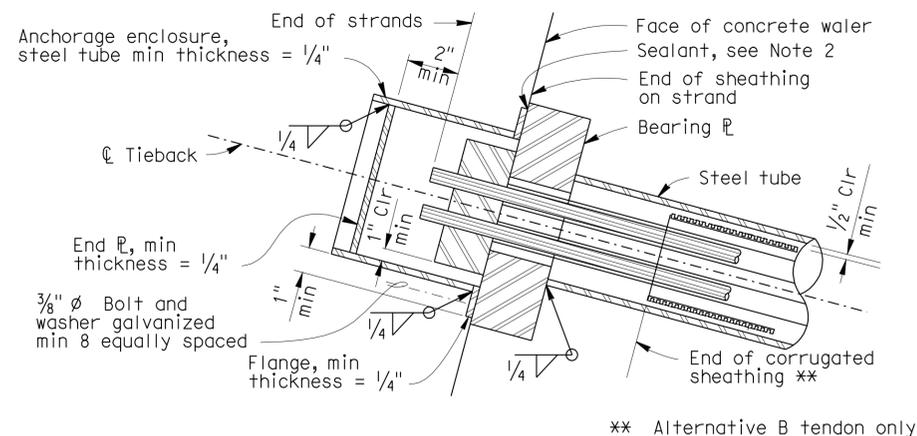


**ALTERNATIVE 2**

- NOTE:
1. Anchorage enclosure shall have provisions to allow injecting grout at low end and venting at high end. Galvanize after fabrication.
  2. Silicone sealant to cover full width of flange.



**TIEBACK TENDON DETAIL (STRAND) - (ALTERNATIVE B)**  
No Scale



**ALTERNATIVE 1**

**ANCHORAGE ENCLOSURE DETAILS**  
No Scale

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	DESIGN	BY B. Li Zhou	CHECKED L. Wang	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO.	RETAINING WALL NO. 7			
	DETAILS	BY M. Lane	CHECKED B. Li Zhou			POST MILE	RETAINING WALL DETAILS NO. 4			
	QUANTITIES	BY M. Lane	CHECKED B. Li Zhou			R5.13				
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS					CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES				SHEET 12 OF 17

**BENCH MARK**

CT 262 (NAVD88)

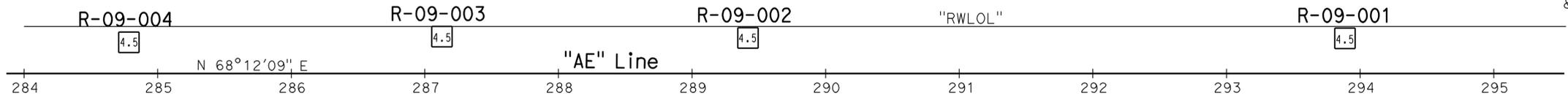
Find a Mag nail and shiner in the AC shoulder along SR 580 EB. It is about 155' east of PM marker 5.0  
 N 2088147.382  
 E 6230611.321  
 Elev = 787.532'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	444	457

12-29-10  
 REGISTERED CIVIL ENGINEER  
 Eduardo Ortega  
 No. C41012  
 Exp. 3-31-11  
 CIVIL  
 STATE OF CALIFORNIA

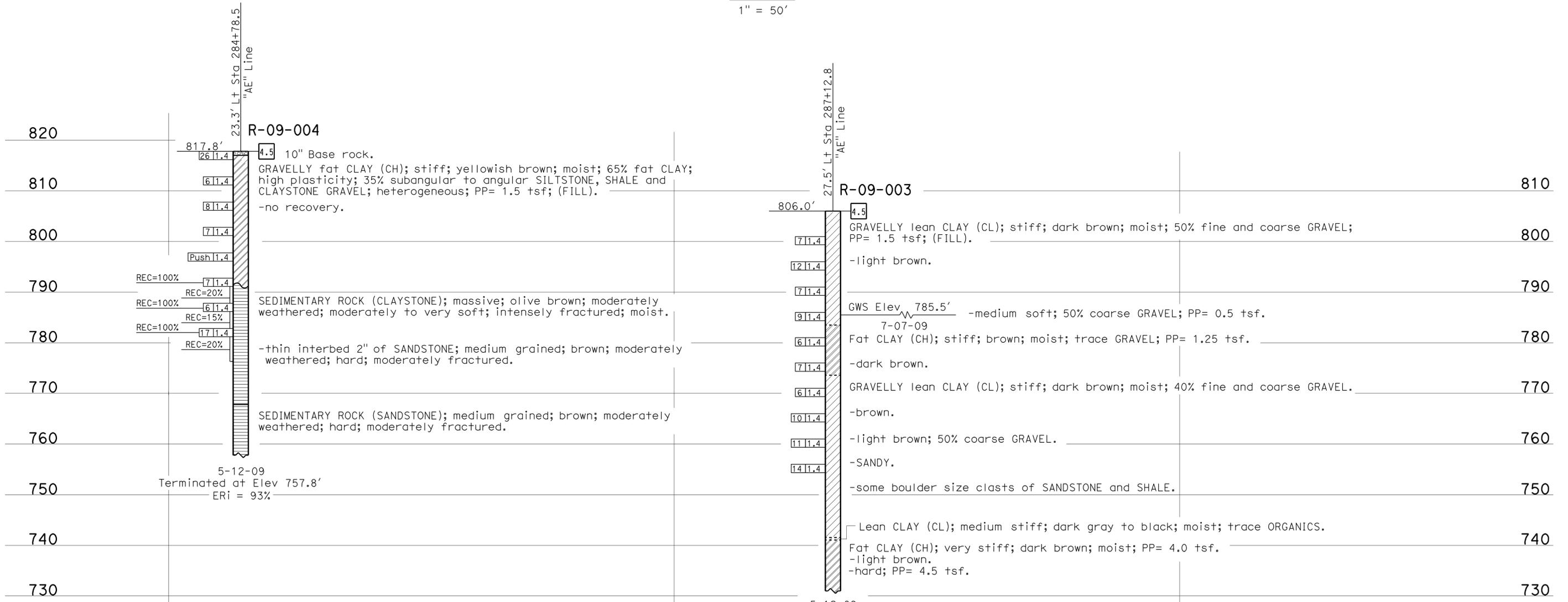
1-23-12  
 PLANS APPROVAL DATE

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**PLAN**  
 1" = 50'

To Stockton/Tracy →



**PROFILE**

Horiz: 1" = 20'  
 Vert: 1" = 10'

<b>ENGINEERING SERVICES</b>		<b>GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33E0211	<b>RETAINING WALL NO. 7</b> <b>LOG OF TEST BORINGS 1 OF 5</b>
FUNCTIONAL SUPERVISOR NAME: M. Momenzadeh	DRAWN BY: F. Nguyen 8/10 CHECKED BY: R. Nashed	FIELD INVESTIGATION BY: C. Koepke, R. Karpowicz				POST MILES R5.13	
OGS CIVIL LOG OF TEST BORINGS SHEET				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES

