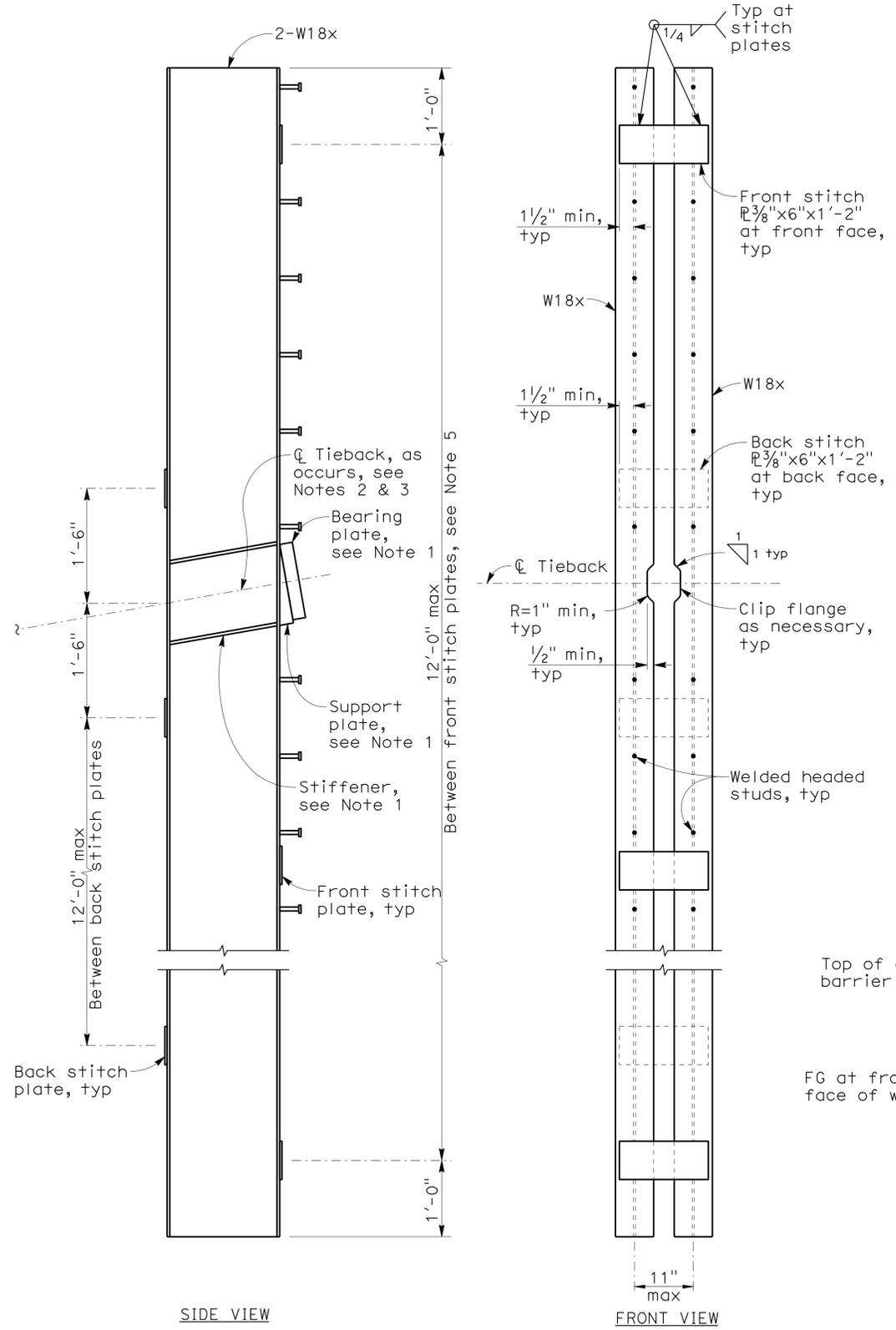


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	601	619

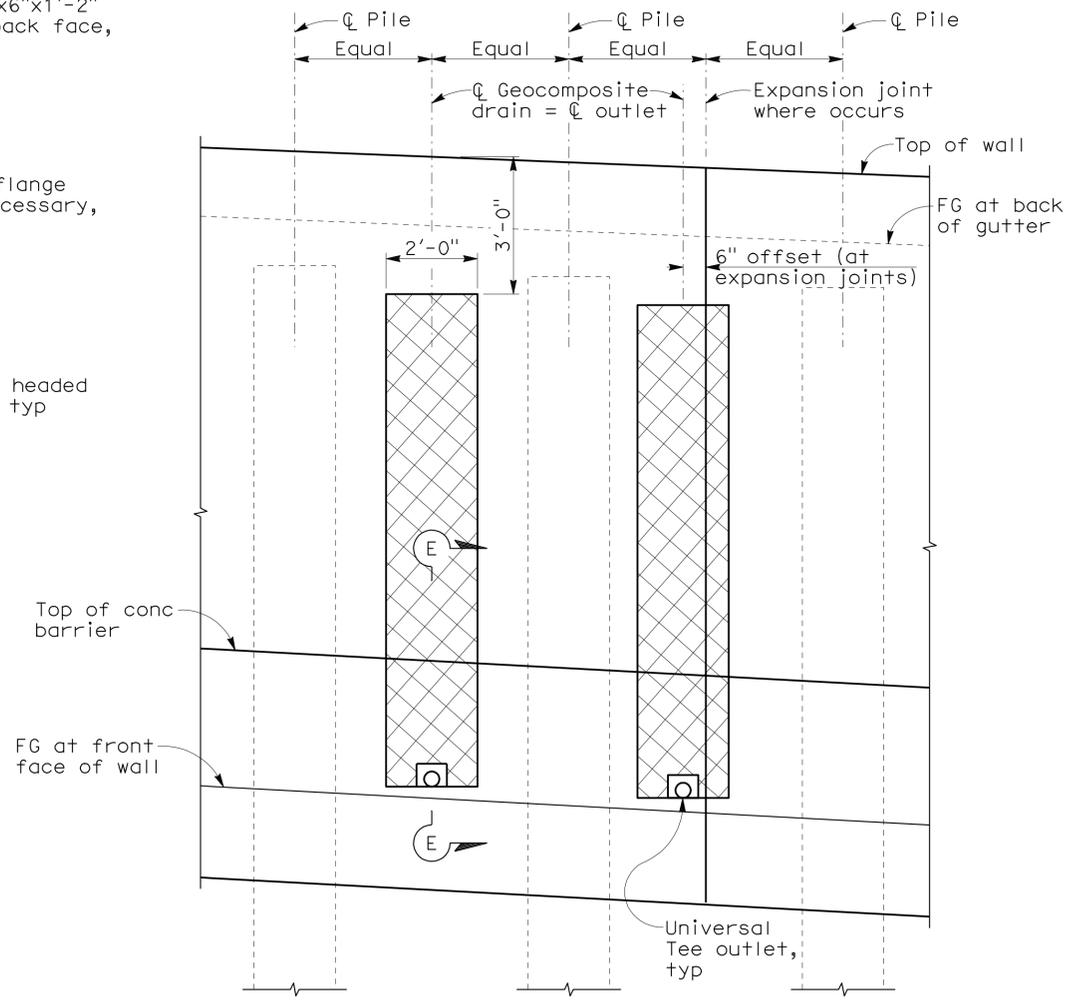
10/03/11  
 REGISTERED CIVIL ENGINEER DATE  
 4-16-12  
 PLANS APPROVAL DATE  
 REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY P. NOTARO  
 No. C51739  
 Exp. 6/30/12  
 STATE OF CALIFORNIA  
 CIVIL

TAM  
 750 LINDARO ST, SUITE 200  
 SAN RAFAEL, CA 94901  
 BIGGS CARDOSA ASSOCIATES INC.  
 865 THE ALAMEDA  
 SAN JOSE, CALIFORNIA 95126

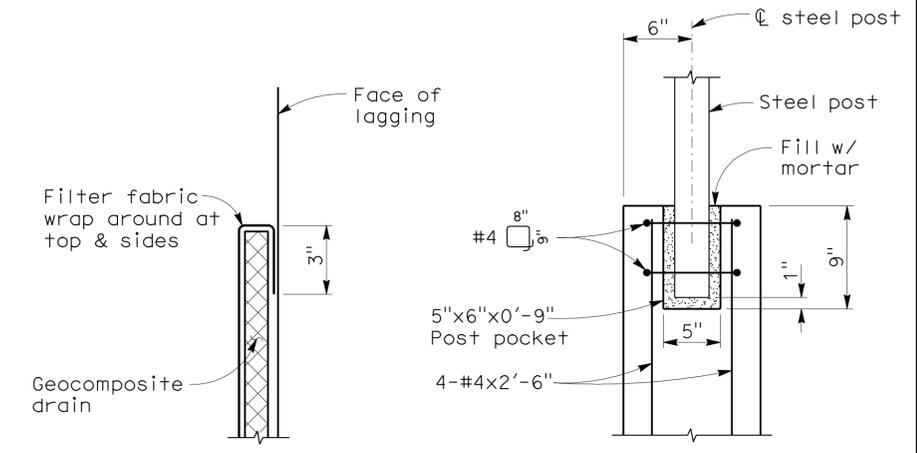


**TIEBACK PILE DETAILS**  
 NO SCALE

- NOTES:
- Bearing plate, support plate and stiffeners to be designed by Contractor
  - For Tieback Force and offset from top of wall (a), see 'TIEBACK DATA TABLE' on 'RETAINING WALL LAYOUT No. 1' sheet.
  - For Tieback angle of inclination, see 'RETAINING WALL DETAILS No. 1' sheet
  - Drilled hole diameter for tieback shall be determined by Contractor
  - Provide 1'-6" min between centerline of front stitch plate and centerline of tieback
  - Contractor shall verify all controlling dimensions prior to fabrication

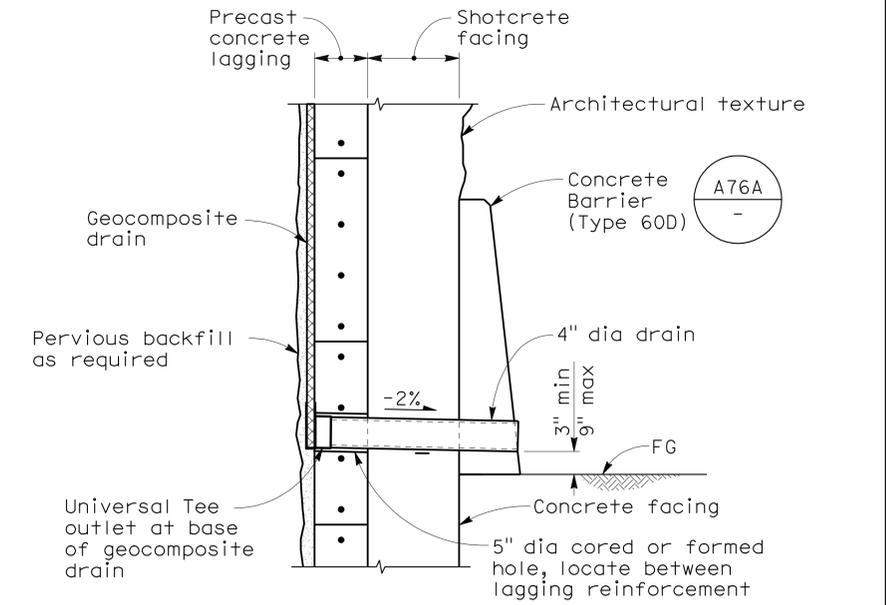


**PART ELEVATION - WALL DRAIN**  
 1/2" = 1'-0"



**DETAIL 1**  
 3" = 1'-0"

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



**SECTION E-E**  
 NO SCALE

DESIGN OVERSIGHT  
 Tracy L. Bertram  
 10-14-11  
 SIGN OFF DATE

DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING
DETAILS	BY G. JEYARAMAN	CHECKED J. VISAYA
QUANTITIES	BY P. GONGIDI	CHECKED K. CRUZ

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION  
 ANTHONY P. NOTARO  
 PROJECT ENGINEER

BRIDGE NO.	27E0030
POST MILES	25.5

**RETAINING WALL No. 4**  
**RETAINING WALL DETAILS No. 2**

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: 0716  
 PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)		SHEET	OF
11/10/10	3/27/11	6	11

FILE => 27e0030-i-rwd2.dgn

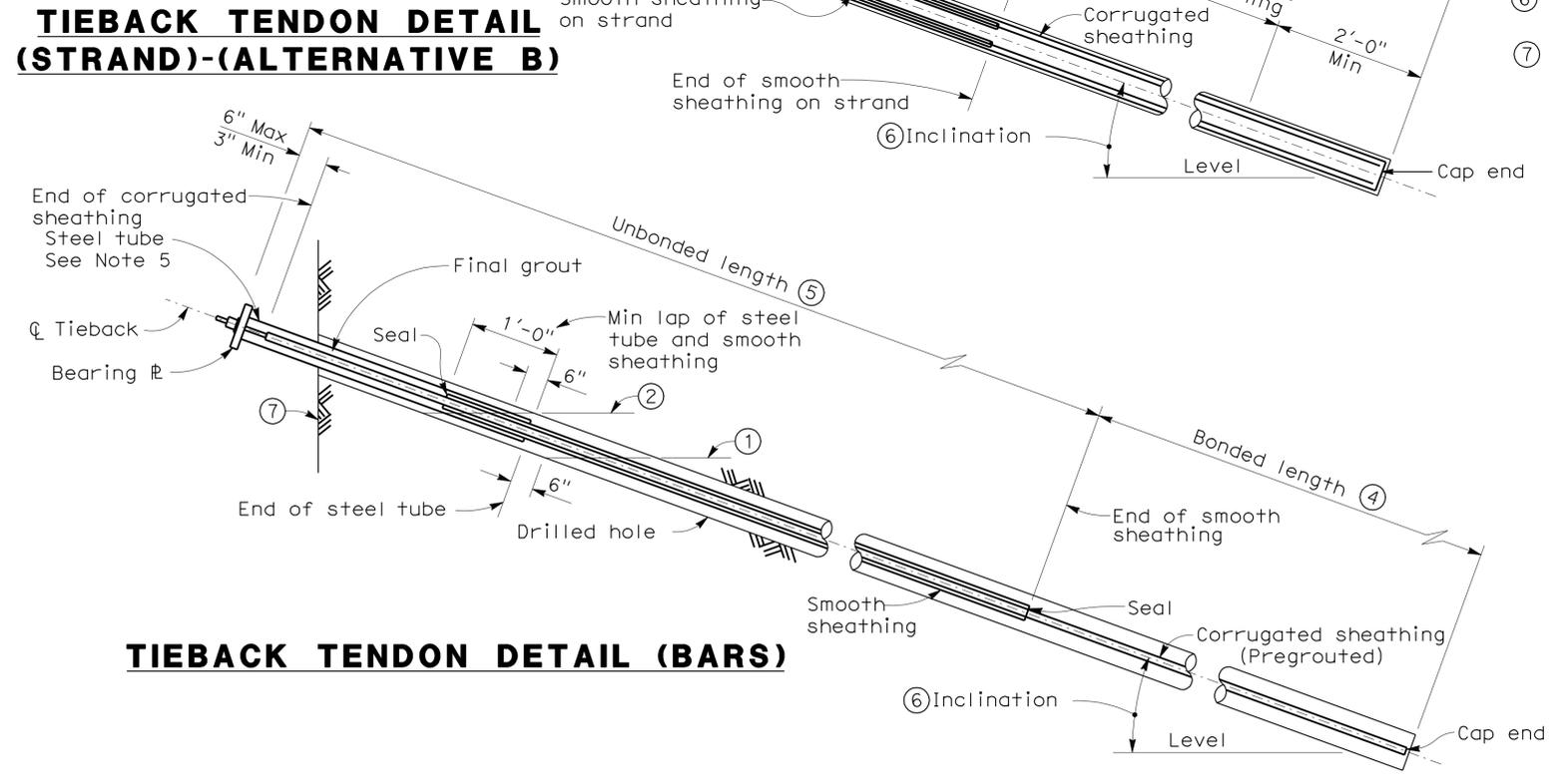
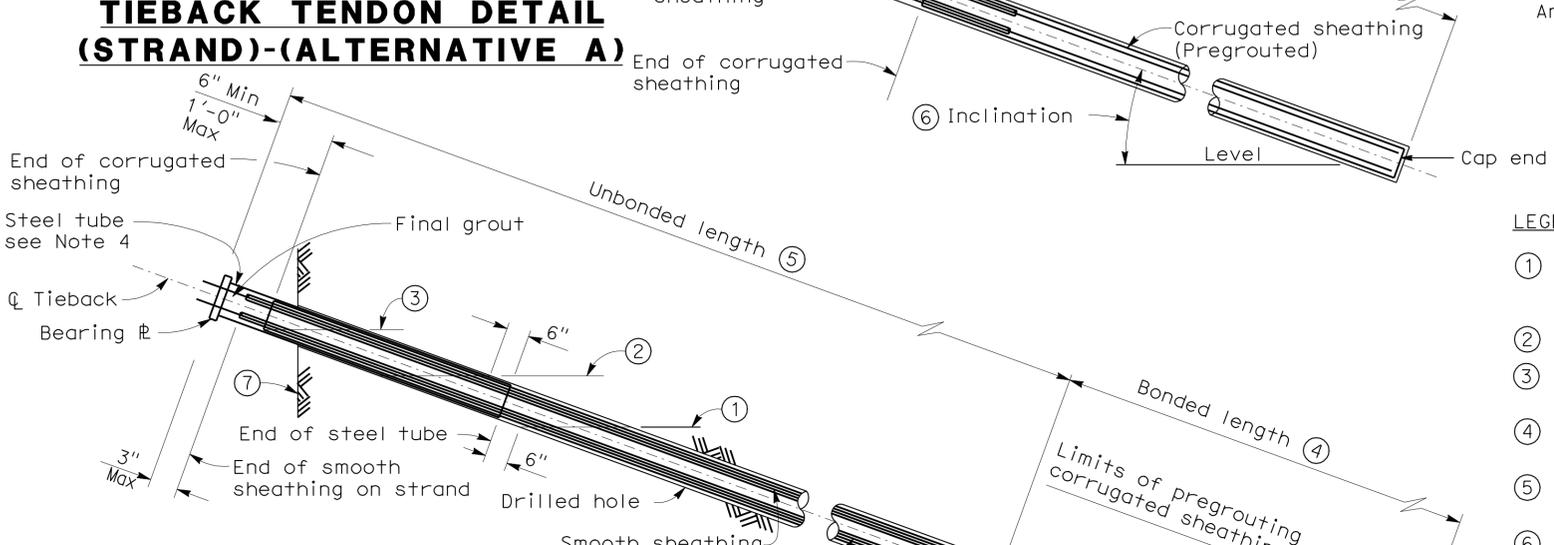
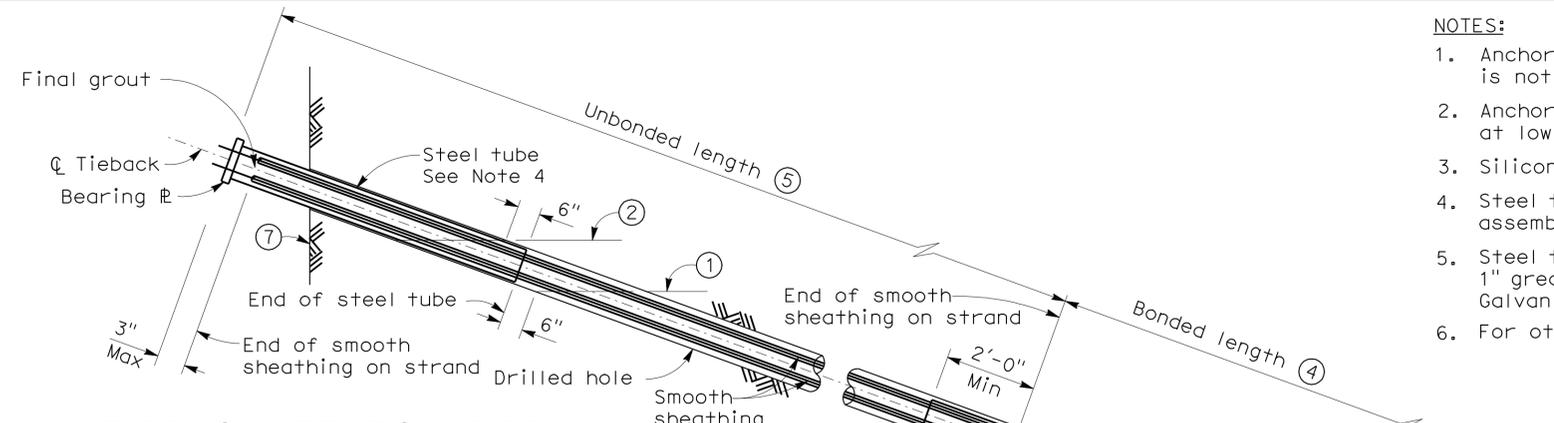
CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