10-04-10 11-05-10 12-29-10

SHEET 13 OF 17

FILE => 04-4a0701-rw07-k-lotb-1of5.dgn



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	446	457

12-29-10  
REGISTERED CIVIL ENGINEER

Eduardo Ortega  
No. C41012  
Exp. 3-31-11  
CIVIL  
STATE OF CALIFORNIA

1-23-12  
PLANS APPROVAL DATE

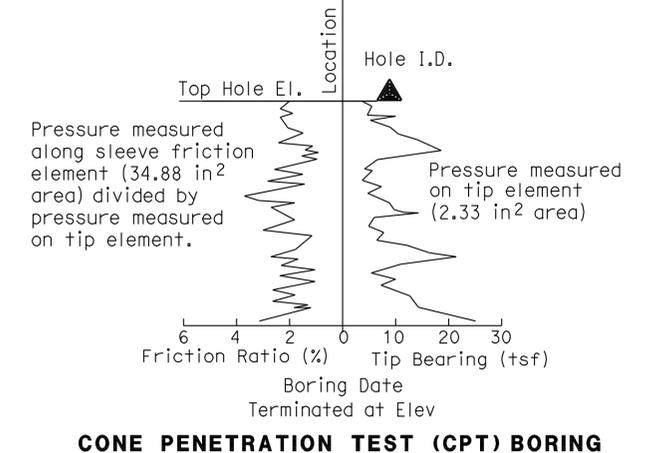
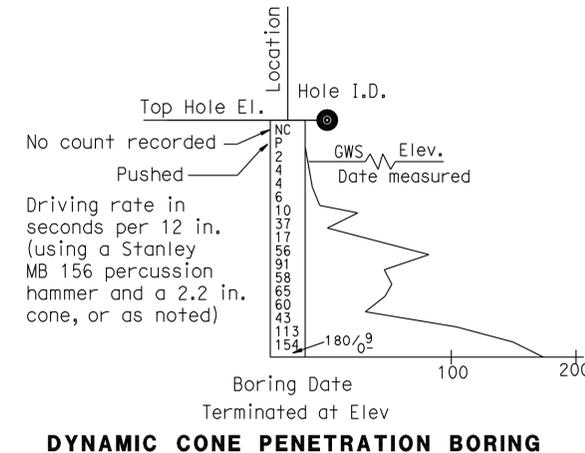
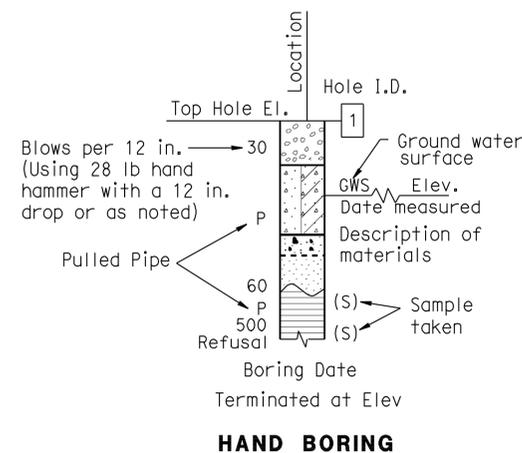
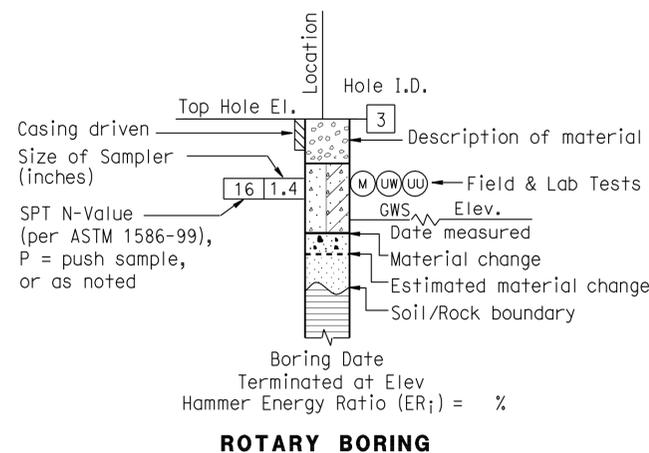
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CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring (hollow or solid stem bucket)
	R	Rotary drilled boring (conventional)
	RW	Rotary drilled with self-casing wire-line
	RC	Rotary core with continuously-sampled, self-casing wire-line
	P	Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778)
	O	Other (note on LOTB)

**Note: Size in inches.**

CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



ENGINEERING SERVICES	GEOTECHNICAL SERVICES PREPARED BY: F. Nguyen	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33E0211	RETAINING WALL NO. 7 LOG OF TEST BORINGS 3 OF 5
				POST MILE R5.13	
GS LOTB SOIL LEGEND	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 15 OF 17

FILE => 04-4a0701-rw07-k-lotb\_3of5.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	447	457

12-29-10  
REGISTERED CIVIL ENGINEER

Eduardo Ortega  
No. C41012  
Exp. 3-31-11  
CIVIL  
STATE OF CALIFORNIA

1-23-12  
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		Lean CLAY with GRAVEL
	Poorly-graded GRAVEL with SAND		SANDY lean CLAY
	Well-graded GRAVEL with SILT		SANDY lean CLAY with GRAVEL
	Well-graded GRAVEL with SILT and SAND		GRAVELLY lean CLAY
	Well-graded GRAVEL with CLAY (or SILTY CLAY)		GRAVELLY lean CLAY with SAND
	Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SILTY CLAY
	Poorly-graded GRAVEL with SILT		SILTY CLAY with SAND
	Poorly-graded GRAVEL with SILT and SAND		SILTY CLAY with GRAVEL
	Poorly-graded GRAVEL with CLAY (or SILTY CLAY)		SANDY SILTY CLAY
	Poorly-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SANDY SILTY CLAY with GRAVEL
	SILTY GRAVEL		GRAVELLY SILTY CLAY
	SILTY GRAVEL with SAND		GRAVELLY SILTY CLAY with SAND
	CLAYEY GRAVEL		SILT
	CLAYEY GRAVEL with SAND		SILT with SAND
	SILTY, CLAYEY GRAVEL		SILT with GRAVEL
	SILTY, CLAYEY GRAVEL with SAND		SANDY SILT
	Well-graded SAND		SANDY SILT with GRAVEL
	Well-graded SAND with GRAVEL		GRAVELLY SILT
	Poorly-graded SAND		GRAVELLY SILT with SAND
	Poorly-graded SAND with GRAVEL		ORGANIC lean CLAY
	Well-graded SAND with SILT		ORGANIC lean CLAY with SAND
	Well-graded SAND with SILT and GRAVEL		ORGANIC lean CLAY with GRAVEL
	Well-graded SAND with CLAY (or SILTY CLAY)		SANDY ORGANIC lean CLAY
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		GRAVELLY ORGANIC lean CLAY
	Poorly-graded SAND with SILT		GRAVELLY ORGANIC lean CLAY with SAND
	Poorly-graded SAND with SILT and GRAVEL		ORGANIC fat CLAY
	Poorly-graded SAND with CLAY (or SILTY CLAY)		ORGANIC fat CLAY with SAND
	Poorly-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		ORGANIC fat CLAY with GRAVEL
	SILTY SAND		SANDY ORGANIC fat CLAY
	SILTY SAND with GRAVEL		SANDY ORGANIC fat CLAY with GRAVEL
	CLAYEY SAND		GRAVELLY ORGANIC fat CLAY
	CLAYEY SAND with GRAVEL		GRAVELLY ORGANIC fat CLAY with SAND
	SILTY, CLAYEY SAND		ORGANIC elastic SILT
	SILTY, CLAYEY SAND with GRAVEL		ORGANIC elastic SILT with SAND
	PEAT		ORGANIC elastic SILT with GRAVEL
	COBBLES		SANDY ORGANIC elastic SILT
	COBBLES and BOULDERS		GRAVELLY ORGANIC elastic SILT
	BOULDERS		GRAVELLY ORGANIC elastic SILT 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
(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)
(UC)	Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
(UU)	Unconsolidated Undrained Triaxial (ASTM D 2850)
(UW)	Unit Weight (ASTM D 4767)

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N <sub>60</sub> (Blows / 12 in.)
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Greater than 50

MOISTURE	
Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

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

PARTICLE SIZE		
Description	Size (in.)	
Boulder	Greater than 12	
Cobble	3 - 12	
Gravel	Coarse	3/4 - 3
	Fine	1/5 - 3/4
Sand	Coarse	1/16 - 1/5
	Medium	1/64 - 1/16
	Fine	1/300 - 1/64
Silt and Clay	Less than 1/300	

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33E0211	RETAINING WALL NO. 7 LOG OF TEST BORINGS 4 OF 5
				POST MILE R5.13	
PREPARED BY: F. Nguyen	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 16 OF 17

GS LOTB SOIL LEGEND

FILE => 04-4a0701-rw07-k-lotb\_4of5.dgn

**PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)**

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

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

RQD\* Indicates soundness criteria not met.

**BEDDING SPACING**

Description	Thickness / Spacing
Massive	Greater than 10 ft
Very Thickly Bedded	3 ft - 10 ft
Thickly Bedded	1 ft - 3 ft
Moderately Bedded	4 in. - 1 ft
Thinly Bedded	1 in. - 4 in.
Very Thinly Bedded	1/4 in. - 1 in.
Laminated	Less than 1/4 in.

**LEGEND OF ROCK MATERIALS**

- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

12-29-10  
REGISTERED CIVIL ENGINEER

1-23-12  
PLANS APPROVAL DATE

Eduardo Ortega  
No. C41012  
Exp. 3-31-11  
CIVIL  
STATE OF CALIFORNIA

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**ROCK HARDNESS**

Description	Criteria
Extremely Hard	Cannot be scratched with a pocketknife or sharp pick. Can only be chipped with repeated heavy hammer blows.
Very Hard	Cannot be scratched with a pocketknife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Can be scratched with a pocketknife or sharp pick with difficulty (heavy pressure). Breaks with heavy hammer blows.
Moderately Hard	Can be scratched with pocketknife or sharp pick with light or moderate pressure. Breaks with moderate hammer blows.
Moderately Soft	Can be grooved 1/16 in. deep with a pocketknife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Can be grooved or gouged easily by a pocketknife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Can be readily indented, grooved or gouged with fingernail, or carved with a pocketknife. Breaks with light manual pressure.