2008100 (20081000RE) TIME PLOTTED => 10:04 USERNAME => s124496 DATE PLOTTED => 16-APR-2012

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	602	619
			10/03/11	REGISTERED CIVIL ENGINEER DATE	
			4-16-12	PLANS APPROVAL DATE	
REGISTERED PROFESSIONAL ENGINEER ANTHONY P. NOTARO No. C51739 Exp. 6/30/12 CIVIL STATE OF CALIFORNIA					
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TAM 750 LINDARO STREET, SUITE 200 SAN RAFAEL, CA 94901					
BIGGS CARDOSA ASSOCIATES INC. 865 THE ALAMEDA SAN JOSE, CALIFORNIA 95126					

**NOTES:**

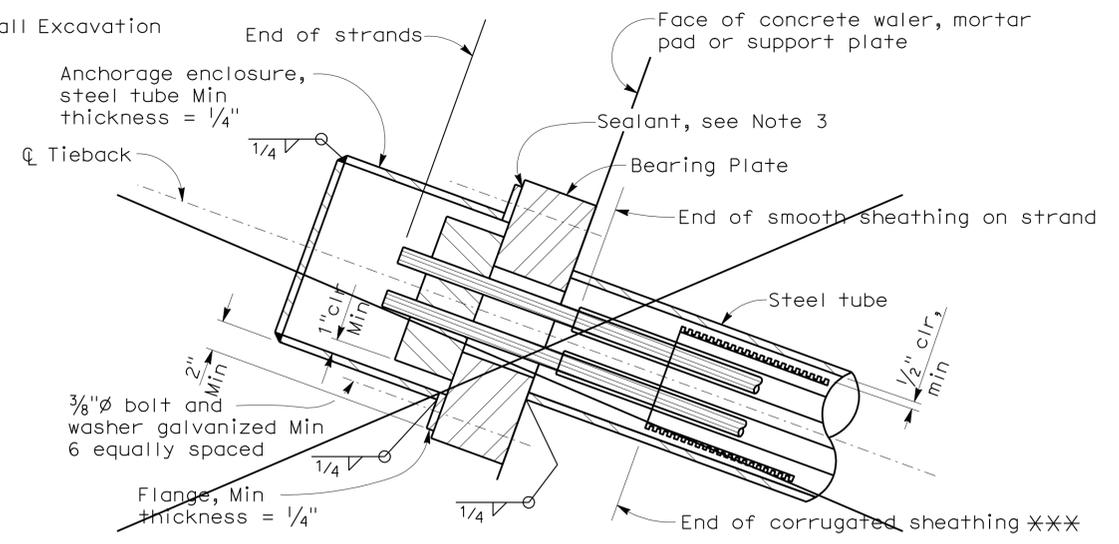
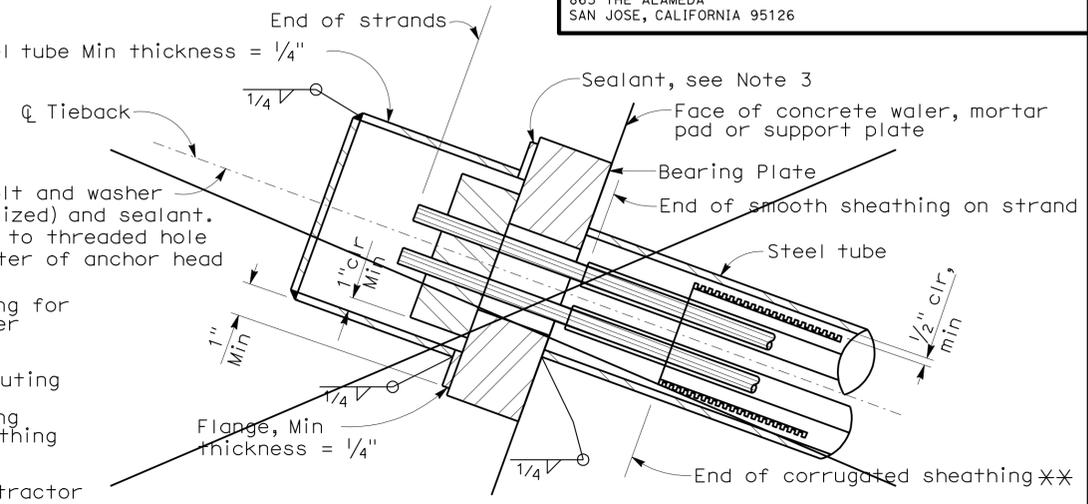
1. Anchorage enclosure shall only be used when anchor head assembly is not enclosed in concrete.
2. Anchorage enclosure shall have provisions to allow injecting grout at low end and venting at high end. Galvanize after fabrication.
3. Silicone sealant to cover full width of flange.
4. Steel tube welded to bearing plate (Min thickness = 1/4"). Galvanize assembly after fabrication
5. Steel tube welded to bearing plate inside diameter of steel tube to be 1" greater than outside diameter of smooth sheathing (Min thickness = 1/4") Galvanize assembly after fabrication.
6. For other wall details, see Structural Plans.



Anchorage enclosure, steel tube Min thickness = 1/4"

**LEGEND:**

- ① Level of initial grouting for drill hole 6" in diameter or smaller
- ② Level of secondary grouting
- ③ Level of initial grouting inside corrugated sheathing
- ④ Bonded length shall be determined by the contractor
- ⑤ For unbonded length, see Project Plans
- ⑥ For inclination, see Project Plans
- ⑦ Face of Wall Excavation



**ANCHORAGE ENCLOSURE DETAILS**

STANDARD DRAWING			
RELEASE DATE: 9/15/09	DESIGN BY: S. SAHNS	CHECKED: R.C. WHITTEN	RELEASED BY:
FILE NO.: xs12-040e	DETAILS BY: S. SAHNS/D. RADLEY	CHECKED:	OFFICE CHIEF:
	SUBMITTED BY: P. CHUNG	DRAWING DATE:	

① Detail not used

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO. 27E0030  
POST MILE 25.5

RETAINING WALL No. 4  
RETAINING WALL DETAILS No. 3

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mirn	101	R23.2/27.1	603	619

10/3/11  
DATE

4-16-12  
PLANS APPROVAL DATE

GARY PARIKH  
No. G.E. 666  
Exp. 12/31/11  
STATE OF CALIFORNIA

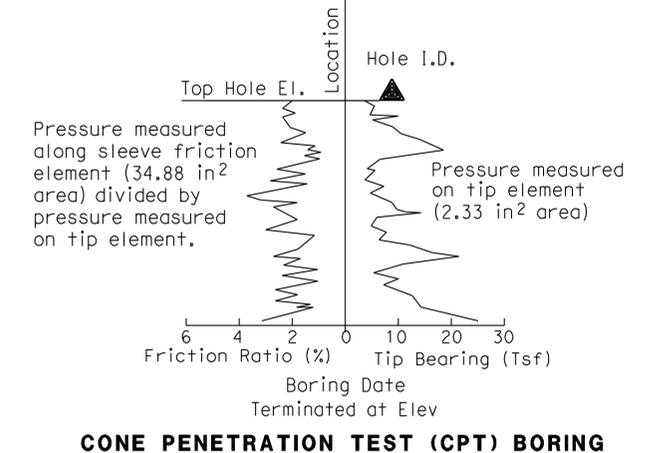
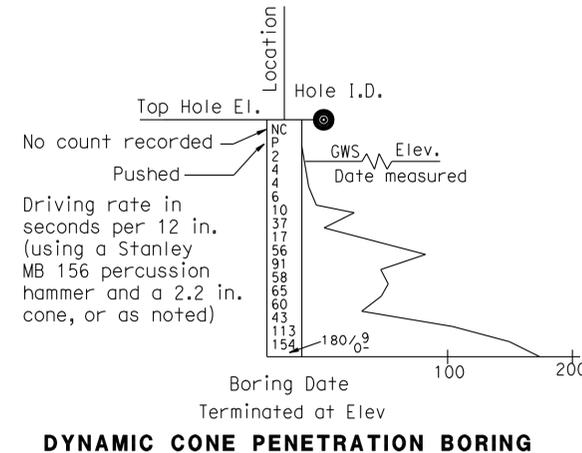
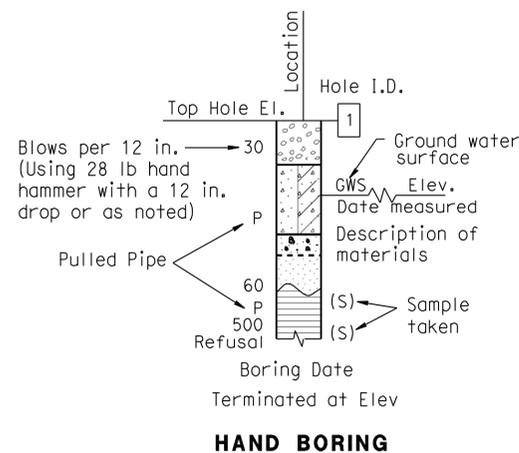
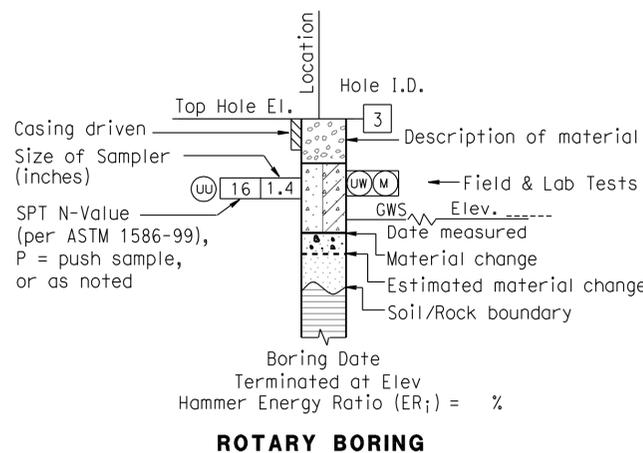
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CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

BOREHOLE IDENTIFICATION		
Symbol	Hole Type	Description
	A	Auger Boring (hollow or solid stem bucket)
	RW	Rotary drilled boring (conventional)
	RC	Rotary drilled with self-casing wire-line
	P	Rotary core with continuously-sampled, self-casing wire-line
	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



DESIGN OVERSIGHT Tracy L. Bertram  
10-14-11  
SIGN OFF DATE

DRAWN BY O. GOUTHIER  
CHECKED BY P. SIRCAR

S. DUDDU  
FIELD INVESTIGATION BY:  
DATE: JANUARY - FEBRUARY 2009

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. SIRCAR  
PROJECT ENGINEER  
BRIDGE NO. 27E0030  
POST MILES 25.5

RETAINING WALL No. 4  
LOG OF TEST BORINGS 1 OF 4

DATE PLOTTED => \$TIME USERNAME => \$USER

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mtn	101	R23.2/27.1	604	619

10/3/11  
DATE

GEOTECHNICAL PROFESSIONAL

4-16-12  
PLANS APPROVAL DATE

GARY PARIKH  
No. G.E. 666  
Exp. 12/31/11  
STATE OF CALIFORNIA

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

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)
(UC)	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	

 DESIGN OVERSIGHT 10-14-11 SIGN OFF DATE	DRAWN BY O. GOUTHIER	S. DUDDU FIELD INVESTIGATION BY:	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 27E0030	<b>RETAINING WALL No. 4</b> <b>LOG OF TEST BORINGS 2 OF 4</b>
	CHECKED BY P. SIRCAR	DATE: JANUARY - FEBRUARY 2009		PROJECT ENGINEER P. SIRCAR	
GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: 0716 PROJECT NUMBER & PHASE: 04000007331	CONTRACT NO.: 04-264074
				DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES: 10/3/11
				SHEET 9 OF 11	USERNAME => \$USER TIME PLOTTED => \$TIME

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

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

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

### RELATIVE STRENGTH OF INTACT ROCK

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

### BEDDING SPACING

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

10/3/11  
DATE

GEOTECHNICAL PROFESSIONAL

4-16-12  
PLANS APPROVAL DATE

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TAM  
750 LINDARO STREET, SUITE 200  
SAN RAFAEL, CALIFORNIA 94901

PARIKH CONSULTANTS, INC.  
2360 OUME DRIVE, SUITE A  
SAN JOSE, CA 95131

### LEGEND OF ROCK MATERIALS

- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

### ROCK HARDNESS

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

### WEATHERING DESCRIPTORS FOR INTACT ROCK

Description	Diagnostic features				General Characteristics	
	Chemical Weathering-Discoloration and/or oxidation		Mechanical Weathering-Grain boundary conditions (disaggregation) primarily for granitics and some coarse-grained sediments	Texture and Solutioning		
	Body of Rock	Fracture Surfaces		Texture		Solutioning
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change.	No solutioning.	Hammer rings when crystalline rocks are struck.
Slightly Weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull.	Minor to complete discoloration or oxidation of most surfaces.	No visible separation, intact (tight).	Preserved.	Minor leaching of some soluble minerals may be noted.	Hammer rings when crystalline rocks are struck. Body of rock not weakened.
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty," feldspar crystals are "cloudy."	All fracture surfaces are discolored or oxidized.	Partial separation of boundaries visible.	Generally preserved.	Soluble minerals may be mostly leached.	Hammer does not ring when rock is struck. Body of rock is slightly weakened.
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in-situ disaggregation, see grain boundary conditions.	All fracture surfaces are discolored or oxidized, surfaces friable.	Partial separation, rock is friable; in semiarid conditions granitics are disaggregated.	Texture altered by chemical disintegration (hydration, argillation).	Leaching of soluble minerals may be complete.	Dull sound when struck with hammer, usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures, or veinlets. Rock is significantly weakened.
Decomposed	Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay.		Complete separation of grain boundaries (disaggregated).	Resembles a soil, partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete.		Can be granulated by hand. Resistant minerals such as quartz may be present as "stringers" or "dikes."