**WEATHERING DESCRIPTORS FOR INTACT ROCK**

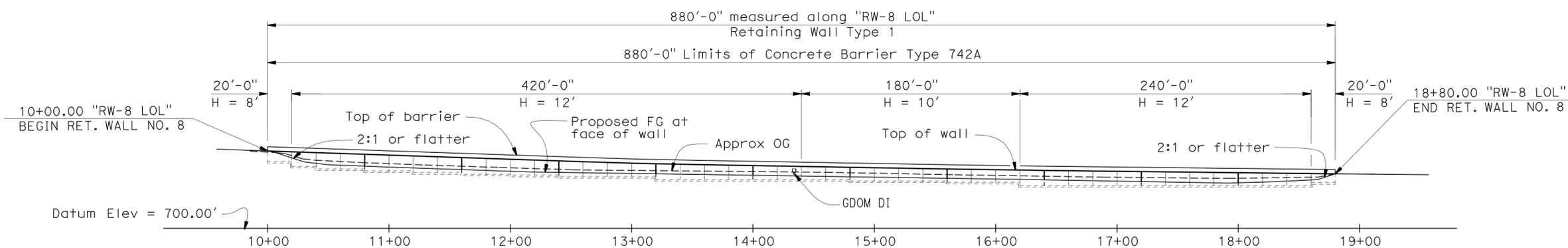
Description	Diagnostic Features				General Characteristics	
	Chemical Weathering-Discoloration and/or Oxidation		Mechanical Weathering-Grain Boundary Conditions (Disaggregation) Primarily for Granitics and Some Coarse-Grained Sediments	Texture and Leaching		
	Body of Rock	Fracture Surfaces		Texture		Leaching
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change	No leaching	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.	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."

**FRACTURE DENSITY**

Description	Observed Fracture Density
Unfractured	No fractures.
Very Slightly Fractured	Core lengths greater than 3 ft.
Slightly Fractured	Core lengths mostly from 1 to 3 ft.
Moderately Fractured	Core lengths mostly from 4 in. to 1 ft.
Intensely Fractured	Core lengths mostly from 1 to 4 in.
Very Intensely Fractured	Mostly chips and fragments.

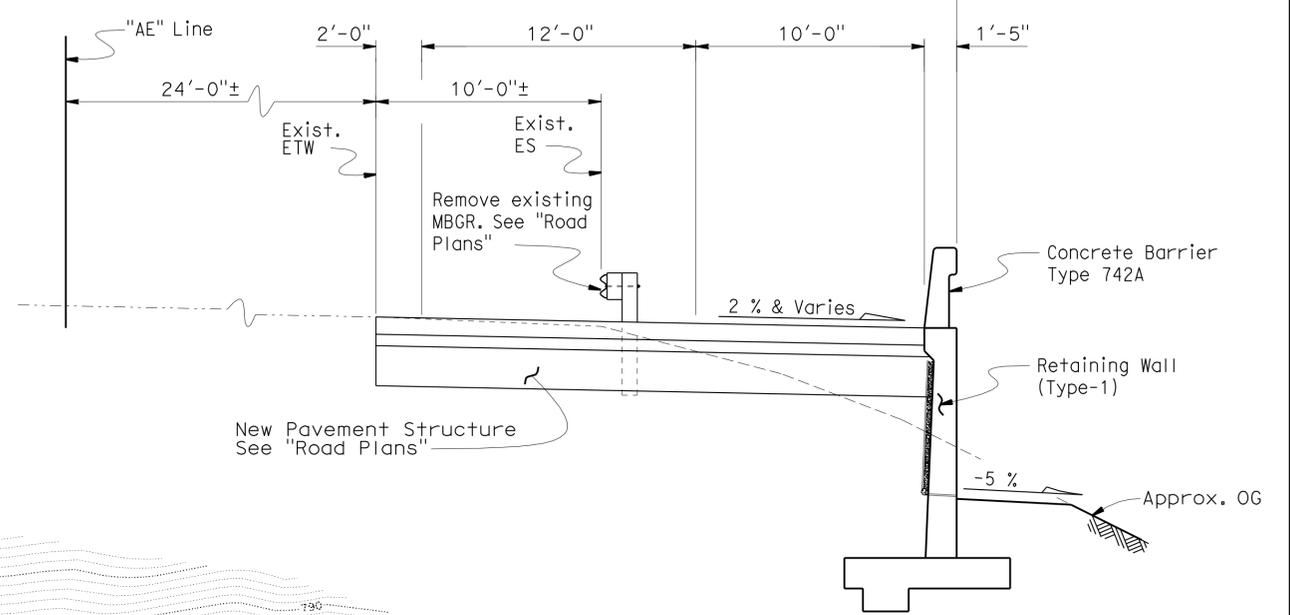
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	449	457

REGISTERED CIVIL ENGINEER DATE 12-7-10  
 LINAN WANG No. 54714 Exp. 12-31-11 CIVIL  
 1-23-12 PLANS APPROVAL DATE  
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**QUANTITIES**

STRUCTURE EXCAVATION (RETAINING WALL)	1,980	CY
STRUCTURE EXCAVATION (TYPE Y-1) (AERIALY DEPOSITED LEAD)	420	CY
STRUCTURE BACKFILL (RETAINING WALL)	1,570	CY
STRUCTURAL CONCRETE, RETAINING WALL	820	CY
BAR REINFORCING STEEL (RETAINING WALL)	71,000	LB
CONCRETE BARRIER (TYPE 742A)	880	LF
GEOCOMPOSITE DRAIN	5,880	SF



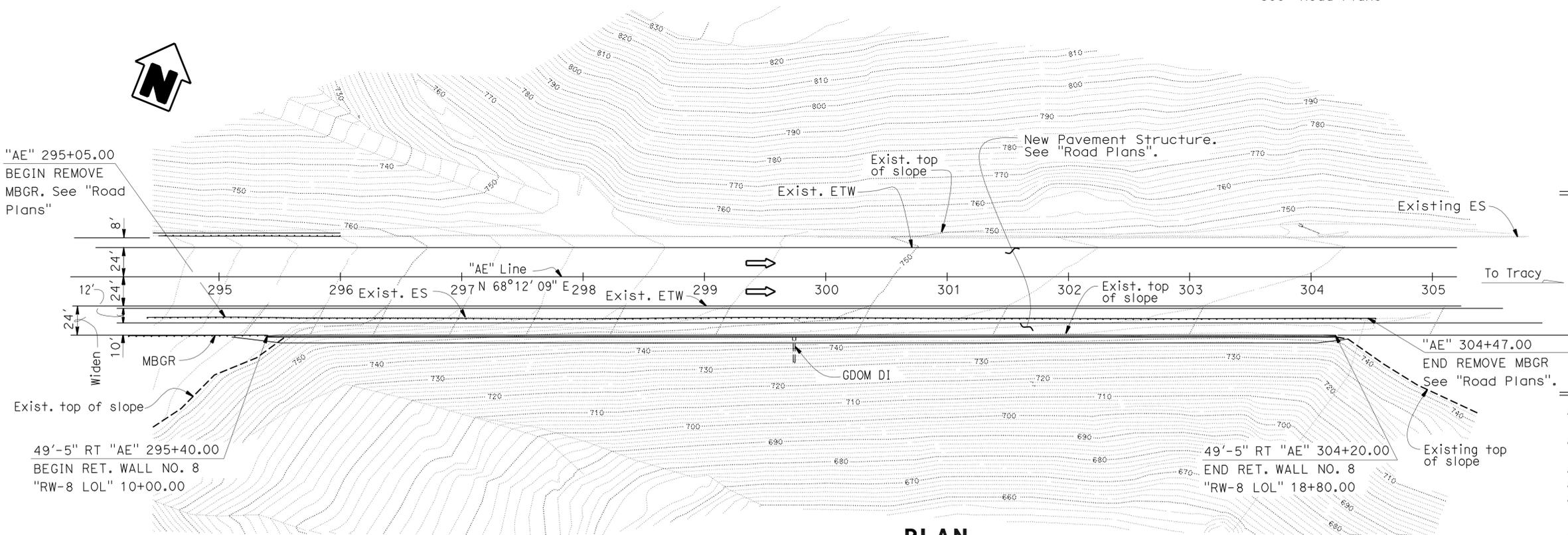
**TYPICAL SECTION**

1/4" = 1'-0"

**INDEX TO PLANS**

- GENERAL PLAN
  - STRUCTURE PLAN NO. 1
  - STRUCTURE PLAN NO. 2
  - STRUCTURE PLAN NO. 3
  - TYPICAL SECTION
  - LOG OF TEST BORINGS 1 OF 4
  - LOG OF TEST BORINGS 2 OF 4
  - LOG OF TEST BORINGS 3 OF 4
  - LOG OF TEST BORINGS 4 OF 4
- 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)   |
| A62B   | LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL BRIDGE SURCHARGE AND WALL BRIDGE DETAILS |
| B0-3   | BRIDGE DETAILS   |
| B3-1   | RETAINING WALL TYPE 1 H=4' THROUGH 30'   |
| B3-8   | RETAINING WALL DETAILS NO. 1   |
| B3-9   | RETAINING WALL DETAILS NO. 2   |
| B11-57 | CONCRETE BARRIER TYPE 742  |



**PLAN**

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

Note: For drainage details see "ROAD PLANS".