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

### FRACTURE DENSITY

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

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

 DESIGN OVERSIGHT Tracy L. Bertram 10-14-11 SIGN OFF DATE	DRAWN BY O. GOUTHIER	S. DUDDU FIELD INVESTIGATION BY:
	CHECKED BY P. SIRCAR	DATE: JANUARY - FEBRUARY 2009

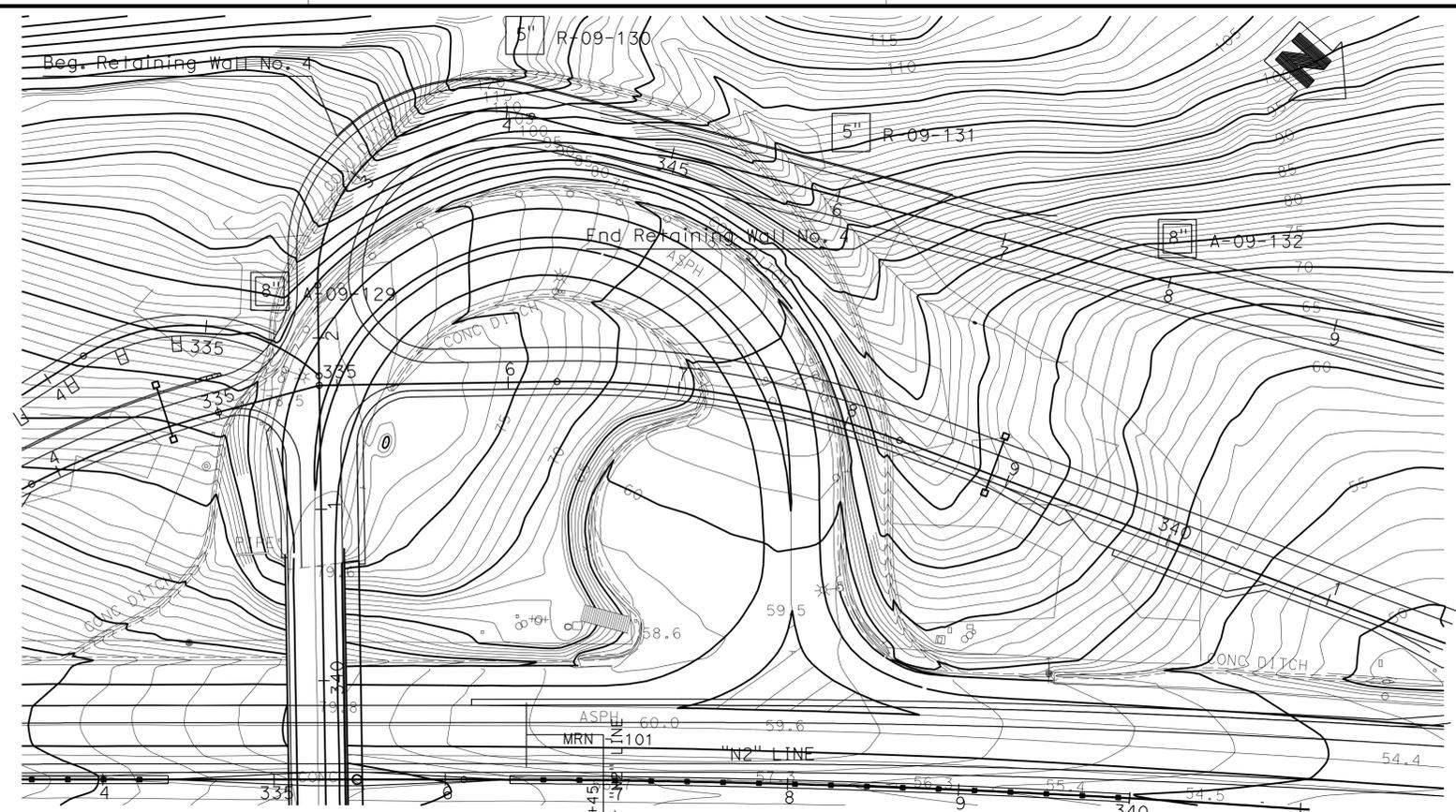
**PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION**

P. SIRCAR PROJECT ENGINEER	BRIDGE NO. 27E0030
	POST MILES 25.5

## RETAINING WALL No. 4

### LOG OF TEST BORINGS 3 OF 4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	606	619
			10/3/11		
GEO TECHNICAL PROFESSIONAL			DATE		
4-16-12			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.					
TAM 750 LINDARO STREET, SUITE 200 SAN RAFAEL, CALIFORNIA 94901					
PARIKH CONSULTANTS, INC. 2360 OUME DRIVE, SUITE A SAN JOSE, CA 95131					

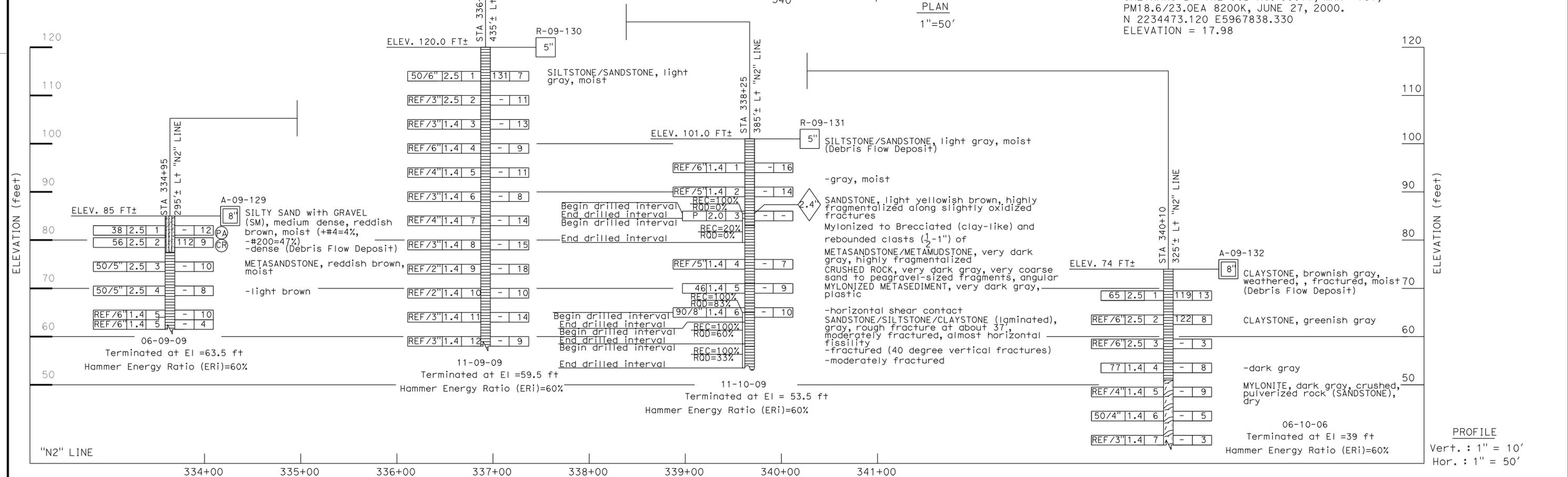


Notes:  
 Standard Penetration Test Sampler: I.D. = 1.4";  
 O.D. = 2" Modified California Sampler: I.D. = 2.5"; O.D. = 3" Hammer Assembly: A 140 lb hammer with a 30" drop (Automatic Hammer)

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

All dimensions are in feet unless otherwise shown

BENCHMARK:  
 BM GPS30 FOUND 1" IRON PIPE WITH PLASTIC PLUG AT NORTHBOUND SHOULDER OF HIGHWAY 101 AT THE BEGINNING OF OFFRAMP TO ATHERTON AVENUE/ SAN MARIN DRIVE. THE VALUES FOR GPS30 WERE PROVIDED BY CALTRANS BY THE JOB No. 00071, MRN- 101, PM18.6/23.OEA 8200K, JUNE 27, 2000.  
 N 2234473.120 E5967838.330  
 ELEVATION = 17.98



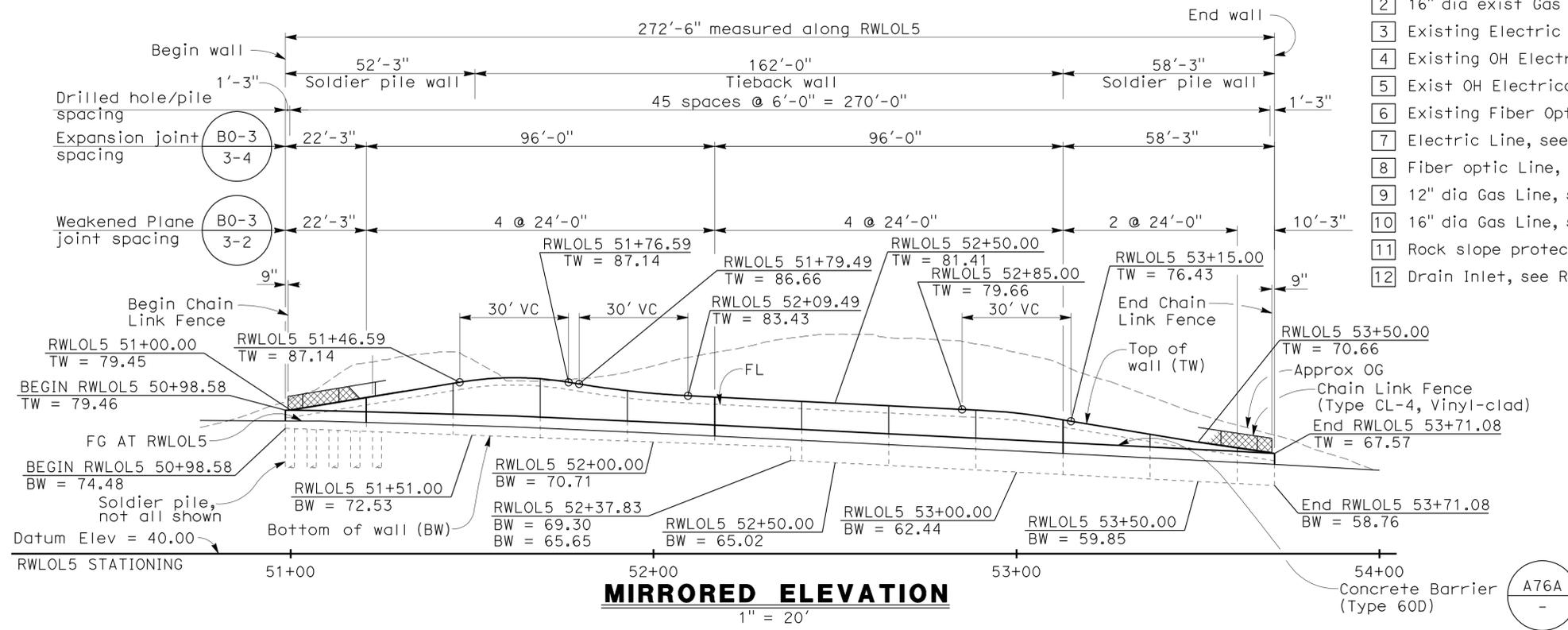
DESIGN OVERSIGHT Tracy L Bertram 10-14-11 SIGN OFF DATE	DRAWN BY O. GOUTHIER	S. DUDDU FIELD INVESTIGATION BY: DATE: JANUARY- FEBRUARY 2009	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 27E0030	<b>RETAINING WALL No. 4</b> <b>LOG OF TEST BORINGS 4 OF 4</b>
	CHECKED BY P. SIRCAR	P. SIRCAR PROJECT ENGINEER	PROJECT NUMBER & PHASE: 04000007331	POST MILES 25.5	
GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)					
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			UNIT: 0716 PROJECT NUMBER & PHASE: 04000007331	CONTRACT NO.: 04-264074	DISREGARD PRINTS BEARING EARLIER REVISION DATES
				REVISION DATES 10/3/11	SHEET OF 11 11

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

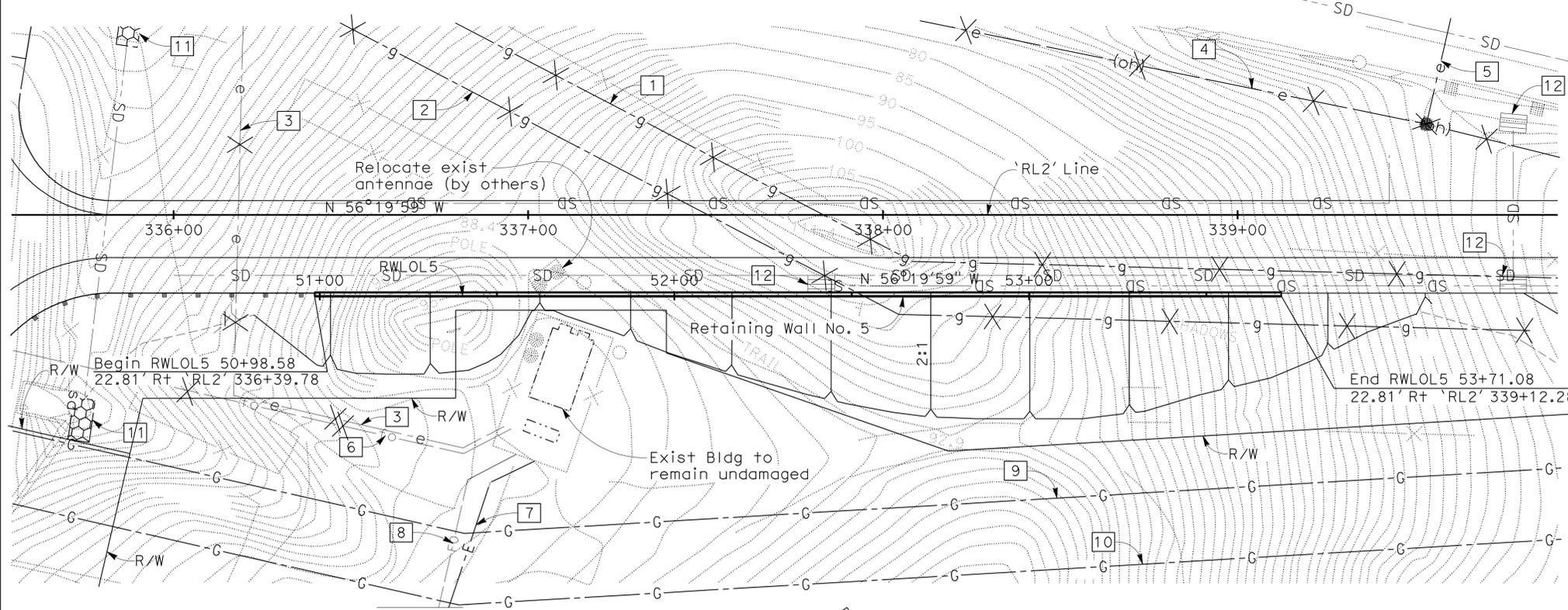
**LEGEND:**

- 1 12" dia exist Gas Line to be removed by others
- 2 16" dia exist Gas Line to be removed by others
- 3 Existing Electric Line to be removed by others
- 4 Existing OH Electrical Line to be removed by others
- 5 Exist OH Electrical Guy Wire to be removed by others
- 6 Existing Fiber Optic Line to be removed by others
- 7 Electric Line, see Road Plans
- 8 Fiber optic Line, see Road Plans
- 9 12" dia Gas Line, see Road Plans
- 10 16" dia Gas Line, see Road Plans
- 11 Rock slope protection, see Road Plans
- 12 Drain Inlet, see Road Plans

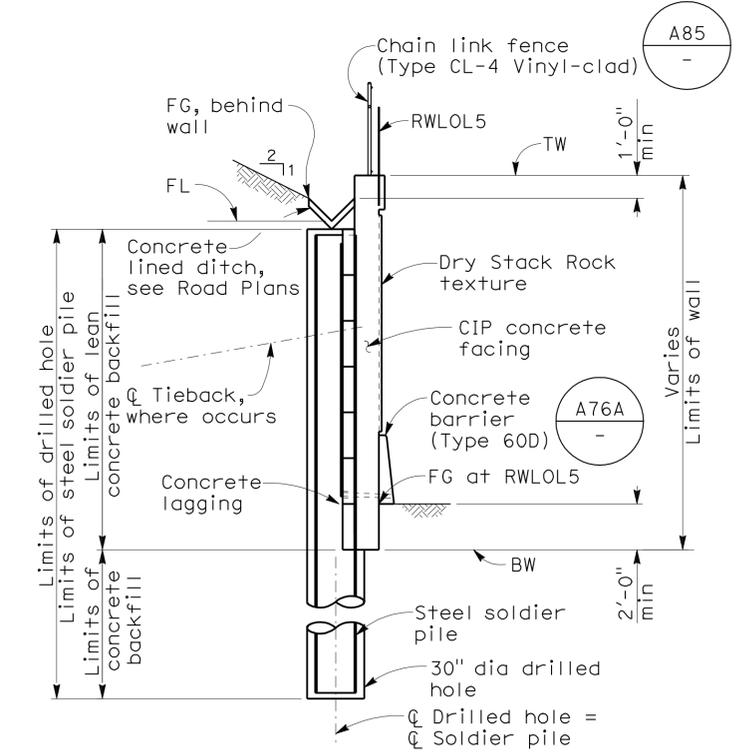
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	607	619
			10/03/11	DATE	
			4-16-12	PLANS APPROVAL DATE	
REGISTERED CIVIL ENGINEER ANTHONY P. NOTARO No. C51739 Exp. 6/30/12 CIVIL ENGINEER STATE OF CALIFORNIA					
TAM 750 LINDARO ST, SUITE 200 SAN RAFAEL, CA 94901 BIGGS CARDOSA ASSOCIATES INC. 865 THE ALAMEDA SAN JOSE, CALIFORNIA 95126					



**MIRRORED ELEVATION**  
1" = 20'



**PLAN**  
1" = 20'



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

**NOTES:**

1. This plan accurate for Retaining Wall No. 5 work only.
2. Top of wall (TW) and bottom of wall (BW) profiles are linear between points shown unless noted otherwise.
3. See Road Plans for Right-of-Way, Utility, Drainage, Roadway and Layout information not noted.
4. Install Concrete Barrier (Type 60D) full length of wall.
5. For Architectural details not shown, see 'AESTHETIC TREATMENT DETAILS' sheet
6. For index to plans, standard plan lists, general notes and quantities, see 'INDEX TO PLANS' sheet.

DESIGN OVERSIGHT  
10-14-11  
SIGN OFF DATE  
Tracy L. Bertram

DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING
DETAILS	BY G. JEYARAMAN	CHECKED J. VISAYA
QUANTITIES	BY P. GONGIDI	CHECKED K. CRUZ

LOAD FACTOR DESIGN	BY G. JEYARAMAN	CHECKED S. MOYLES
LAYOUT	BY G. JEYARAMAN	CHECKED S. MOYLES
SPECIFICATIONS	BY A. NOTARO	PLANS AND SPECS COMPARED S. MOYLES

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

ANTHONY P. NOTARO  
PROJECT ENGINEER

BRIDGE NO.	27E0031
POST MILES	25.5

**RETAINING WALL No. 5 GENERAL PLAN**

DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: 0716  
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)		SHEET	OF
7/1/10	3/2/11	1	13

FILE => 27e0031-a-gp01.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

2008100ERT 10:05 DATE PLOTTED => 16-APR-2012 USERNAME => s124496

**GENERAL NOTES  
WORKING STRESS DESIGN**

DESIGN: Bridge Design Specifications April 2000  
(1996 AASHTO with Interims and Revisions by Caltrans)

LIVE LOADING: Includes Uniform Lateral Pressure of  
72 psf due to surcharge

BUILDING SURCHARGE (RWLOL5 Sta 50+78 TO RWLOL5 Sta 52+76) 25 psf Uniform Lateral Pressure (2-Ton Truck)  
204 psf Uniform Lateral Pressure (Shelter and equipment Dead Load)

REINFORCED CONCRETE: ASTM Designation: A706  
fy = 60,000 psi fs = 24,000 psi  
f'c = 3600 psi fc = 1440 psi  
n = 8 n = 10

PRECAST CONCRETE LAGGING: fy = 60,000 psi  
f'c = 5000 psi

STRUCTURAL STEEL: Steel Piles: ASTM Designation: A992/A992M, Grade 50  
Plates: ASTM Designation: A709/A709M, Grade 36  
Welded Headed Studs: ASTM Designation: A108 and AASHTO/AWS D1.5

SOIL PARAMETERS: Unit weight ( $\gamma$ ) = 135 pcf  
Cohesion = 100 psf  
Active Earth Pressure Coeff (Ka) = 0.41 (2:1 backslope)  
Passive Earth Pressure Coeff (Kp) = 9.0  
Passive Arching Capability = 2.0  
Effective Angle of Internal Friction ( $\phi'$ ) = 36°

PRESTRESSING STEEL: Bars: ASTM Designation: A722 Type II  
Strands: ASTM Designation: A416  
T = Design force per tieback  
f pu = Minimum tensile strength of prestressing steel in tieback tendon (ksi)  
As (min) = Minimum cross sectional area of prestressing steel in tieback tendon (sq in)  
As (min) =  $\frac{1.5 T}{0.75 f pu}$   
T = See 'TIEBACK DATA TABLE'

See 'LOG OF TEST BORINGS' sheets for additional soil classifications and parameters

**RETAINING WALL NO. 5, BR# 27E0031**

**QUANTITIES**

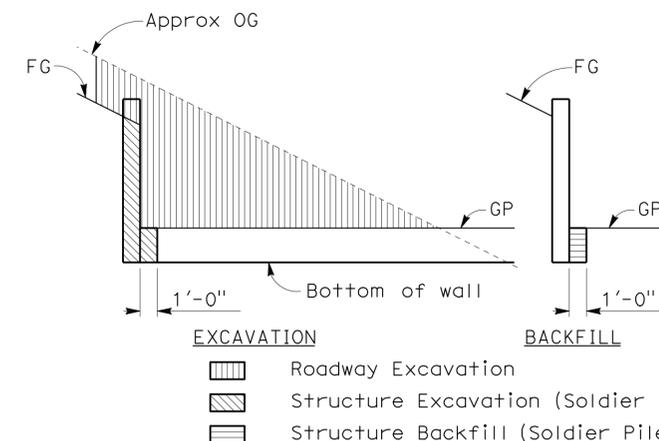
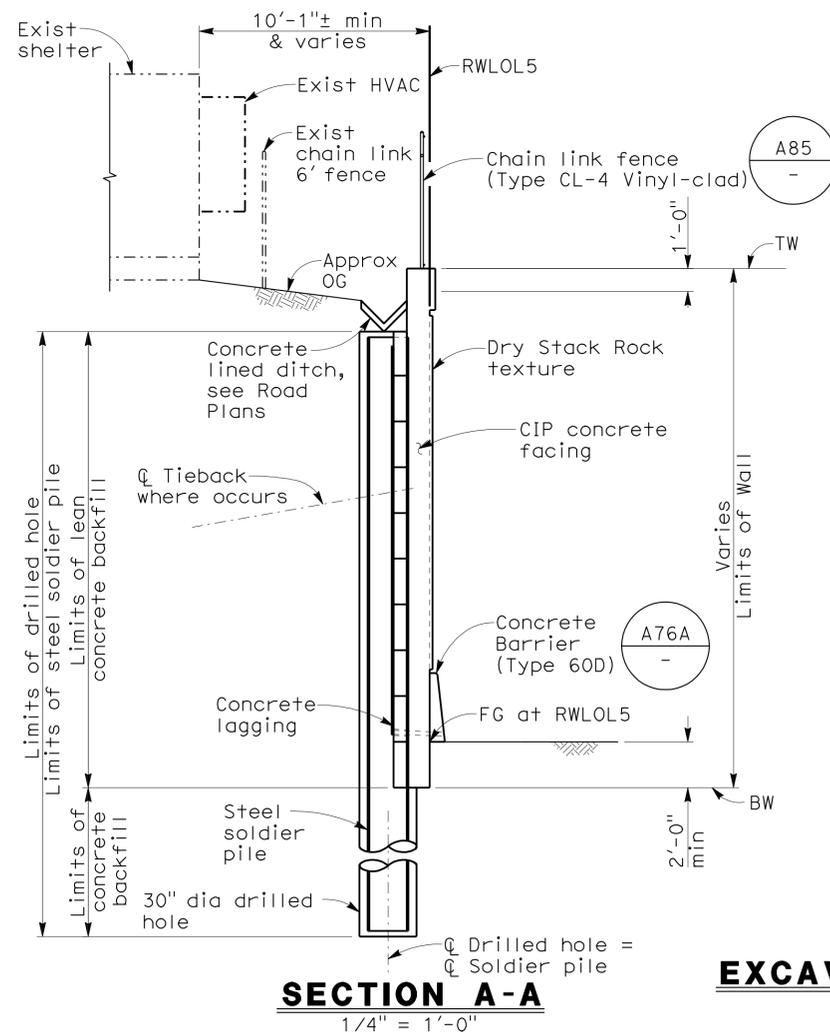
ROCK EXCAVATION (CONTROLLED BLASTING)	42	CY
STRUCTURE EXCAVATION (SOLDIER PILE WALL) (RW5)	125	CY
STRUCTURE BACKFILL (SOLDIER PILE WALL)	41	CY
CONCRETE BACKFILL	64	CY
LEAN CONCRETE BACKFILL	92	CY
GROUND ANCHOR	27	EA
STEEL SOLDIER PILING (W21 X 44)	96	LF
STEEL SOLDIER PILING (W21 X 68)	258	LF
STEEL SOLDIER PILING (2 W18 X 35)	493	LF
30" DRILLED HOLE	846	LF
STRUCTURAL CONCRETE, RETAINING WALL	137	CY
ARCHITECTURAL TREATMENT	1,798	SQFT
ANTI-GRAFFITI COATING	2,620	SQFT
CONCRETE LAGGING (TYPE A)	2,990	SQFT
BAR REINFORCING STEEL (RETAINING WALL)	24,526	LB
CHAIN LINK FENCE (TYPE CL-4, VINYL-CLAD)	273	LF
CONCRETE BARRIER (TYPE 60D)	273	LF

**INDEX TO PLANS**

SHEET NO.	TITLE
1	GENERAL PLAN
2	INDEX TO PLANS
3	RETAINING WALL LAYOUT No. 1
4	RETAINING WALL LAYOUT No. 2
5	RETAINING WALL DETAILS No. 1
6	RETAINING WALL DETAILS No. 2
7	RETAINING WALL DETAILS No. 3
8	AESTHETIC TREATMENT DETAILS No. 1
9	AESTHETIC TREATMENT DETAILS No. 2
10	LOG OF TEST BORINGS 1 OF 4
11	LOG OF TEST BORINGS 2 OF 4
12	LOG OF TEST BORINGS 3 OF 4
13	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)
RSP A76A	CONCRETE BARRIER TYPE 60
RSP A85	CHAIN LINK FENCE
BO-3	BRIDGE DETAILS



NOTE: Rock excavation (controlled blasting) assumed at 25% of structure excavation (soldier pile wall)

**LIMITS OF PAYMENT FOR STRUCTURE EXCAVATION AND BACKFILL - SOLDIER PILE WALL**

No Scale

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	608	619
			DATE	10/03/11	
			REGISTERED CIVIL ENGINEER	ANTHONY P. NOTARO	
			PLANS APPROVAL DATE	4-16-12	
			No.	C51739	
			Exp.	6/30/12	
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.					
TAM 750 LINDARO ST, SUITE 200 SAN RAFAEL, CA 94901					
BIGGS CARDOSA ASSOCIATES INC. 865 THE ALAMEDA SAN JOSE, CALIFORNIA 95126					

**NOTES:**

- For 'TIEBACK DATA TABLE' see 'RETAINING WALL LAYOUT No. 1' sheet
- For 'PILE DATA TABLE' see 'RETAINING WALL LAYOUT No. 1' & 'RETAINING WALL LAYOUT No. 2' sheets

**DATUM NOTES**

COORDINATES, BEARINGS & DISTANCES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM OF 1983 (CCS83), ZONE 3 (1991.35 HPGN). ALL DISTANCES ARE IN FEET. MULTIPLY DISTANCES BY 1.00004621 TO OBTAIN GROUND DISTANCES.

ELEVATION IS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SUPPLEMENTARY INFORMATION MAY BE OBTAINED FROM THE DISTRICT OFFICE, SURVEYS BRANCH OR RIGHT OF WAY ENGINEERING BRANCH, 111 GRAND AVENUE, OAKLAND, CALIFORNIA.

**BENCH MARK**

BM GPS30 FOUND 1" IRON PLASTIC PLUG AT NORTHBOUND SHOULDER OF HIGHWAY 101 AT THE BEGINNING OF OFFRAMP TO ATHERTON AVENUE/SAN MARIN DRIVE. THE VALUES FOR GPS30 WERE PROVIDED BY CALTRANS PER JOB No. 00071, MRN-101, PM18.6/23.0 EA 8200K, JUNE 27, 2000. N 2234473.120 E 5967838.30 ELEVATION = 17.98

DESIGN OVERSIGHT  
10-14-11  
SIGN OFF DATE

DESIGN BY G. JEYARAMAN  
DETAILS BY G. JEYARAMAN  
QUANTITIES BY P. GONGIDI

CHECKED G. KENNING  
CHECKED J. VISAYA  
CHECKED K. CRUZ

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

BRIDGE NO.  
27E0031  
POST MILES  
25.5

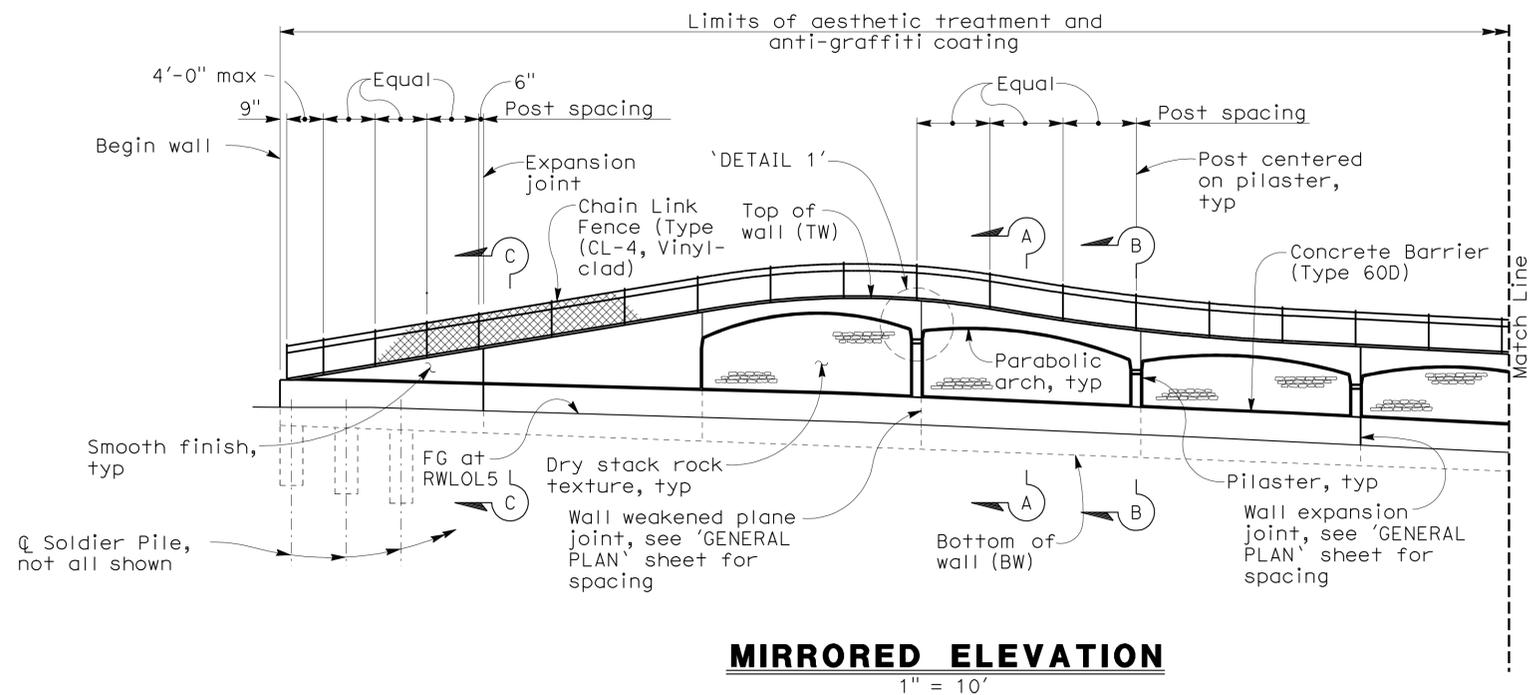
**RETAINING WALL No. 5**  
**INDEX TO PLANS**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
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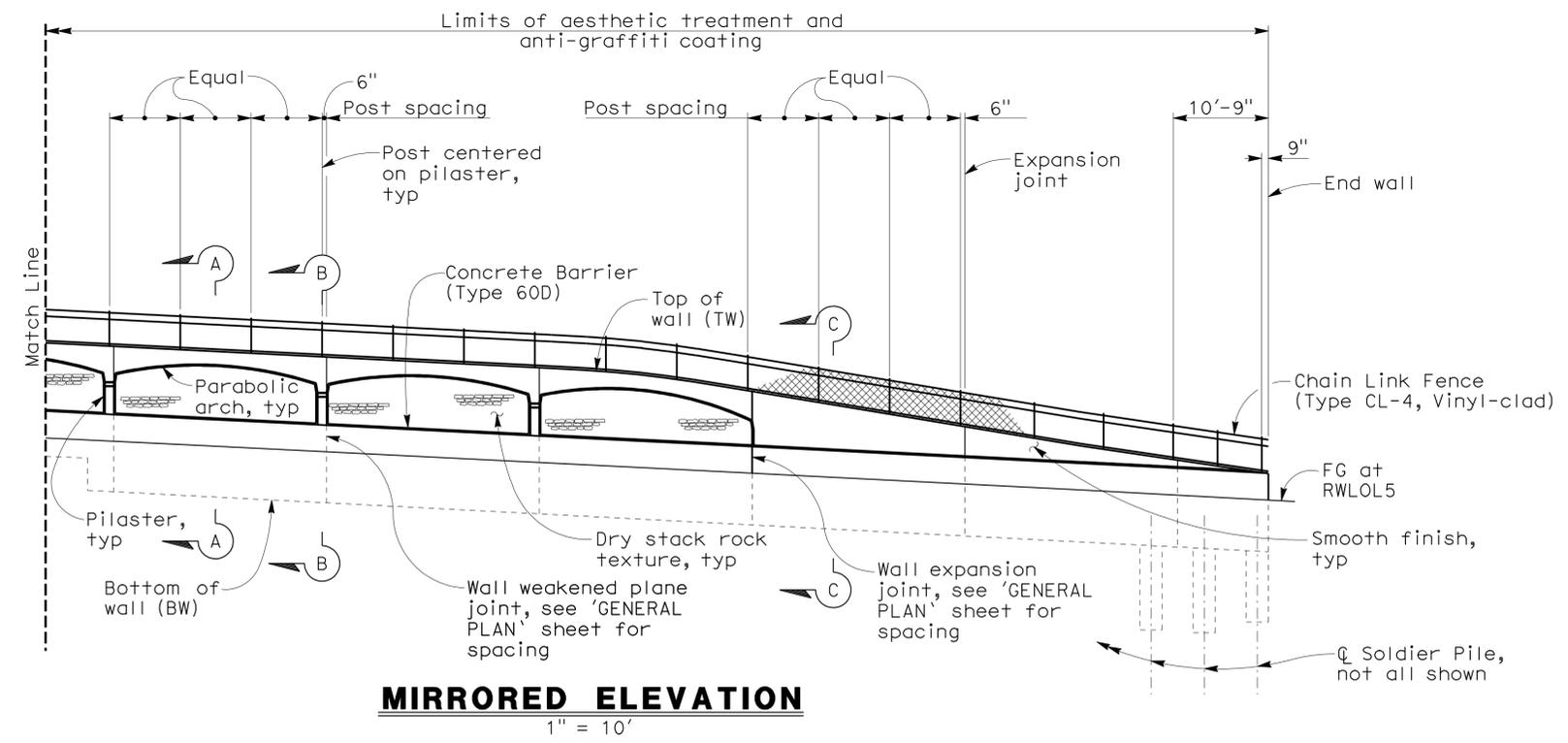
10/03/11  
REGISTERED CIVIL ENGINEER DATE  
4-16-12  
PLANS APPROVAL DATE  
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750 LINDARO ST, SUITE 200  
SAN RAFAEL, CA 94901  
BIGGS CARDOSA ASSOCIATES INC.  
865 THE ALAMEDA  
SAN JOSE, CALIFORNIA 95126