Minh Ha DESIGN ENGINEER	DESIGN	By Rafael Salazar	CHECKED Linan Wang	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING:	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 4	BRIDGE NO.	33-OORW08	RETAINING WALL NO. 8	
	DETAILS	By Jeff Thorne/Wei Zhang	CHECKED Linan Wang	LAYOUT	BY Linan Wang			CHECKED X		POST MILE	R4.74
	QUANTITIES	By Rafael Salazar	CHECKED Linan Wang	SPECIFICATIONS	BY X	PLANS AND SPECS COMPARED X					
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS							CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES	
STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.07-24-06)							0 1 2 3	4-4-10 3-16-11 1-1-10 9-22-10 10-19-10 11-8-10 11-18-10 12-7-10 3-8-11		SHEET 1	OF 9

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:49

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	450	457

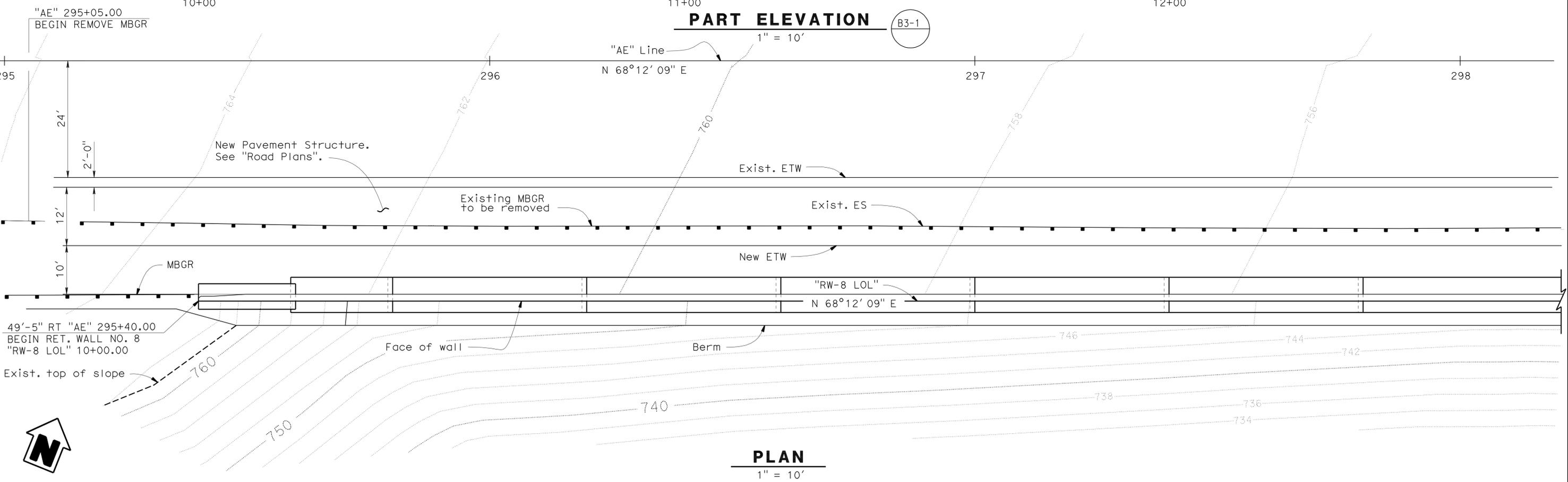
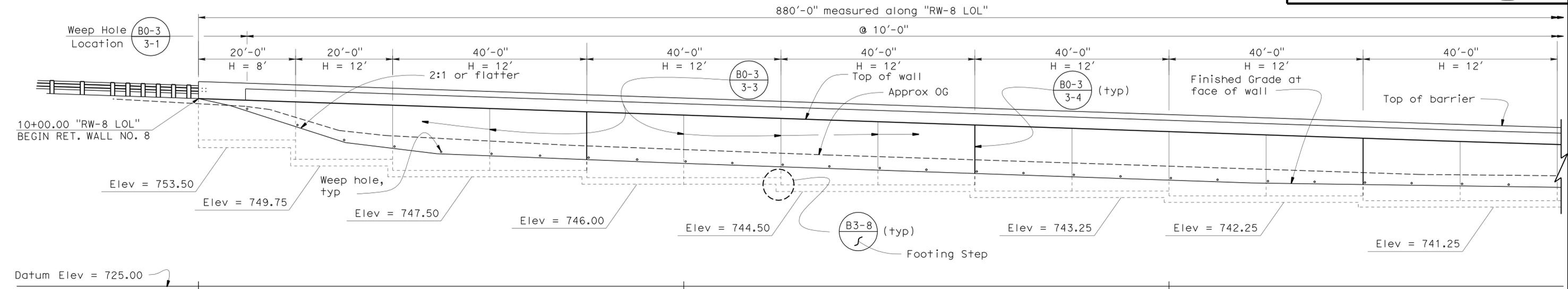
  

REGISTERED CIVIL ENGINEER DATE	
12-7-10	
PLANS APPROVAL DATE	
1-23-12	

REGISTERED PROFESSIONAL ENGINEER	
LINAN WANG	No. 54714
Exp. 12-31-11	
CIVIL	
STATE OF CALIFORNIA	

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DESIGN	BY Rafael Salazar	CHECKED Linan Wang	<b>STATE OF CALIFORNIA</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>DIVISION OF ENGINEERING SERVICES</b> <b>STRUCTURE DESIGN</b> <b>DESIGN BRANCH 4</b>	BRIDGE NO.	<b>RETAINING WALL NO.8</b> <b>STRUCTURE PLAN NO. 1</b>
DETAILS	BY Jeff Thorne	CHECKED Linan Wang			33-00RW08	
QUANTITIES	BY Rafael Salazar	CHECKED Linan Wang			POST MILE R4.74	

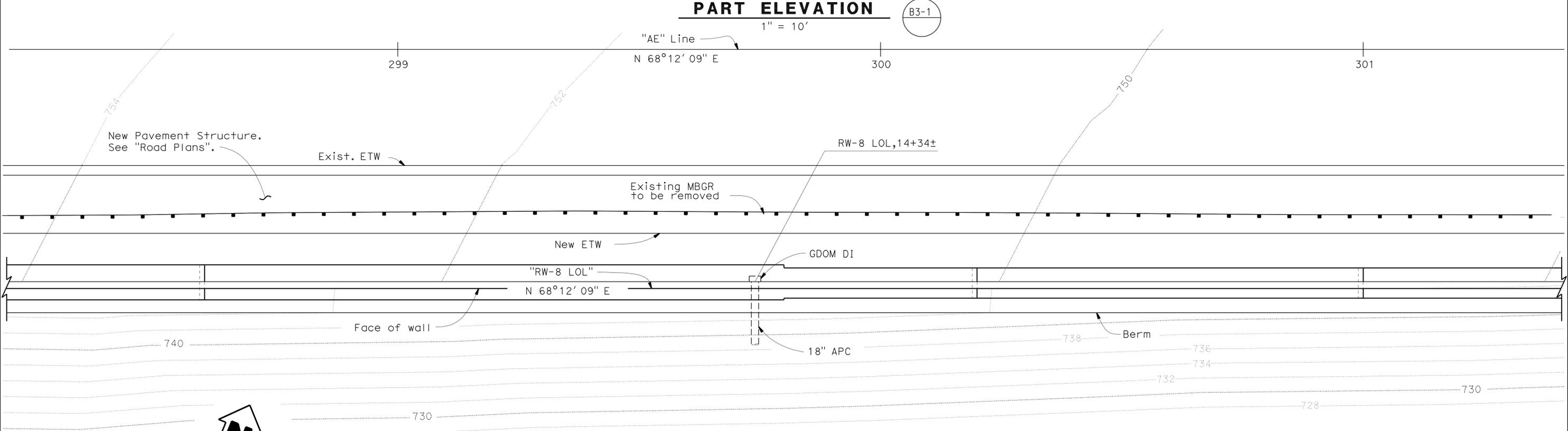
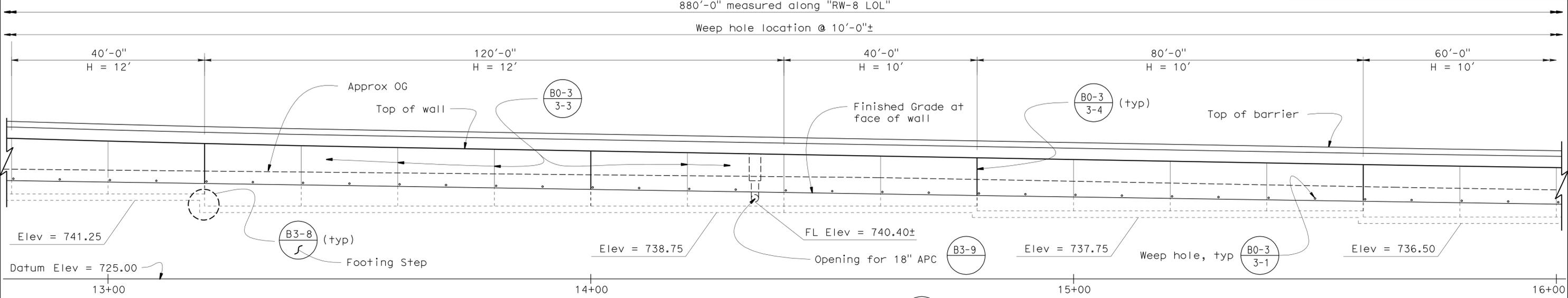
CU 04	EA 4A07U1	BRIDGE NO.	33-00RW08	POST MILE	R4.74						
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES							
0	1	2	3	3-30-10	5-11-10	9-21-10	10-19-10	11-19-10	3-9-11	3-16-11	SHEET 2 OF 9