NOTE:  
For 'SECTION A-A', 'SECTION B-B', 'SECTION C-C' and 'DETAIL 1', see 'AESTHETIC TREATMENT DETAILS No. 2' sheet



DESIGN OVERSIGHT Tracy L. Bertram  
10-14-11  
SIGN OFF DATE

DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING
DETAILS	BY G. JEYARAMAN	CHECKED J. VISAYA
QUANTITIES	BY P. GONGIDI	CHECKED K. CRUZ

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

ANTHONY P. NOTARO  
PROJECT ENGINEER

BRIDGE No.	27E0031
POST MILES	25.5

**RETAINING WALL No. 5**  
**AESTHETIC TREATMENT DETAILS No. 1**

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



UNIT: 0716  
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)					SHEET	OF
7/1/10	3/2/11	5/2/11	8/18/11	11/03/11	3	13

FILE => 27e0031-i-rw-aes1.dgn

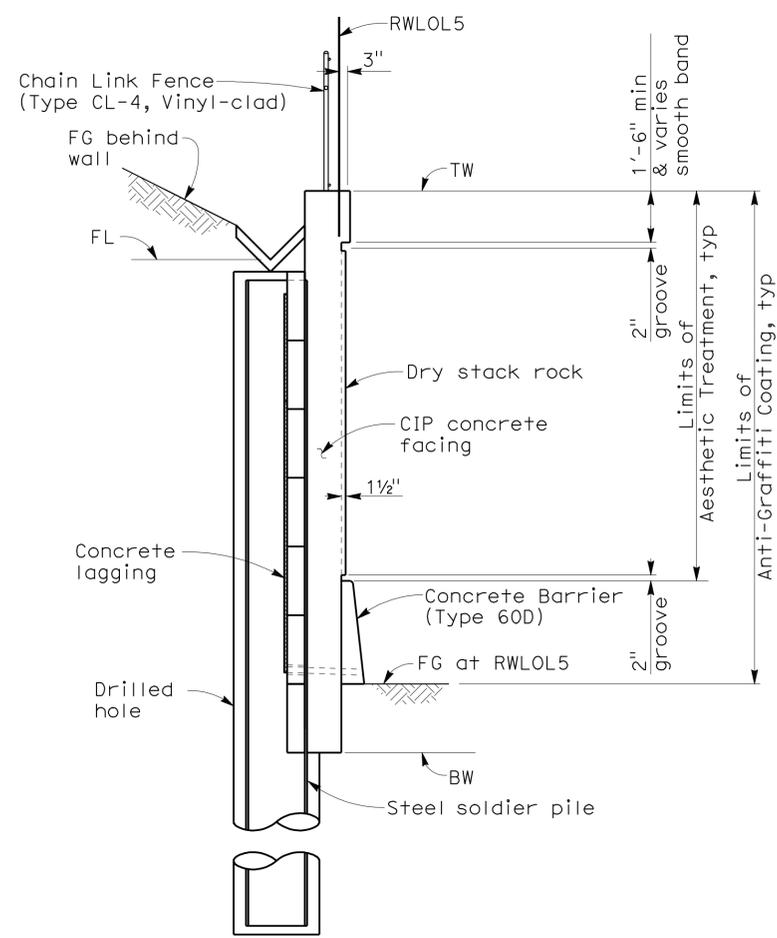
CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

2008100 (2008100ER8) USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:05

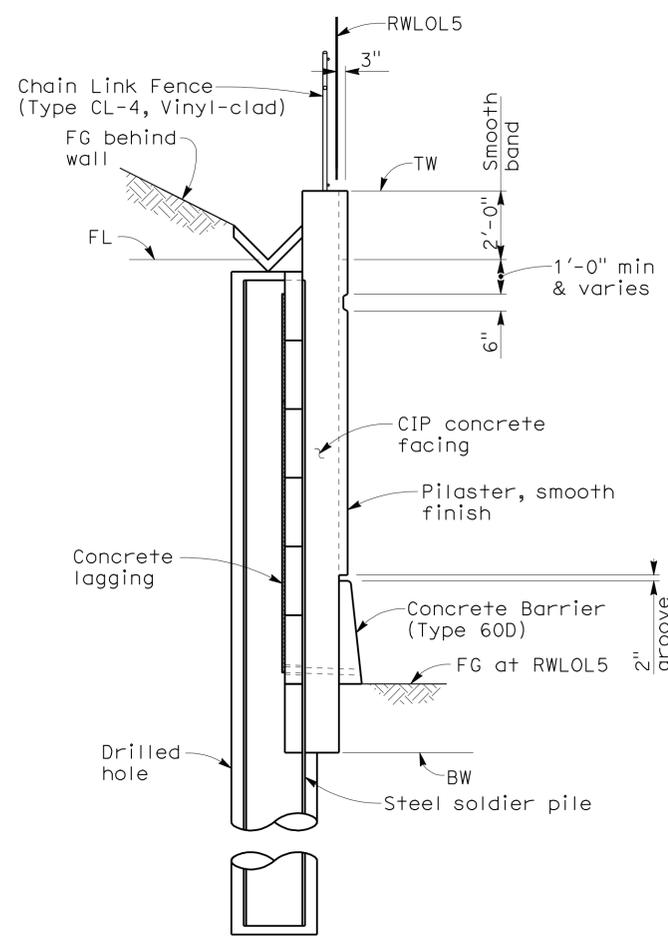
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	610	619

10/03/11  
REGISTERED CIVIL ENGINEER DATE  
4-16-12  
PLANS APPROVAL DATE  
No. C51739  
Exp. 6/30/12  
REGISTERED PROFESSIONAL ENGINEER  
ANTHONY P. NOTARO  
CIVIL  
STATE OF CALIFORNIA  
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

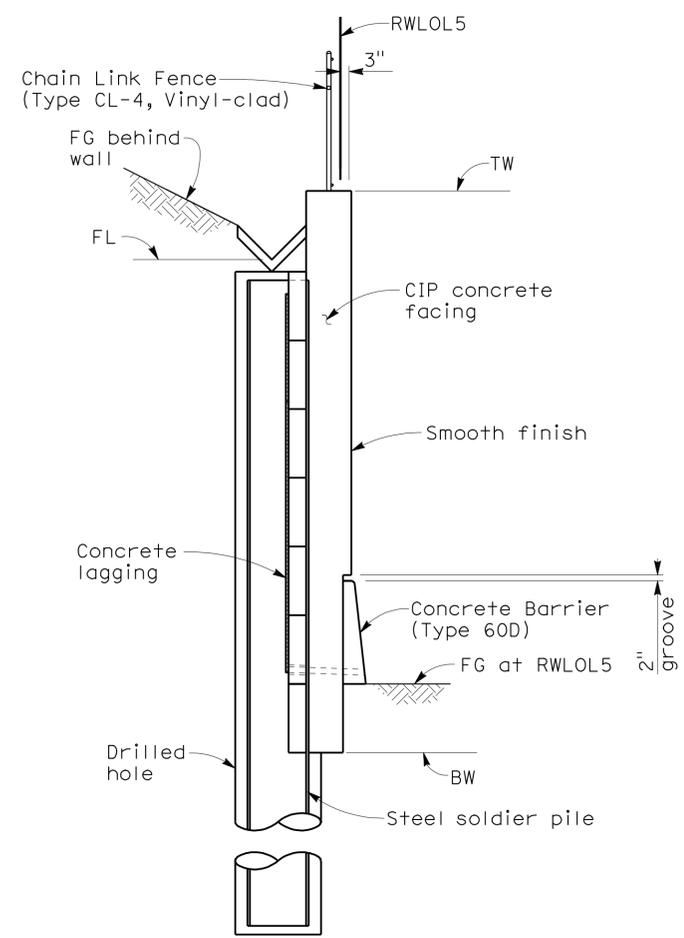
TAM  
750 LINDARO ST, SUITE 200  
SAN RAFAEL, CA 94901  
BIGGS CARDOSA ASSOCIATES INC.  
865 THE ALAMEDA  
SAN JOSE, CALIFORNIA 95126



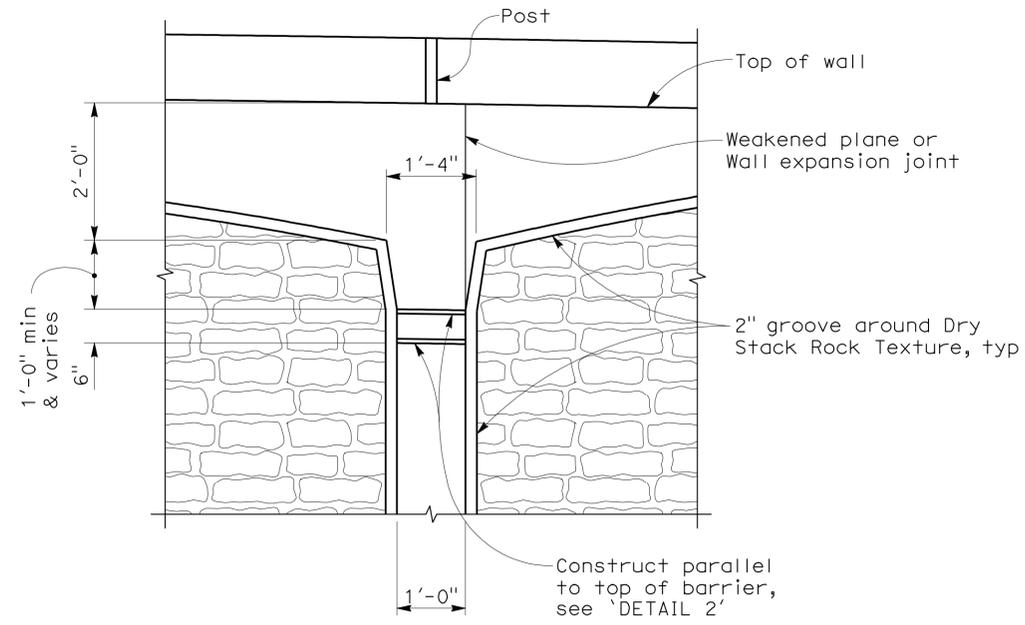
**SECTION A-A**  
3/8" = 1'-0"



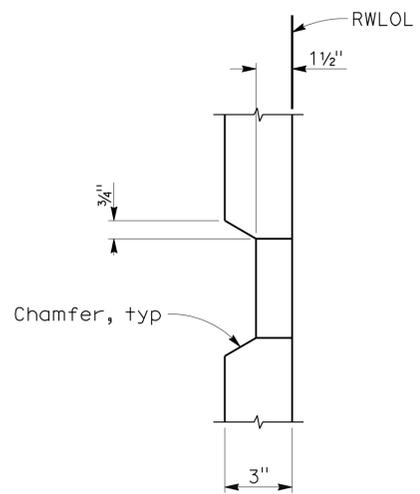
**SECTION B-B**  
3/8" = 1'-0"



**SECTION C-C**  
3/8" = 1'-0"



**DETAIL 1**  
3/4" = 1'-0"



**DETAIL 2**  
3" = 1'-0"

DESIGN OVERSIGHT  
Tracy L. Bertram  
10-14-11  
SIGN OFF DATE

DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING
DETAILS	BY G. JEYARAMAN	CHECKED J. VISAYA
QUANTITIES	BY P. GONGIDI	CHECKED K. CRUZ

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

ANTHONY P. NOTARO  
PROJECT ENGINEER

BRIDGE NO.	27E0031
POST MILES	25.5

**RETAINING WALL No. 5**  
**AESTHETIC TREATMENT DETAILS No. 2**

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: 0716  
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 4 OF 13
	7/1/10 3/2/11 5/2/11 8/18/11 10/3/11	

FILE => 27e0031-i-rw-aes2.dgn CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

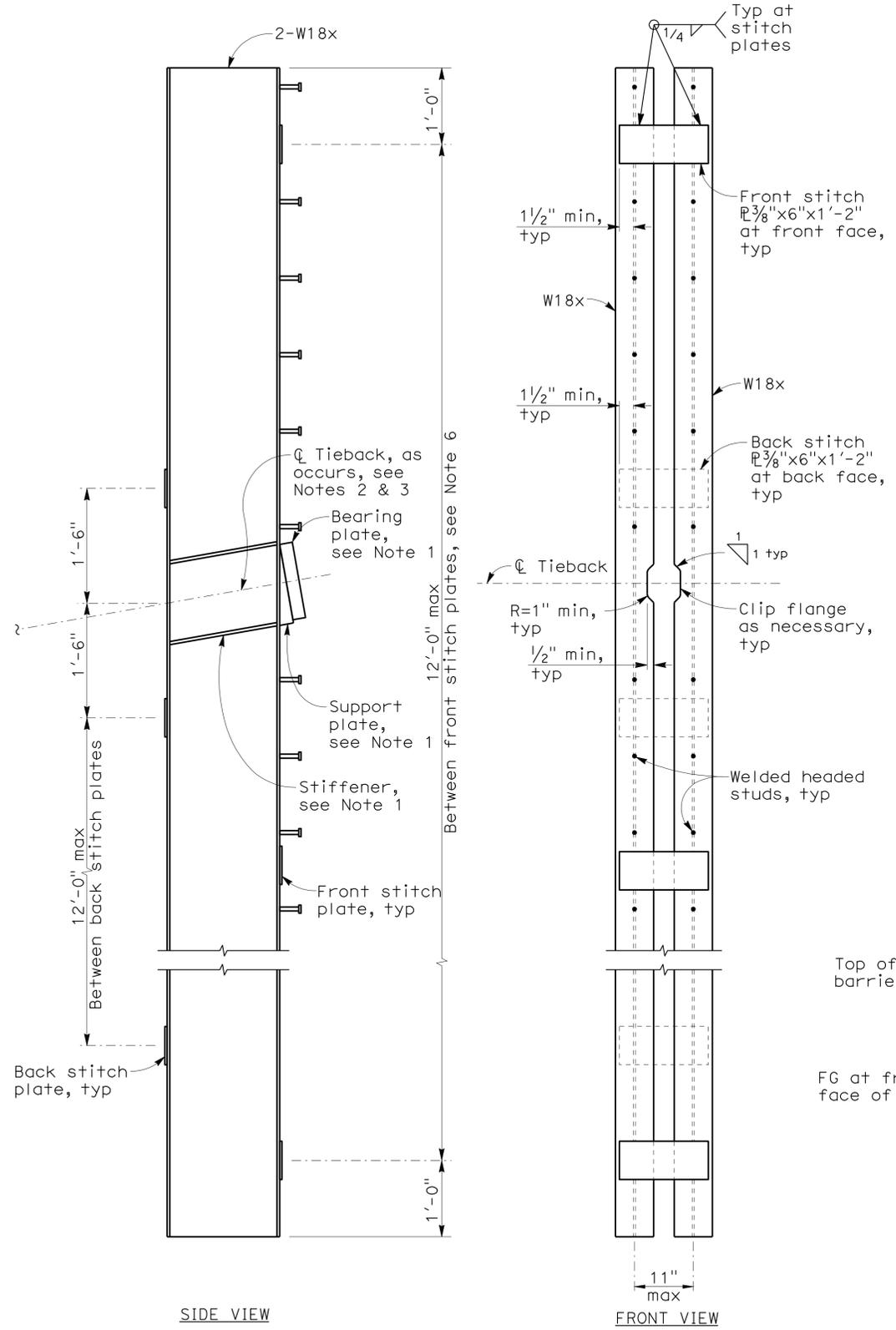
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
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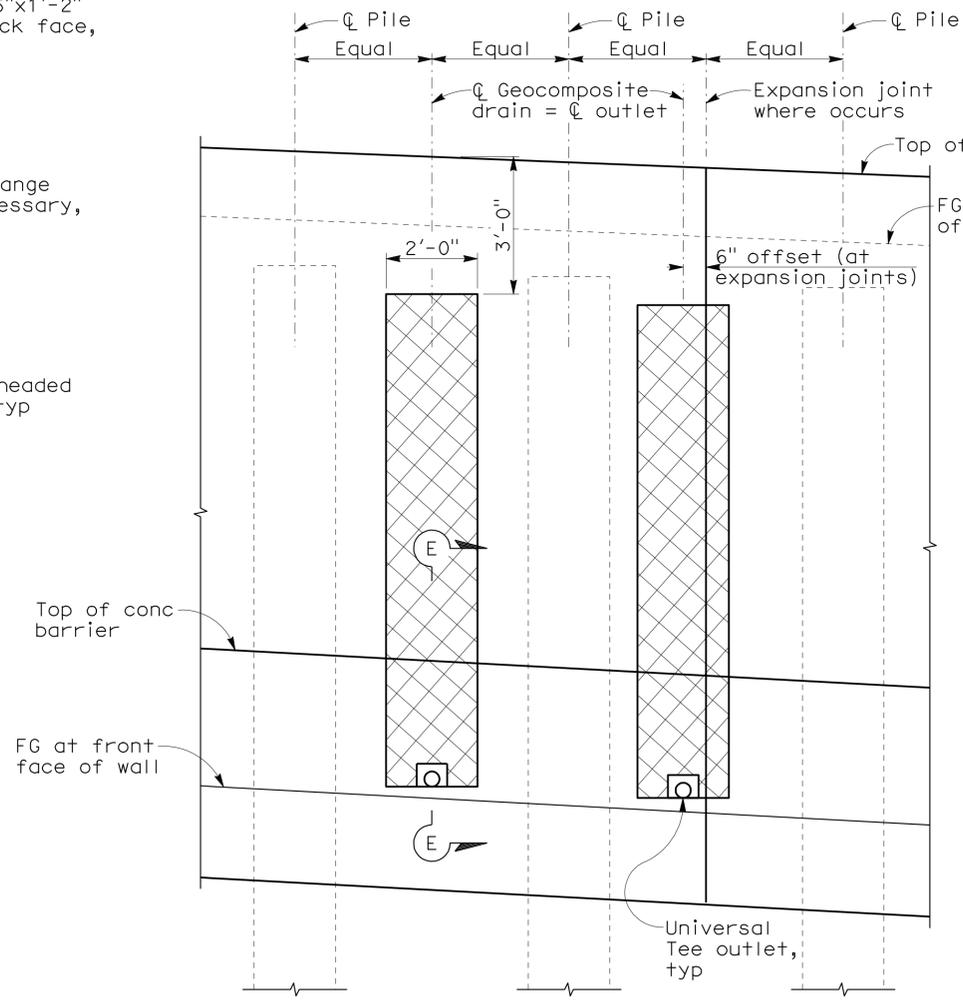
10/03/11  
 REGISTERED CIVIL ENGINEER DATE  
 4-16-12  
 PLANS APPROVAL DATE  
 REGISTERED PROFESSIONAL ENGINEER  
 ANTHONY P. NOTARO  
 No. C51739  
 Exp. 6/30/12  
 STATE OF CALIFORNIA  
 CIVIL  
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