FILE => 04-4a0701-rw08-a-sp01.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	451	457

12-7-10  
 REGISTERED CIVIL ENGINEER DATE  
 1-23-12  
 PLANS APPROVAL DATE  
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REGISTERED PROFESSIONAL ENGINEER  
 LINAN WANG  
 No. 54714  
 Exp. 12-31-11  
 CIVIL  
 STATE OF CALIFORNIA



**PLAN**  
1" = 10'

Note: For drainage details see "ROAD PLANS".

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)	DESIGN	BY Rafael Salazar	CHECKED Linan Wang	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN <b>DESIGN BRANCH 4</b>	BRIDGE NO.	RETAINING WALL NO.8		
	DETAILS	BY Jeff Thorne	CHECKED Linan Wang			33-00RW08	STRUCTURE PLAN NO. 2		
	QUANTITIES	BY Rafael Salazar	CHECKED Linan Wang			POST MILE R4.74			
				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES 5-3-10   5-11-10   9-22-10   9-22-10   10-19-10   11-9-10   11-15-10   3-9-11   3-16-11	SHEET 3 OF 9

FILE => 04-4a0701-rw08-a-sp02.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	452	457

 12-7-10  
 REGISTERED CIVIL ENGINEER DATE

1-23-12  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER

LINAN WANG

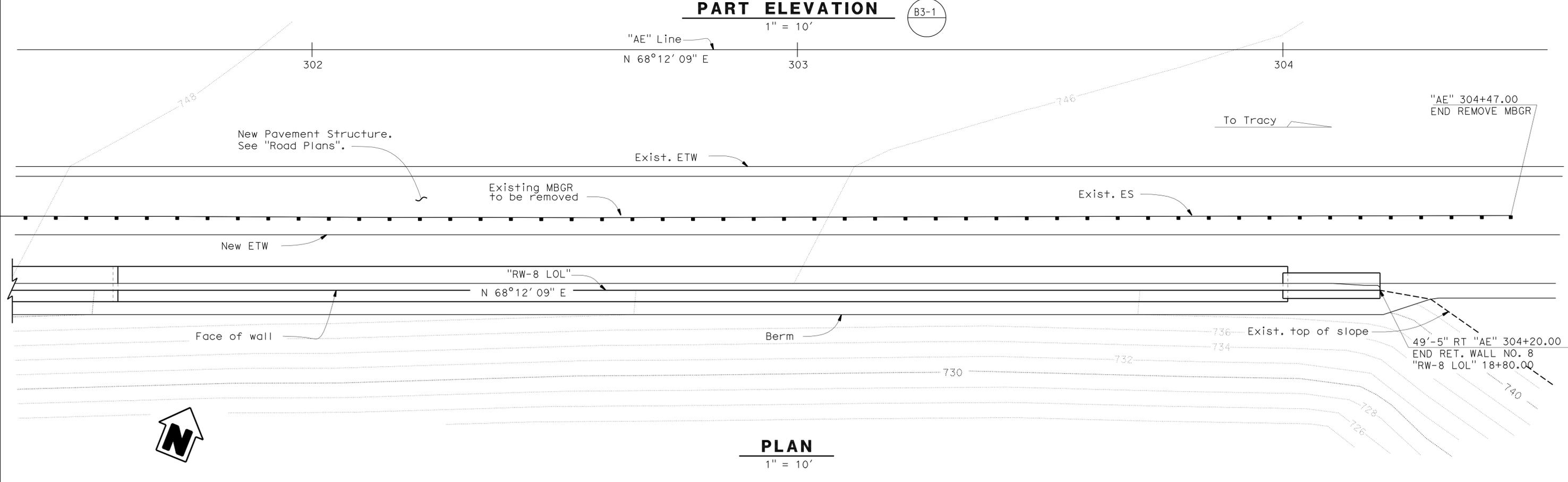
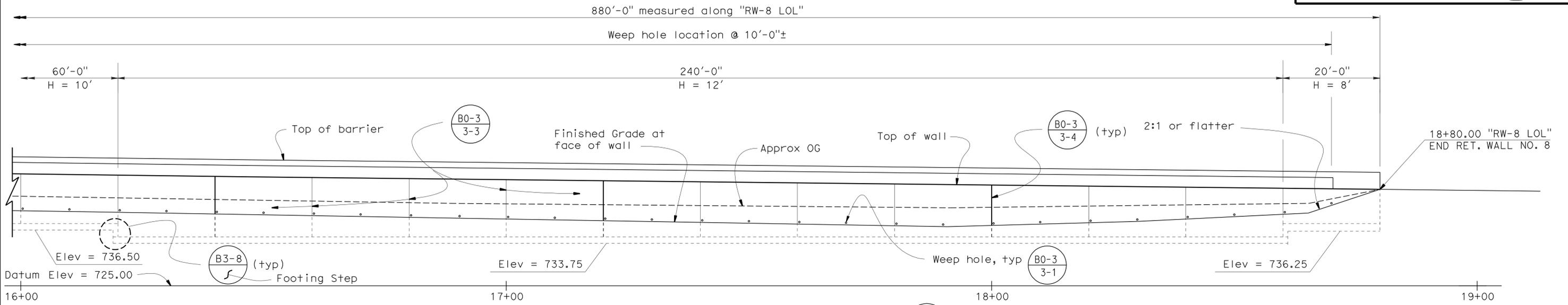
No. 54714

Exp. 12-31-11

CIVIL

STATE OF CALIFORNIA

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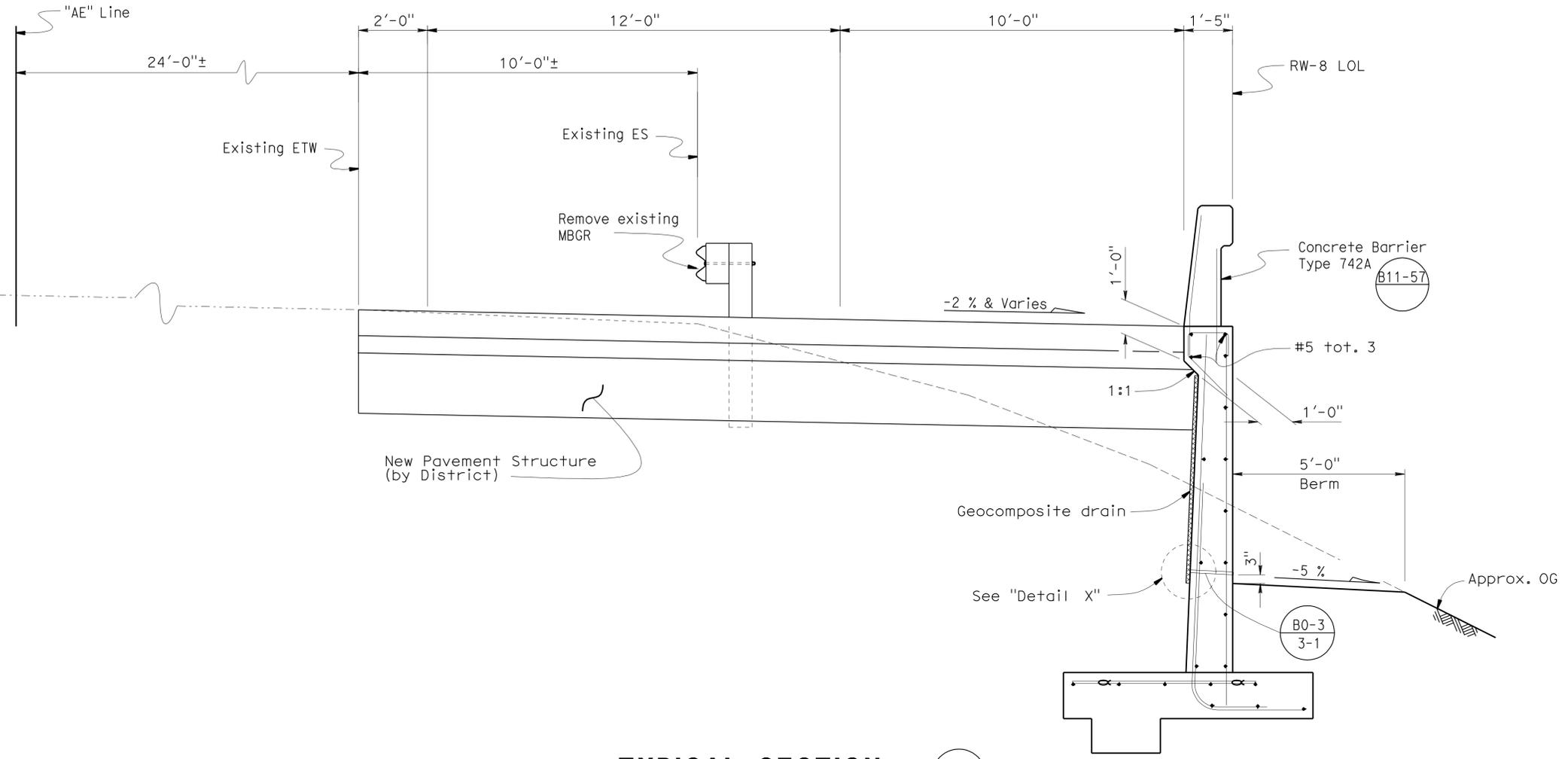


<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: x-small;">DESIGN</td> <td style="font-size: x-small;">BY Rafael Salazr</td> <td style="font-size: x-small;">CHECKED Linan Wang</td> </tr> <tr> <td style="font-size: x-small;">DETAILS</td> <td style="font-size: x-small;">BY Jeff Thorne</td> <td style="font-size: x-small;">CHECKED Linan Wang</td> </tr> <tr> <td style="font-size: x-small;">QUANTITIES</td> <td style="font-size: x-small;">BY Rafael Salazr</td> <td style="font-size: x-small;">CHECKED Linan Wang</td> </tr> </table>	DESIGN	BY Rafael Salazr	CHECKED Linan Wang	DETAILS	BY Jeff Thorne	CHECKED Linan Wang	QUANTITIES	BY Rafael Salazr	CHECKED Linan Wang	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN <b>DESIGN BRANCH 4</b>	BRIDGE NO. 33-00RW08 POST MILE R4.74	<b>RETAINING WALL NO.8</b> <b>STRUCTURE PLAN NO. 3</b>
DESIGN	BY Rafael Salazr	CHECKED Linan Wang											
DETAILS	BY Jeff Thorne	CHECKED Linan Wang											
QUANTITIES	BY Rafael Salazr	CHECKED Linan Wang											
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 10/25/05)		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A07U1	DISREGARD PRINTS BEARING EARLIER REVISION DATES									
				REVISION DATES									
				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">5-4-10</td> <td style="width: 10%;">5-11-10</td> <td style="width: 10%;">9-22-10</td> <td style="width: 10%;">9-27-10</td> <td style="width: 10%;">10-19-10</td> <td style="width: 10%;">11-19-10</td> <td style="width: 10%;">3-8-11</td> <td style="width: 10%;">3-16-11</td> </tr> </table>	5-4-10	5-11-10	9-22-10	9-27-10	10-19-10	11-19-10	3-8-11	3-16-11	
5-4-10	5-11-10	9-22-10	9-27-10	10-19-10	11-19-10	3-8-11	3-16-11						
				SHEET 4 OF 9									

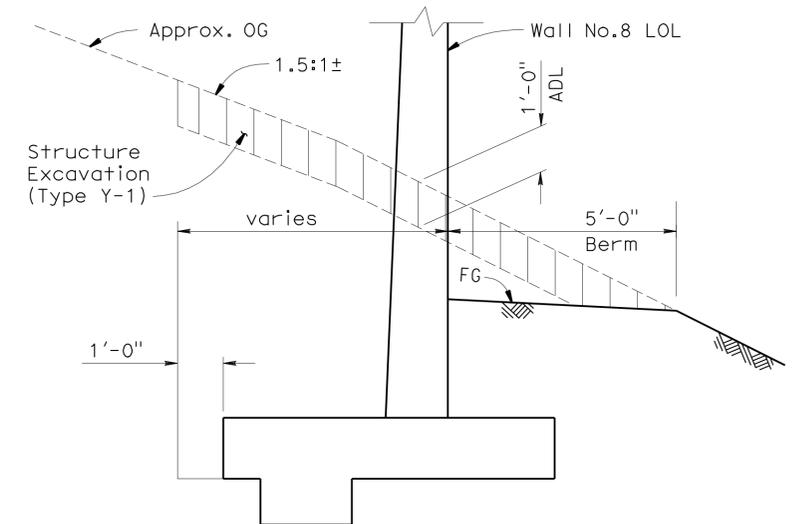
USERNAME => s128843 DATE PLOTTED => 25-JAN-2012

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Alameda	580	R4.7/R8.2	453	457

REGISTERED CIVIL ENGINEER DATE 12-7-10  
 REGISTERED CIVIL ENGINEER LINAN WANG No. 54714 Exp. 12-31-11 CIVIL STATE OF CALIFORNIA  
 PLANS APPROVAL DATE 1-23-12  
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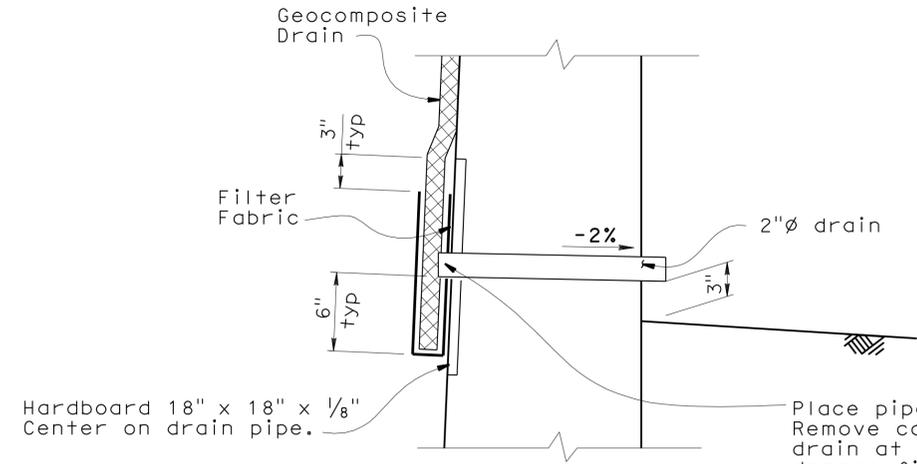


**TYPICAL SECTION**  
 $\frac{1}{2}'' = 1'-0''$   
 B3-1



**EXCAVATION LIMIT OF AERIALY DEPOSITED LEAD (ADL)**  
 No Scale

[Hatched Area] Indicates Structure Excavation (TYPE Y-1)  
 [Hatched Area] Aerially Deposited Lead (ADL)



**DETAIL X**  
 No Scale

Note:  
 Geocomposite drain not required for wall height less than 6 feet.

DESIGN	BY Rafael Salazar	CHECKED Linan Wang
DETAILS	BY Jeff Thorne /Wei Zhang	CHECKED Linan Wang
QUANTITIES	BY Rafael Salazar	CHECKED Linan Wang

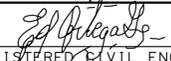
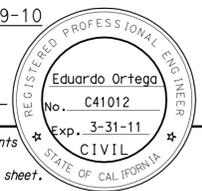
STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
 STRUCTURE DESIGN  
 DESIGN BRANCH 4

BRIDGE NO.	33-00RW08
POST MILE	R4.74

RETAINING WALL NO.8  
 TYPICAL SECTION

REVISION DATES	SHEET	OF
5-10-10 9-22-10 10-14-10 11-18-10 12-14-10 3-9-11 3-16-11	5	9

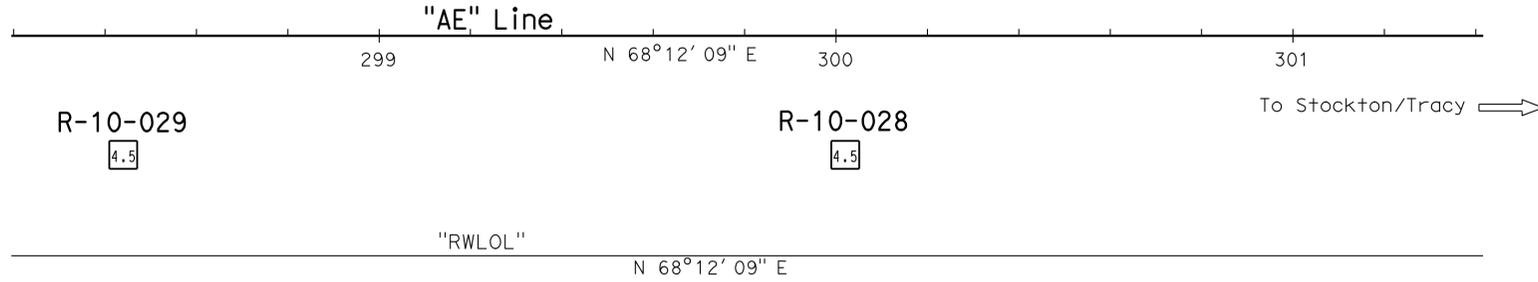
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	454	457
 REGISTERED CIVIL ENGINEER			12-29-10		
1-23-12 PLANS APPROVAL DATE					
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This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (June 2007).