TAM  
 750 LINDARO ST, SUITE 200  
 SAN RAFAEL, CA 94901  
 BIGGS CARDOSA ASSOCIATES INC.  
 865 THE ALAMEDA  
 SAN JOSE, CALIFORNIA 95126

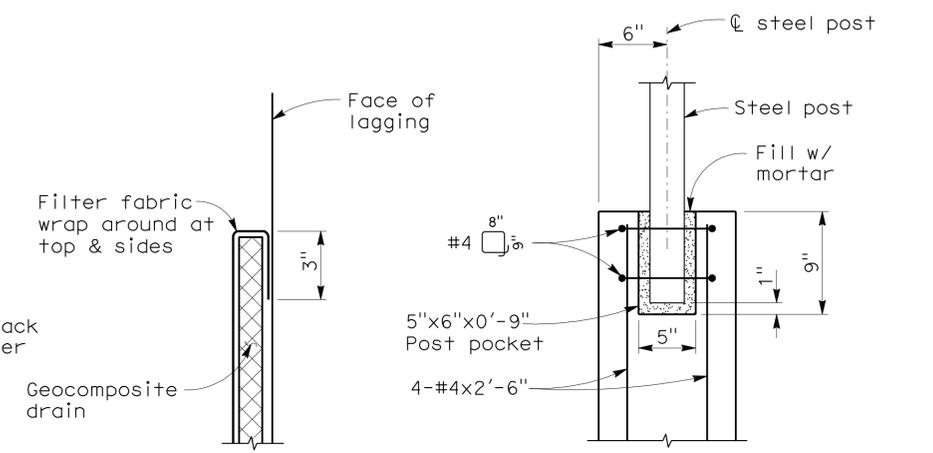


**TIEBACK PILE DETAILS**  
 NO SCALE

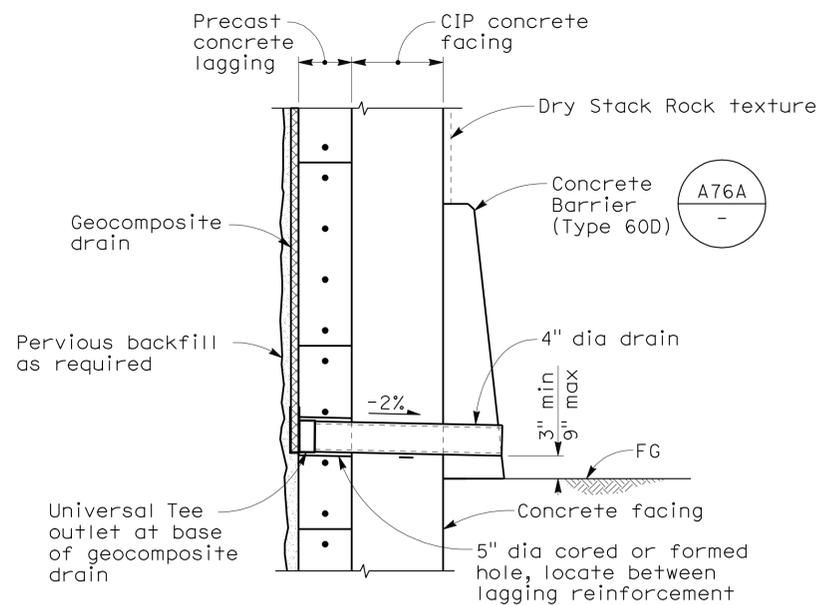
- NOTES:**
- Bearing plate, support plate and stiffeners to be designed by Contractor
  - For Tieback Force see 'GENERAL NOTES' on 'INDEX TO PLANS' sheet
  - For tieback offset from top of walls, see 'RETAINING WALL DETAILS No. 1' sheet
  - For tieback angle of inclination, see 'RETAINING WALL DETAILS No. 1' sheet
  - Drilled hole diameter for tieback shall be determined by Contractor
  - Provide 1'-6" min between centerline of front stitch plate and centerline of tieback
  - Contractor shall verify all controlling dimensions prior to fabrication



**PART ELEVATION - WALL DRAIN**  
 1/2" = 1'-0"



**DETAIL 1**  
 3" = 1'-0"  
**DETAIL 2**  
 1/2" = 1'-0"



**SECTION E-E**  
 NO SCALE

DESIGN OVERSIGHT  
 Tracy L. Bertram  
 10-14-11  
 SIGN OFF DATE

DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING
DETAILS	BY G. JEYARAMAN	CHECKED J. VISAYA
QUANTITIES	BY P. GONGIDI	CHECKED K. CRUZ

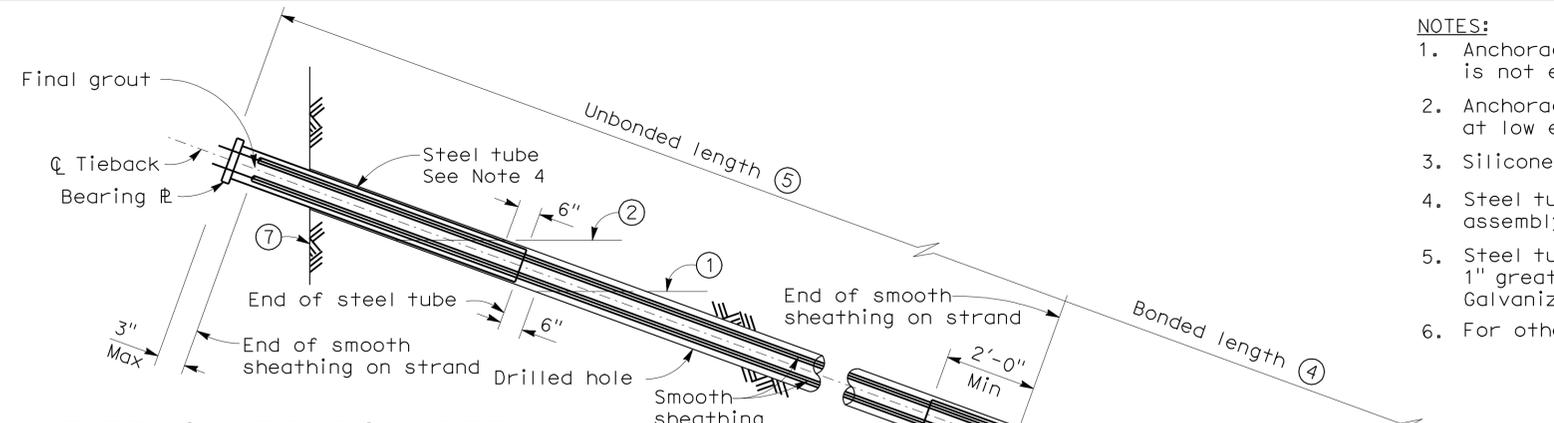
PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION  
 ANTHONY P. NOTARO  
 PROJECT ENGINEER

BRIDGE NO.	27E0031	<b>RETAINING WALL No. 5</b>
POST MILES	25.5	
<b>RETAINING WALL DETAILS No. 2</b>		

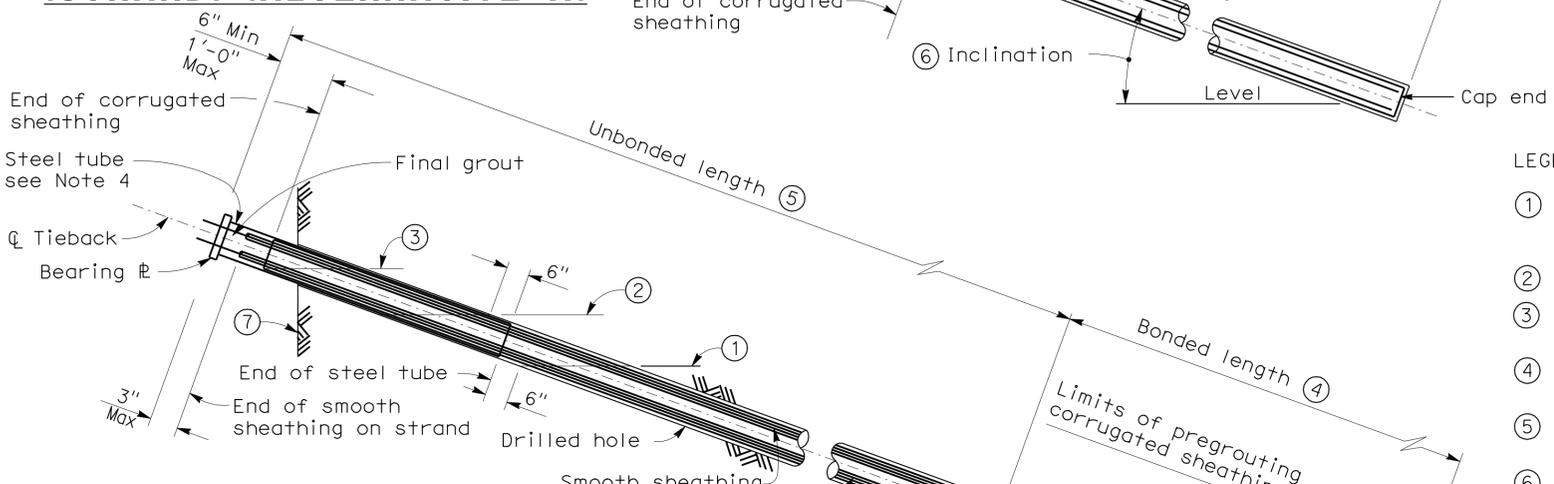
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	613	619
			DATE	10/03/11	
			REGISTERED CIVIL ENGINEER	ANTHONY P. NOTARO	
			PLANS APPROVAL DATE	4-16-12	
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.					
TAM 750 LINDARO STREET, SUITE 200 SAN RAFAEL, CA 94901					
BIGGS CARDOSA ASSOCIATES INC. 865 THE ALAMEDA SAN JOSE, CALIFORNIA 95126					

**NOTES:**

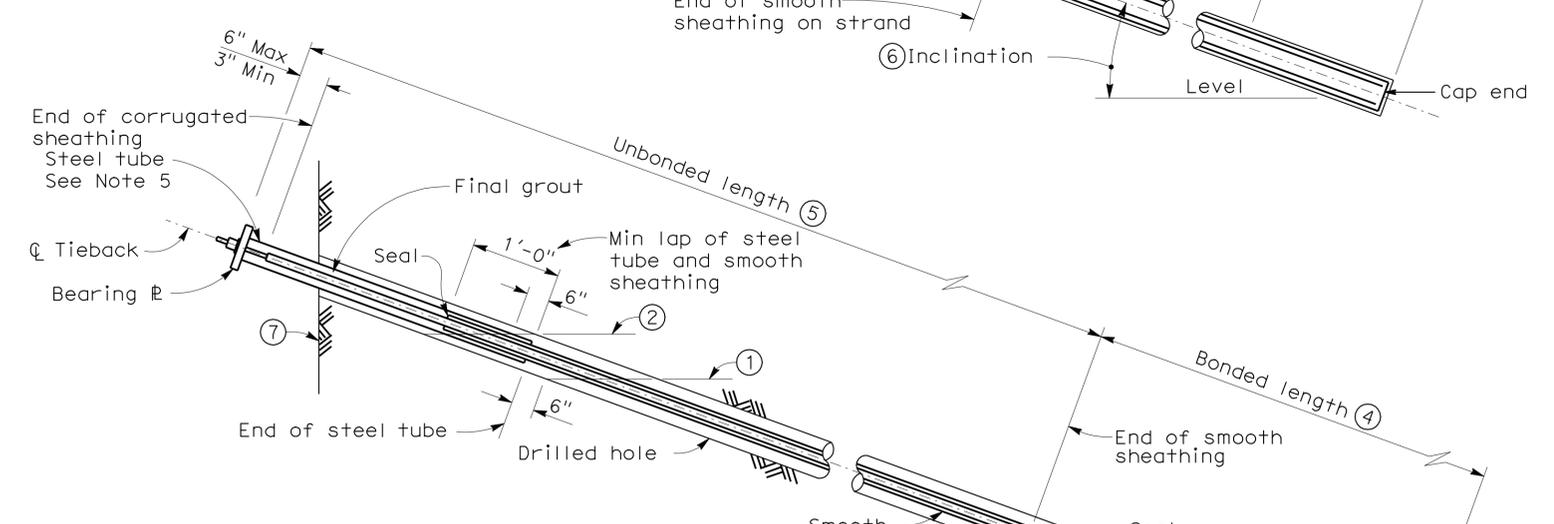
1. Anchorage enclosure shall only be used when anchor head assembly is not enclosed in concrete.
2. Anchorage enclosure shall have provisions to allow injecting grout at low end and venting at high end. Galvanize after fabrication.
3. Silicone sealant to cover full width of flange.
4. Steel tube welded to bearing plate (Min thickness = 1/4"). Galvanize assembly after fabrication
5. Steel tube welded to bearing plate inside diameter of steel tube to be 1" greater than outside diameter of smooth sheathing (Min thickness = 1/4") Galvanize assembly after fabrication.
6. For other wall details, see Structural Plans.