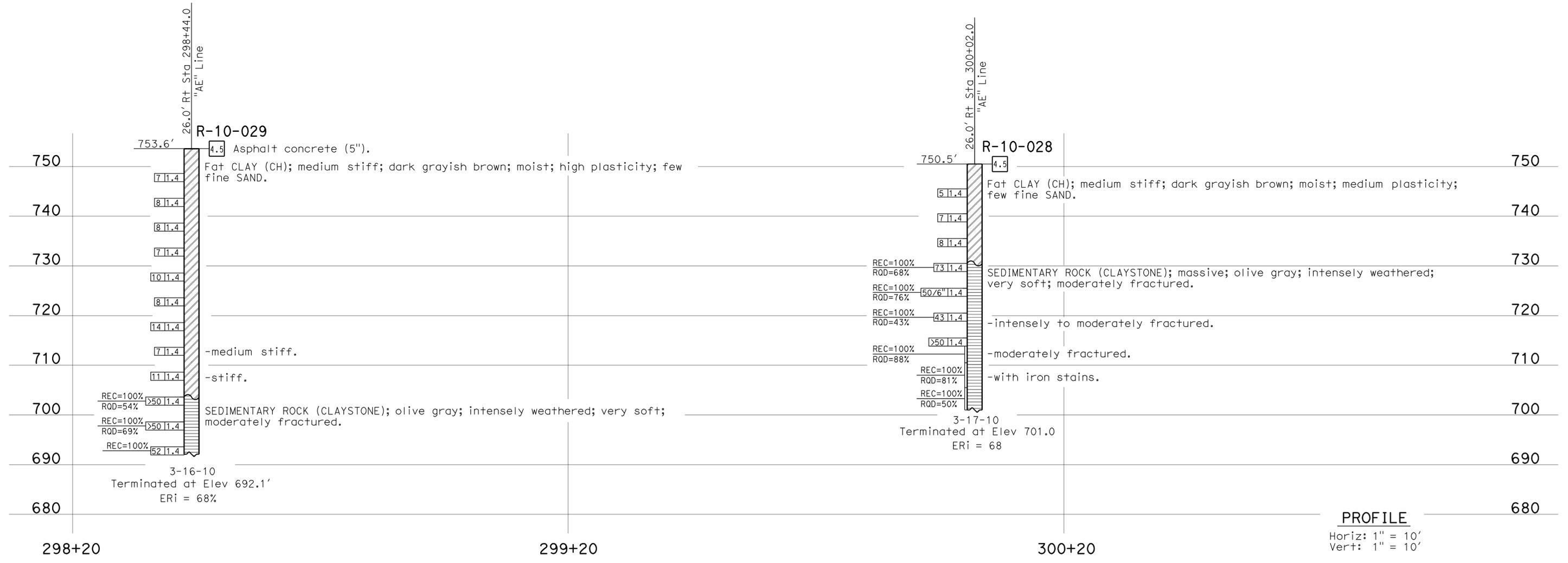
**BENCH MARK**

CT 264 (NAVD88)

Find a Mag nail and shiner of the flowline of an AC dike along SR 580 EB. It is about 215' east of the westerly end of a metal beam guard rail.  
 N 2088383.422  
 E 6231202.168  
 Elev = 757.264'



**PLAN**  
1" = 20'



**PROFILE**

Horiz: 1" = 10'  
Vert: 1" = 10'

<b>ENGINEERING SERVICES</b>		<b>GEOTECHNICAL SERVICES</b>		<b>STATE OF CALIFORNIA</b>		<b>DIVISION OF ENGINEERING SERVICES</b>		<b>BRIDGE NO.</b>		<b>RETAINING WALL NO. 8</b>	
FUNCTIONAL SUPERVISOR		DRAWN BY: F. Nguyen 8/10		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		33-00RW08		<b>LOG OF TEST BORINGS 1 OF 4</b>	
NAME: M. Momenzadeh		CHECKED BY: R. Nashed		C. Koepke, R. Karpowicz		<b>DESIGN BRANCH</b>		POST MILES			
								R4.74			
06S CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU EA		04 4A0701		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES	
				0 1 2 3				11-08-10 12-29-10 3-9-11		SHEET OF	
										6 9	

USERNAME => s128843 DATE PLOTTED => 25-JAN-2012 TIME PLOTTED => 16:50

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	455	457

12-29-10  
REGISTERED CIVIL ENGINEER

Eduardo Ortega  
No. C41012  
Exp. 3-31-11  
CIVIL  
STATE OF CALIFORNIA

1-23-12  
PLANS APPROVAL DATE

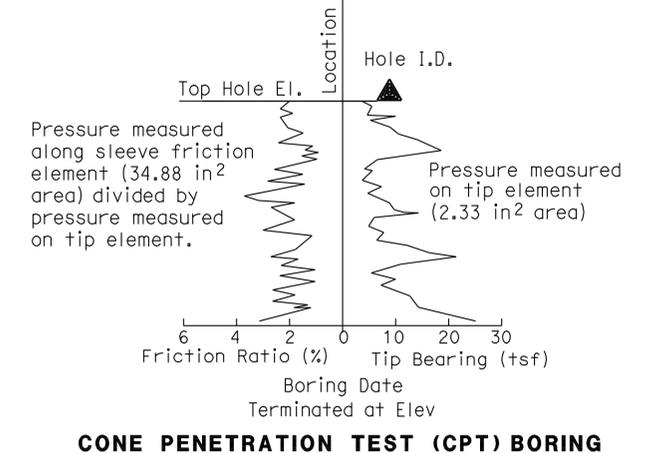
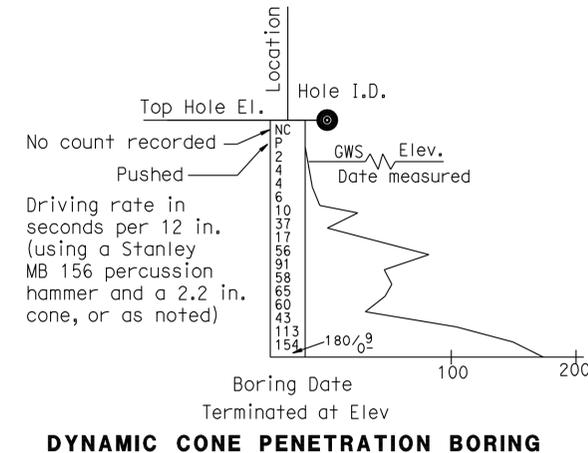
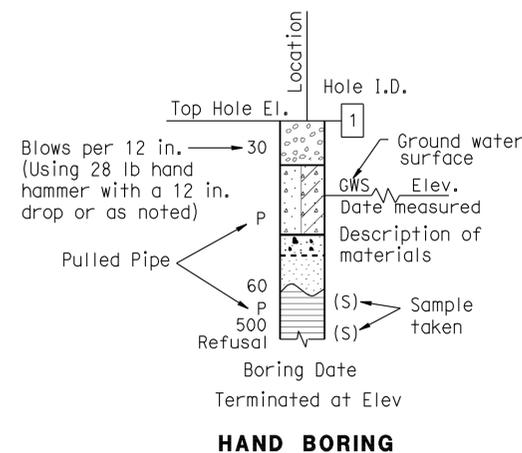
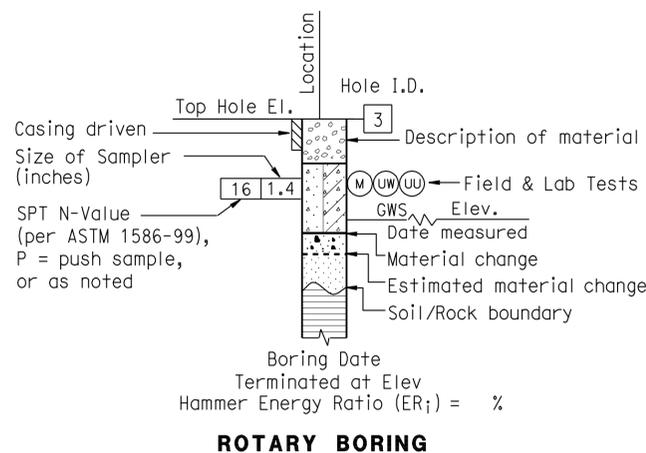
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CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring (hollow or solid stem bucket)
	R	Rotary drilled boring (conventional)
	RW	Rotary drilled with self-casing wire-line
	RC	Rotary core with continuously-sampled, self-casing wire-line
	P	Rotary percussion boring (air)
	R	Rotary drilled diamond core
	HD	Hand driven (1-inch soil tube)
	HA	Hand Auger
	D	Dynamic Cone Penetration Boring
	CPT	Cone Penetration Test (ASTM D 5778)
	O	Other (note on LOTB)