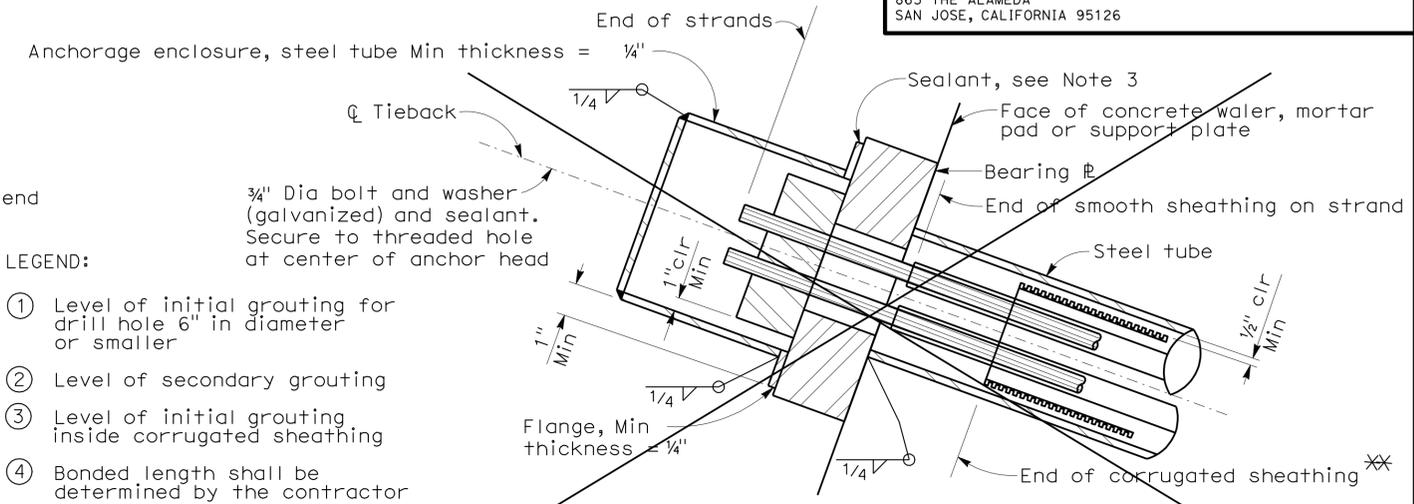
**TIEBACK TENDON DETAIL (STRAND)-(ALTERNATIVE A)**



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



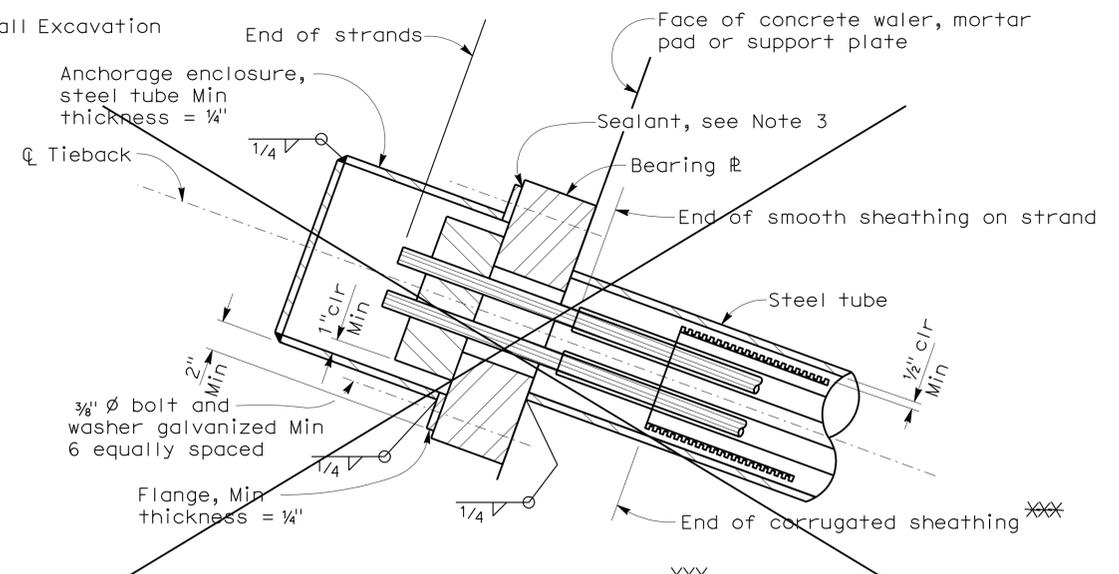
**TIEBACK TENDON DETAIL (BARS)**



**ALTERNATIVE X**

**LEGEND:**

- ① Level of initial grouting for drill hole 6" in diameter or smaller
- ② Level of secondary grouting
- ③ Level of initial grouting inside corrugated sheathing
- ④ Bonded length shall be determined by the contractor
- ⑤ For unbonded length, see Project Plans
- ⑥ For inclination, see Project Plans
- ⑦ Face of Wall Excavation



**ALTERNATIVE Y**

**ANCHORAGE ENCLOSURE DETAILS**

STANDARD DRAWING				Released by	
RELEASE DATE	DESIGN BY	CHECKED	BY	RELEASED BY	
9/15/08	S. SAHNS	R.C. WHITTEN			
FILE NO.	DETAILS BY	CHECKED			
xs12-0406	S. SAHNS/D. RADLEY				
	SUBMITTED BY	DRAWING DATE		OFFICE CHIEF	
	P. CHUNG				

① Detail not used
-------------------

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO. 27E0030  
POST MILE 25.5

RETAINING WALL No. 5  
RETAINING WALL DETAILS No. 3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	614	619

10/03/11  
 REGISTERED CIVIL ENGINEER DATE  
 ANTHONY P. NOTARO  
 No. C51739  
 Exp. 6/30/12  
 STATE OF CALIFORNIA  
 CIVIL ENGINEER

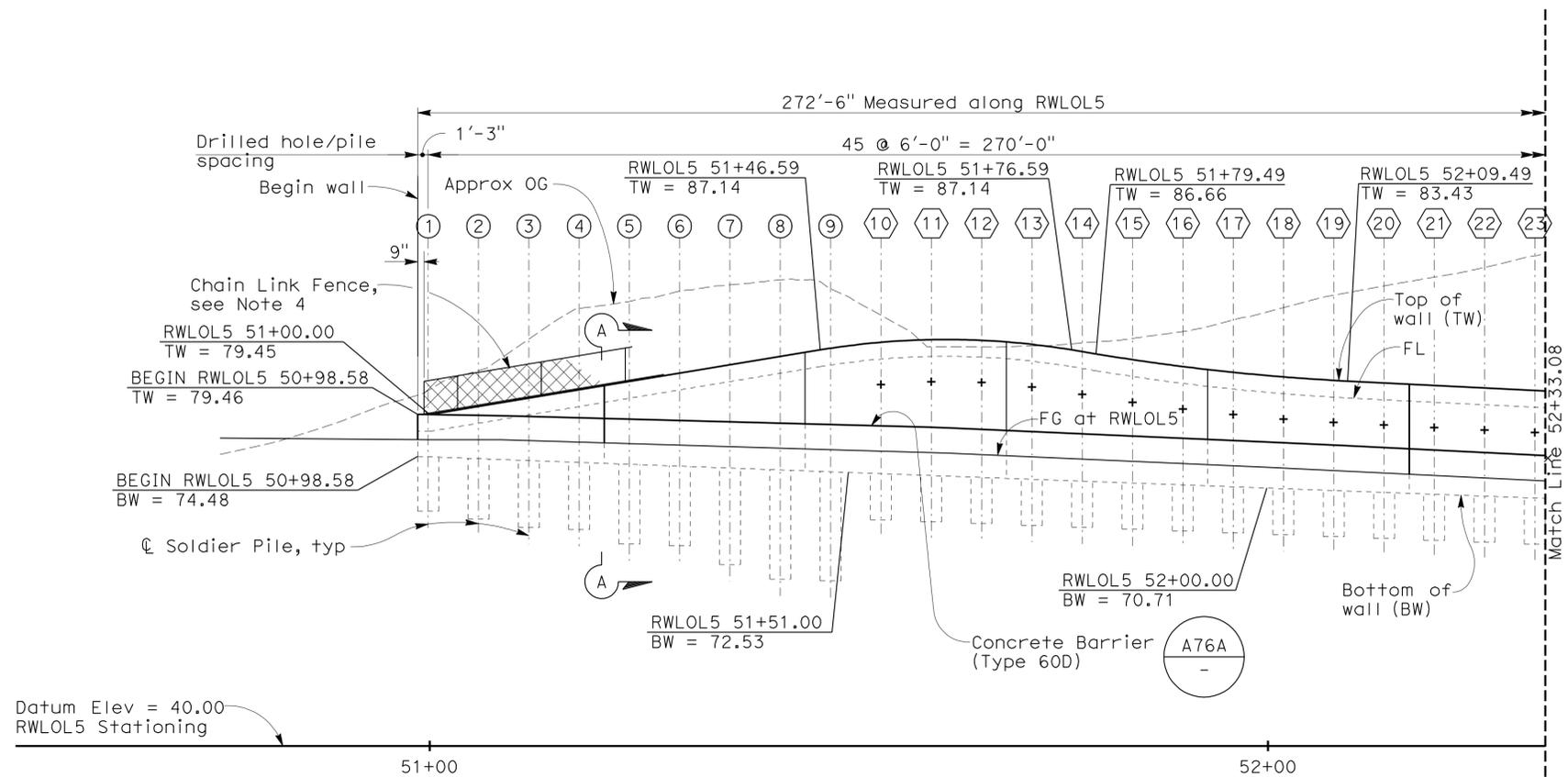
4-16-12  
 PLANS APPROVAL DATE  
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 TAM  
 750 LINDARO ST, SUITE 200  
 SAN RAFAEL, CA 94901  
 BIGGS CARDOSA ASSOCIATES INC.  
 865 THE ALAMEDA  
 SAN JOSE, CALIFORNIA 95126

**LEGEND:**

- ① Denotes soldier pile no., see 'PILE DATA TABLE'
- ⑮ Denotes tieback pile no., see 'PILE DATA TABLE'
- + Denotes tieback location. See 'TYPICAL SECTION' on 'RETAINING WALL DETAILS No. 1' sheet

**NOTES:**

1. For 'SECTION A-A' see 'RETAINING WALL DETAILS No. 1' sheet
2. For locations of wall expansion and weakened plane joints, see 'GENERAL PLAN' sheet
3. For architectural details not shown, see 'AESTHETIC TREATMENT DETAILS No. 1' & 'AESTHETIC TREATMENT DETAILS No. 2' sheets
4. Install chain link fence full length of wall
5. Pile cut-off elevation shown is approximate. Verify with grading shown on Road Plans



**MIRRORED ELEVATION**  
 1" = 10'

**PILE DATA TABLE**

Pile No.	STATION ALONG 'RWL0L5' LINE	PILE SECTION	TOP OF WALL (TW) ELEVATION	PILE CUT-OFF ELEVATION	PILE TIP ELEVATION
BEG WALL	50+98.58		79.22		
①	50+99.83	W21x44	79.43	76.90	67.93
②	51+05.83	W21x44	80.42	77.90	67.71
③	51+11.83	W21x44	81.41	78.90	65.99
④	51+17.83	W21x44	82.40	79.90	65.76
⑤	51+23.83	W21x44	83.39	80.90	64.04
⑥	51+29.83	W21x44	84.38	81.90	63.82
⑦	51+35.83	W21x68	85.37	82.90	61.59
⑧	51+41.83	W21x68	86.36	83.90	59.87
⑨	51+47.83	W21x68	87.34	84.80	59.65
⑩	51+53.83	(2)W18x35	88.05	85.50	66.92
⑪	51+59.83	(2)W18x35	88.36	85.90	66.70
⑫	51+65.83	(2)W18x35	88.28	85.80	66.48
⑬	51+71.83	(2)W18x35	87.80	85.30	66.26
⑭	51+77.83	(2)W18x35	86.94	84.40	66.03
⑮	51+83.83	(2)W18x35	85.98	83.50	65.81
⑯	51+89.83	(2)W18x35	85.16	82.70	65.59
⑰	51+95.83	(2)W18x35	84.48	82.00	65.36
⑱	52+01.83	(2)W18x35	83.93	81.40	65.14
⑲	52+07.83	(2)W18x35	83.52	81.00	64.92
⑳	52+13.83	(2)W18x35	83.22	80.70	64.69
㉑	52+19.83	(2)W18x35	82.92	80.40	64.47
㉒	52+25.83	(2)W18x35	82.62	80.10	64.25
㉓	52+31.83	(2)W18x35	82.32	79.80	64.02
MAT LINE	52+33.08		82.26		

**TIEBACK DATA TABLE**

TIEBACK FORCE (kips)	TIEBACK OFFSET FROM TOP OF WALL 'a' (ft)	UNBONDED LENGTH (ft)
70	5'-0"	18'-0"

DESIGN OVERSIGHT  
 Tracy L. Bertram  
 10-14-11  
 SIGN OFF DATE

DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING
DETAILS	BY G. JEYARAMAN	CHECKED J. VISAYA
QUANTITIES	BY P. GONGIDI	CHECKED K. CRUZ

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

ANTHONY P. NOTARO  
 PROJECT ENGINEER

BRIDGE NO.	27E0031
POST MILES	25.5

**RETAINING WALL No. 5**  
**RETAINING WALL LAYOUT No. 1**

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: 0716  
 PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
10/3/11, 10/3/11, 10/3/11, 10/3/11	8	13

FILE => 27e0031-i-rw-1e01.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

2008100 (2008100E83) TIME PLOTTED => 16-APR-2012 USERNAME => s124496 DATE PLOTTED => 10:06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	615	619

10/03/11  
REGISTERED CIVIL ENGINEER DATE

4-16-12  
PLANS APPROVAL DATE

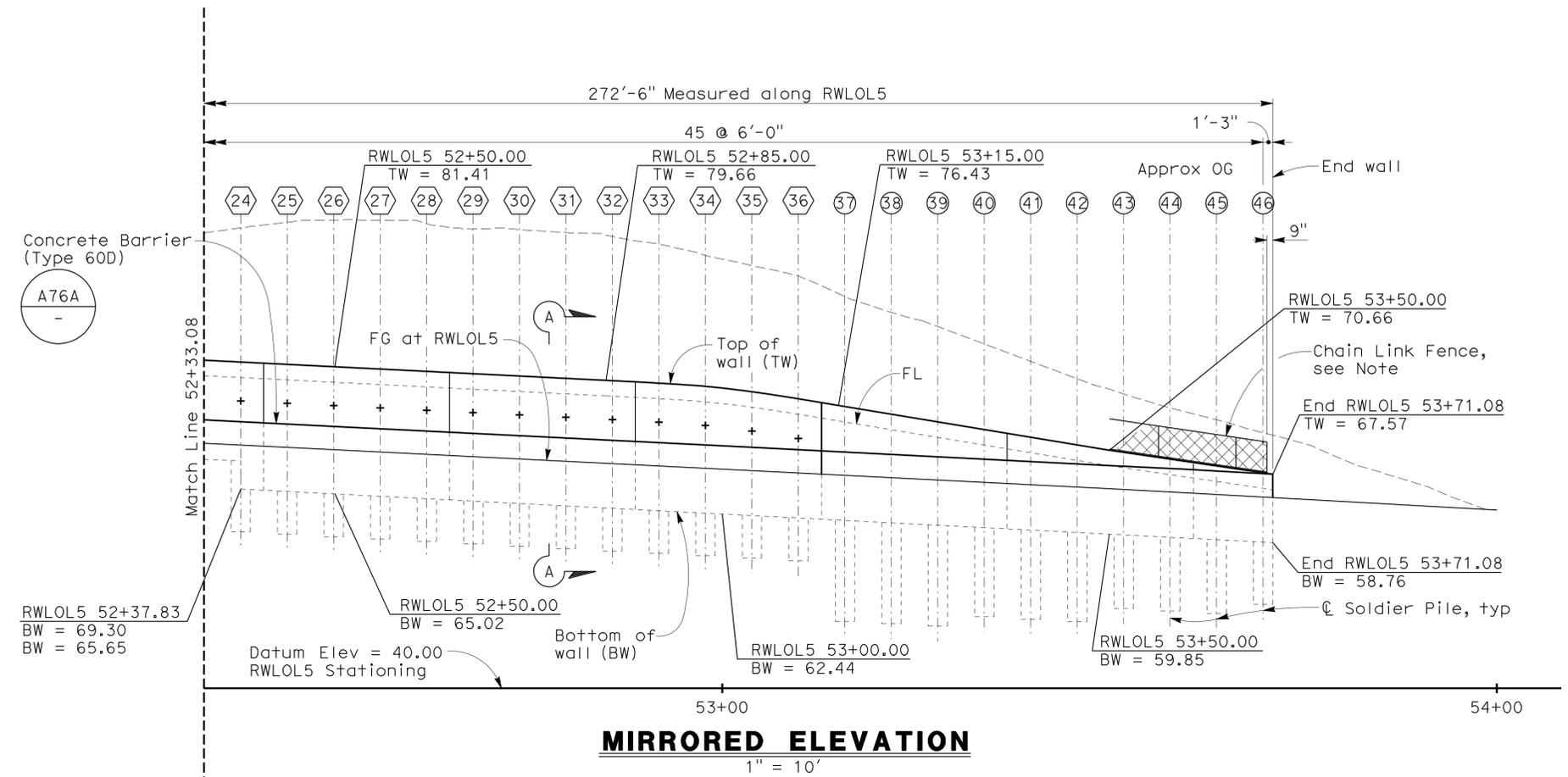
REGISTERED PROFESSIONAL ENGINEER  
ANTHONY P. NOTARO  
No. C51739  
Exp. 6/30/12  
CIVIL ENGINEER  
STATE OF CALIFORNIA

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865 THE ALAMEDA  
SAN JOSE, CALIFORNIA 95126

NOTE:  
For notes and legend, see 'RETAINING WALL LAYOUT No. 1' sheet



PILE DATA TABLE					
Pile No.	STATION ALONG 'RWLOL5' LINE	PILE SECTION	TOP OF WALL (TW) ELEVATION	PILE CUT-OFF ELEVATION	PILE TIP ELEVATION
MAT LINE	52+33.08		82.26		
(24)	52+37.83	(2)W18x35	82.02	79.50	60.15
(25)	52+43.83	(2)W18x35	81.72	79.20	59.84
(26)	52+49.83	(2)W18x35	81.42	78.90	59.53
(27)	52+55.83	(2)W18x35	81.12	78.60	59.22
(28)	52+61.83	(2)W18x35	80.82	78.30	58.91
(29)	52+67.83	(2)W18x35	80.52	78.10	58.60
(30)	52+73.83	(2)W18x35	80.22	77.70	58.29
(31)	52+79.83	(2)W18x35	79.92	77.40	57.98
(32)	52+85.83	(2)W18x35	79.62	77.10	57.67
(33)	52+91.83	(2)W18x35	79.23	76.70	57.36
(34)	52+97.83	(2)W18x35	78.70	76.20	57.05
(35)	53+03.83	(2)W18x35	78.04	75.50	56.74
(36)	53+09.83	(2)W18x35	77.24	74.70	56.43
(37)	53+15.83	W21x68	76.30	73.80	48.62
(38)	53+21.83	W21x68	75.31	72.80	48.31
(39)	53+27.83	W21x68	74.32	71.80	48.00
(40)	53+33.83	W21x68	73.33	70.80	49.19
(41)	53+39.83	W21x68	72.34	69.80	48.88
(42)	53+45.83	W21x68	71.35	68.80	48.57
(43)	53+51.83	W21x68	70.36	67.90	50.26
(44)	53+57.83	W21x68	69.37	66.90	49.95
(45)	53+63.83	W21x68	68.38	65.90	49.63
(46)	53+69.83	W21x44	67.39	64.90	50.82
END WALL	53+71.08		67.18		

DESIGN OVERSIGHT  
Tracy L. Bertram  
10-14-11  
SIGN OFF DATE

DESIGN	BY G. JEYARAMAN	CHECKED G. KENNING
DETAILS	BY G. JEYARAMAN	CHECKED J. VISAYA
QUANTITIES	BY P. GONGIDI	CHECKED K. CRUZ

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

ANTHONY P. NOTARO  
PROJECT ENGINEER

BRIDGE NO.  
27E0031  
POST MILES  
25.5

RETAINING WALL No. 5  
RETAINING WALL LAYOUT No. 2

DESIGN DETAIL SHEET (ENGLISH) (REV. 6-01-09)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: 0716  
PROJECT NUMBER & PHASE: 04000007331

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)				SHEET	OF
7/1/10	3/27/11	5/27/11	8/18/11	9	13

FILE => 27e0031-i-rw-1e02.dgn

CONTRACT NO.: 04-264074 PROJECT ID: 0400000733

2008100 (2008100ERR) TIME PLOTTED => 16-APR-2012 USERNAME => s124496 DATE PLOTTED => 10:06

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2010)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mirn	101	R23.2/27.1	616	619

10/3/11  
DATE

GEOLOGICAL PROFESSIONAL

4-16-12  
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
GARY PARIKH  
No. G.E. 666  
Exp. 12/31/11  
GEOLOGICAL  
STATE OF CALIFORNIA

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SAN RAFAEL, CALIFORNIA 94901

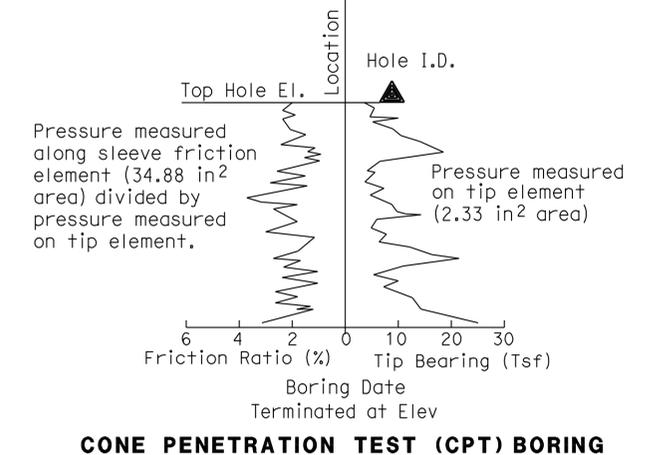
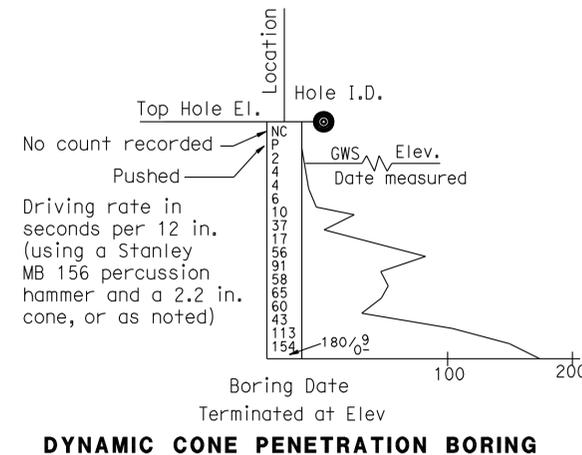
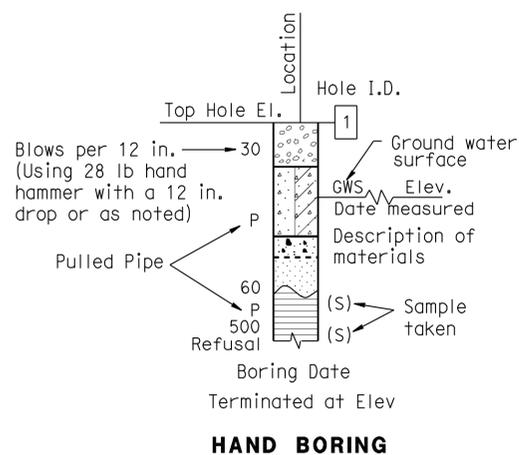
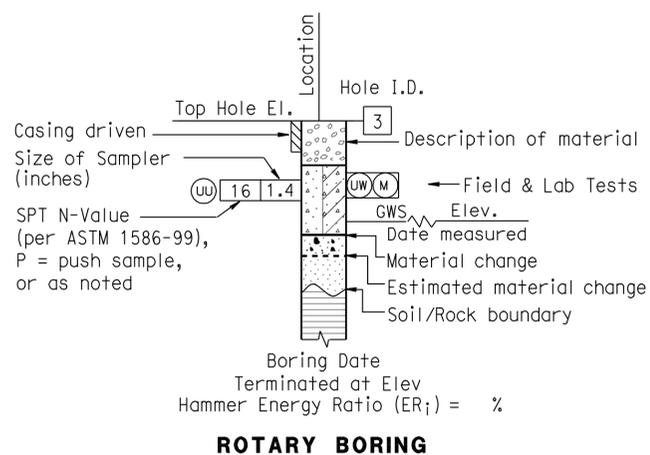
PARIKH CONSULTANTS, INC.  
2360 OUME DRIVE, SUITE A  
SAN JOSE, CA 95131

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)
	RW	Rotary drilled boring (conventional)
	RC	Rotary drilled with self-casing wire-line
	P	Rotary core with continuously-sampled, self-casing wire-line
	R	Rotary percussion boring (air)
	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



DESIGN OVERSIGHT  
Tracy L. Bertram  
10-14-11  
SIGN OFF DATE

DRAWN BY  
O. GOUTHIER  
CHECKED BY  
P. SIRCAR

S. DUDDU  
FIELD INVESTIGATION BY:  
DATE: JANUARY - FEBRUARY 2009

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

P. SIRCAR  
PROJECT ENGINEER

BRIDGE NO.  
27E0031  
POST MILES  
25.5

**RETAINING WALL No. 5**  
**LOG OF TEST BORINGS 1 OF 4**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	617	619

10/3/11  
DATE

GEOTECHNICAL PROFESSIONAL

4-16-12  
PLANS APPROVAL DATE

GARY PARIKH  
No. G.E. 666  
Exp. 12/31/11  
GEOTECHNICAL  
STATE OF CALIFORNIA

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750 LINDARO STREET, SUITE 200  
SAN RAFAEL, CALIFORNIA 94901

PARIKH CONSULTANTS, INC.  
2360 OUME DRIVE, SUITE A  
SAN JOSE, CA 95131

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

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)
(UU)	Unconfined Compression-Rock (ASTM D 2938)
(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	

 DESIGN OR BRISIGHT Tracy L. Bertram 10-14-11 SIGN OFF DATE	DRAWN BY O. GOUTHIER	S. DUDDU FIELD INVESTIGATION BY: DATE: JANUARY - FEBRUARY 2009	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 27E0031	<b>RETAINING WALL No. 5</b> <b>LOG OF TEST BORINGS 2 OF 4</b>		
	CHECKED BY P. SIRCAR	PROJECT ENGINEER P. SIRCAR		POST MILES 25.5		REVISION DATES 10/3/11	
GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: 0716 PROJECT NUMBER & PHASE: 04000007331	CONTRACT NO.: 04-264074	DISREGARD PRINTS BEARING EARLIER REVISION DATES	SHEET 11 OF 13

USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	618	619

10/3/11  
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GEOTECHNICAL PROFESSIONAL

4-16-12  
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PARIKH CONSULTANTS, INC.  
2360 OUME DRIVE, SUITE A  
SAN JOSE, CA 95131

REGISTERED PROFESSIONAL ENGINEER

GARY PARIKH  
No. G.E. 666  
Exp. 12/31/11  
GEOTECHNICAL  
STATE OF CALIFORNIA

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

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

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

**RELATIVE STRENGTH OF INTACT ROCK**

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

**BEDDING SPACING**

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

**LEGEND OF ROCK MATERIALS**

- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

**ROCK HARDNESS**

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

**WEATHERING DESCRIPTORS FOR INTACT ROCK**

Description	Diagnostic features				General Characteristics	
	Chemical Weathering-Discoloration and/or oxidation		Mechanical Weathering-Grain boundary conditions (disaggregation) primarily for granitics and some coarse-grained sediments	Texture and Solutioning		
	Body of Rock	Fracture Surfaces		Texture		Solutioning
Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change.	No solutioning.	Hammer rings when crystalline rocks are struck.
Slightly Weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull.	Minor to complete discoloration or oxidation of most surfaces.	No visible separation, intact (tight).	Preserved.	Minor leaching of some soluble minerals may be noted.	Hammer rings when crystalline rocks are struck. Body of rock not weakened.
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty," feldspar crystals are "cloudy."	All fracture surfaces are discolored or oxidized.	Partial separation of boundaries visible.	Generally preserved.	Soluble minerals may be mostly leached.	Hammer does not ring when rock is struck. Body of rock is slightly weakened.
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in-situ disaggregation, see grain boundary conditions.	All fracture surfaces are discolored or oxidized, surfaces friable.	Partial separation, rock is friable; in semiarid conditions granitics are disaggregated.	Texture altered by chemical disintegration (hydration, argillation).	Leaching of soluble minerals may be complete.	Dull sound when struck with hammer, usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures, or veinlets. Rock is significantly weakened.
Decomposed	Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay.		Complete separation of grain boundaries (disaggregated).	Resembles a soil, partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete.		Can be granulated by hand. Resistant minerals such as quartz may be present as "stringers" or "dikes."

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

**FRACTURE DENSITY**

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

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

<p><i>Tracy L. Bertram</i> DESIGN OVERSIGHT 10-14-11 SIGN OFF DATE</p>	<p>DRAWN BY O. GOUTHIER</p> <p>CHECKED BY P. SIRCAR</p>	<p>S. DUDDU FIELD INVESTIGATION BY: DATE: JANUARY-FEBRUARY 2009</p>
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**PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION**

P. SIRCAR PROJECT ENGINEER	BRIDGE NO. 27E0031
POST MILES 25.5	

**RETAINING WALL No. 5**

**LOG OF TEST BORINGS 3 OF 4**

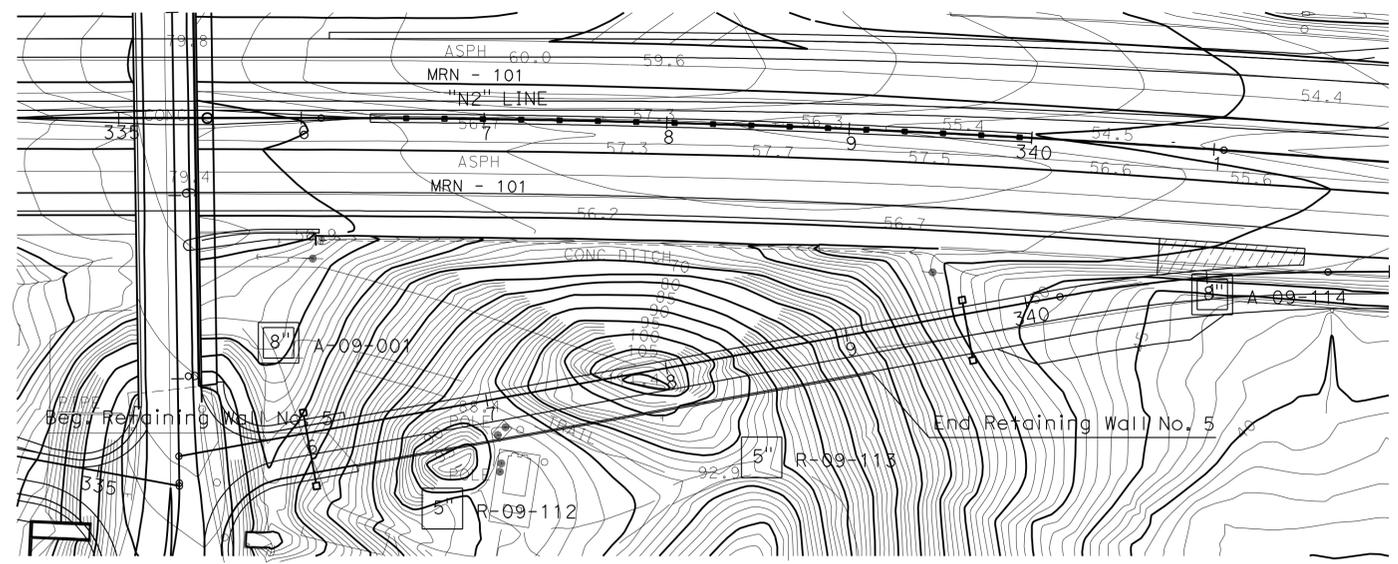
USERNAME => s124496 DATE PLOTTED => 16-APR-2012 TIME PLOTTED => 10:06

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Mrn	101	R23.2/27.1	619	619

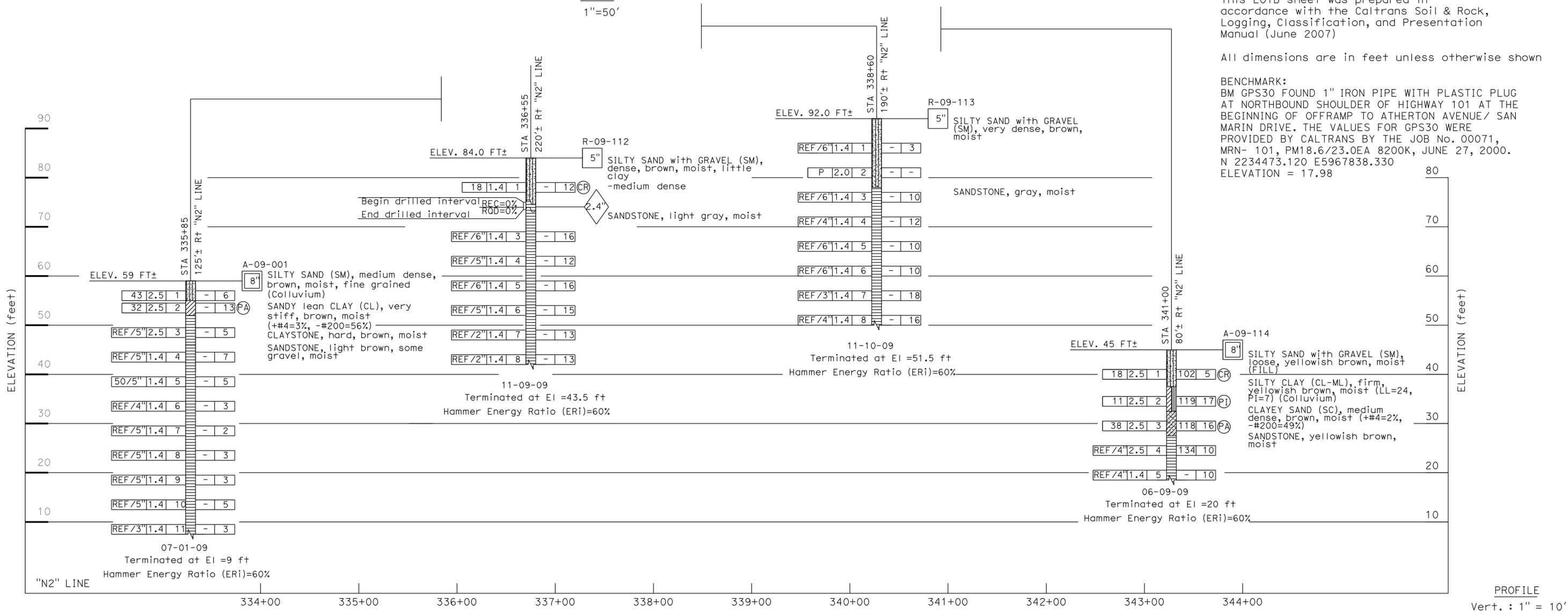
10/3/11  
 GEOTECHNICAL PROFESSIONAL DATE  
 4-16-12  
 PLANS APPROVAL DATE  
 GARY PARIKH  
 No. G.E. 666  
 Exp. 12/31/11  
 GEOTECHNICAL  
 STATE OF CALIFORNIA

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.

TAM  
 750 LINDARO STREET, SUITE 200  
 SAN RAFAEL, CALIFORNIA 94901  
 PARIKH CONSULTANTS, INC.  
 2360 OUME DRIVE, SUITE A  
 SAN JOSE, CA 95131



PLAN  
1"=50'



PROFILE  
Vert. : 1" = 10'  
Hor. : 1" = 50'

Notes:  
 Standard Penetration Test Sampler: I.D. = 1.4";  
 O.D. = 2" Modified California Sampler: I.D. = 2.5";  
 O.D. = 3" Hammer Assembly: A 140 lb hammer with a 30" drop (Automatic Hammer)

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

All dimensions are in feet unless otherwise shown

BENCHMARK:  
 BM GPS30 FOUND 1" IRON PIPE WITH PLASTIC PLUG AT NORTHBOUND SHOULDER OF HIGHWAY 101 AT THE BEGINNING OF OFFRAMP TO ATHONTON AVENUE/ SAN MARIN DRIVE. THE VALUES FOR GPS30 WERE PROVIDED BY CALTRANS BY THE JOB No. 00071, MRN- 101, PM18.6/23.0EA 8200K, JUNE 27, 2000. N 2234473.120 E5967838.330 ELEVATION = 17.98

DESIGN OVERSIGHT  
 Tracy L. Bertram  
 10-14-11  
 SIGN OFF DATE

DRAWN BY  
 O. GOUTHIER  
 CHECKED BY  
 P. SIRCAR

S. DUDDU  
 FIELD INVESTIGATION BY:  
 DATE: JANUARY - FEBRUARY 2009

PREPARED FOR THE  
 STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

P. SIRCAR  
 PROJECT ENGINEER  
 BRIDGE NO.  
 27E0031  
 POST MILES  
 25.5

RETAINING WALL No. 5  
 LOG OF TEST BORINGS 4 OF 4