**Note: Size in inches.**

CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer Measurement, PP, (tsf)	Torvane Measurement, TV, (tsf)	Vane Shear Measurement, VS, (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2



ENGINEERING SERVICES	GEOTECHNICAL SERVICES PREPARED BY: F. Nguyen	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33-00RW08	RETAINING WALL NO. 8 LOG OF TEST BORINGS 2 OF 4
				POST MILE R4.74	
GS LOTB SOIL LEGEND	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU 04 EA 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 7 OF 9

FILE => 04-4a0701-rw08-k-lotb\_2of4.dgn

12-29-10

REGISTERED CIVIL ENGINEER

Eduardo Ortega  
No. C41012  
Exp. 3-31-11  
CIVIL  
STATE OF CALIFORNIA

1-23-12  
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		Lean CLAY with GRAVEL
	Poorly-graded GRAVEL with SAND		SANDY lean CLAY
	Well-graded GRAVEL with SILT		SANDY lean CLAY with GRAVEL
	Well-graded GRAVEL with SILT and SAND		GRAVELLY lean CLAY
	Well-graded GRAVEL with CLAY (or SILTY CLAY)		GRAVELLY lean CLAY with SAND
	Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SILTY CLAY
	Poorly-graded GRAVEL with SILT		SILTY CLAY with SAND
	Poorly-graded GRAVEL with SILT and SAND		SILTY CLAY with GRAVEL
	Poorly-graded GRAVEL with CLAY (or SILTY CLAY)		SANDY SILTY CLAY
	Poorly-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		SANDY SILTY CLAY with GRAVEL
	SILTY GRAVEL		GRAVELLY SILTY CLAY
	SILTY GRAVEL with SAND		GRAVELLY SILTY CLAY with SAND
	CLAYEY GRAVEL		SILT
	CLAYEY GRAVEL with SAND		SILT with SAND
	SILTY, CLAYEY GRAVEL		SILT with GRAVEL
	SILTY, CLAYEY GRAVEL with SAND		SANDY SILT
	Well-graded SAND		SANDY SILT with GRAVEL
	Well-graded SAND with GRAVEL		GRAVELLY SILT
	Poorly-graded SAND		GRAVELLY SILT with SAND
	Poorly-graded SAND with GRAVEL		Fat CLAY
	Well-graded SAND with SILT		Fat CLAY with SAND
	Well-graded SAND with SILT and GRAVEL		Fat CLAY with GRAVEL
	Well-graded SAND with CLAY (or SILTY CLAY)		SANDY fat CLAY
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		SANDY fat CLAY with GRAVEL
	Poorly-graded SAND with SILT		GRAVELLY fat CLAY
	Poorly-graded SAND with SILT and GRAVEL		GRAVELLY fat CLAY with SAND
	Poorly-graded SAND with CLAY (or SILTY CLAY)		Elastic SILT
	Poorly-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		Elastic SILT with SAND
	SILTY SAND		Elastic SILT with GRAVEL
	SILTY SAND with GRAVEL		SANDY elastic SILT
	CLAYEY SAND		SANDY elastic SILT with GRAVEL
	CLAYEY SAND with GRAVEL		GRAVELLY elastic SILT
	SILTY, CLAYEY SAND		GRAVELLY elastic SILT with SAND
	SILTY, CLAYEY SAND with GRAVEL		ORGANIC fat CLAY
	PEAT		ORGANIC fat CLAY with SAND
	COBBLES		ORGANIC fat CLAY with GRAVEL
	COBBLES and BOULDERS		SANDY ORGANIC fat CLAY
	BOULDERS		SANDY ORGANIC fat CLAY with GRAVEL
			GRAVELLY ORGANIC fat CLAY
			GRAVELLY ORGANIC fat CLAY with SAND
			ORGANIC elastic SILT
			ORGANIC elastic SILT with SAND
			ORGANIC elastic SILT with GRAVEL
			SANDY ORGANIC elastic SILT
			SANDY ORGANIC elastic SILT with GRAVEL
			GRAVELLY ORGANIC elastic SILT
			GRAVELLY ORGANIC elastic SILT with SAND
			ORGANIC SOIL
			ORGANIC SOIL with SAND
			ORGANIC SOIL with GRAVEL
			SANDY ORGANIC SOIL
			SANDY ORGANIC SOIL with GRAVEL
			GRAVELLY ORGANIC SOIL
			GRAVELLY ORGANIC SOIL with SAND

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
(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)
(UC)	Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
(UU)	Unconsolidated Undrained Triaxial (ASTM D 2850)
(UW)	Unit Weight (ASTM D 4767)

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N <sub>60</sub> (Blows / 12 in.)
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Greater than 50

MOISTURE	
Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

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

PARTICLE SIZE		
Description	Size (in.)	
Boulder	Greater than 12	
Cobble	3 - 12	
Gravel	Coarse	3/4 - 3
	Fine	1/5 - 3/4
Sand	Coarse	1/16 - 1/5
	Medium	1/64 - 1/16
	Fine	1/300 - 1/64
Silt and Clay	Less than 1/300	

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH	BRIDGE NO. 33-00RW08	RETAINING WALL NO. 8 LOG OF TEST BORINGS 3 OF 4
				POST MILE R4.74	
PREPARED BY: F. Nguyen	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU EA 04 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 8 OF 9

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Ala	580	R4.7/R8.2	457	457

12-29-10  
 REGISTERED CIVIL ENGINEER  
 Eduardo Ortega  
 No. C41012  
 Exp. 3-31-11  
 CIVIL  
 STATE OF CALIFORNIA

1-23-12  
 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.*

**PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)**

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

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

RQD\* Indicates soundness criteria not met.

**BEDDING SPACING**

Description	Thickness / Spacing
Massive	Greater than 10 ft
Very Thickly Bedded	3 ft - 10 ft
Thickly Bedded	1 ft - 3 ft
Moderately Bedded	4 in. - 1 ft
Thinly Bedded	1 in. - 4 in.
Very Thinly Bedded	1/4 in. - 1 in.
Laminated	Less than 1/4 in.

**LEGEND OF ROCK MATERIALS**

- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

**ROCK HARDNESS**

Description	Criteria
Extremely Hard	Cannot be scratched with a pocketknife or sharp pick. Can only be chipped with repeated heavy hammer blows.
Very Hard	Cannot be scratched with a pocketknife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Can be scratched with a pocketknife or sharp pick with difficulty (heavy pressure). Breaks with heavy hammer blows.
Moderately Hard	Can be scratched with pocketknife or sharp pick with light or moderate pressure. Breaks with moderate hammer blows.
Moderately Soft	Can be grooved 1/16 in. deep with a pocketknife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Can be grooved or gouged easily by a pocketknife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Can be readily indented, grooved or gouged with fingernail, or carved with a pocketknife. 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 Leaching		
	Body of Rock	Fracture Surfaces		Texture		Leaching
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change	No leaching	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.	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."

**FRACTURE DENSITY**

Description	Observed Fracture Density
Unfractured	No fractures.
Very Slightly Fractured	Core lengths greater than 3 ft.
Slightly Fractured	Core lengths mostly from 1 to 3 ft.
Moderately Fractured	Core lengths mostly from 4 in. to 1 ft.
Intensely Fractured	Core lengths mostly from 1 to 4 in.
Very Intensely Fractured	Mostly chips and fragments.

<b>ENGINEERING SERVICES</b>	<b>GEOTECHNICAL SERVICES</b>	<b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	<b>DIVISION OF ENGINEERING SERVICES</b> STRUCTURE DESIGN <b>DESIGN BRANCH</b>	BRIDGE NO. 33-00RW08 POST MILE R4.74	<b>RETAINING WALL NO. 8</b> <b>LOG OF TEST BORINGS 4 OF 4</b>
	PREPARED BY: F. Nguyen		CU EA 04 4A0701	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES
GS LOTB SOIL LEGEND	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3			SHEET 9 OF 9

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