DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	201	217

REGISTERED CIVIL ENGINEER — 11-3-09 DATE

7-19-10
PLANS APPROVAL DATE

QI ZHAO
No. 62197
Exp. 9-30-11
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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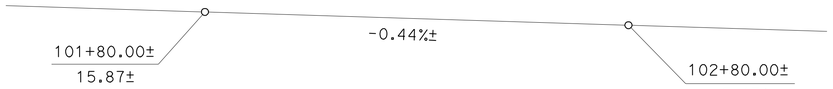


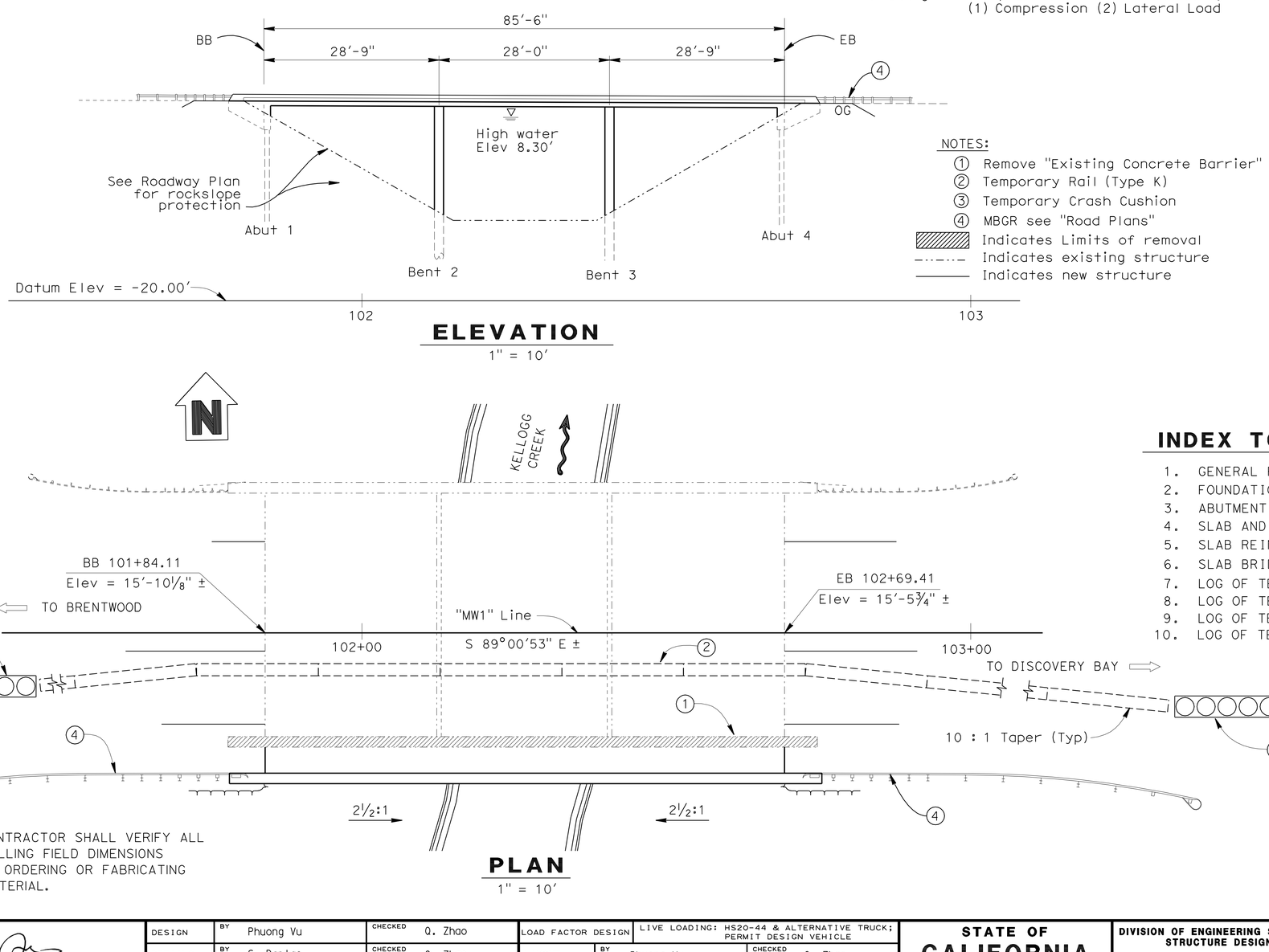
EXISTING PROFILE GRADE

No Scale

PILE DATA TABLE

Location	Pile Type	Design Loading kip	Nominal Resistance		Design Pile Tip Elevation (ft)	Specified Pile Tip Elevation (ft)
			Compression kip	Tension kip		
Abutment 1	CISS PP 18"X3/8"	70	140	0	-55.0 (1)	-55.0 (1)
Bent 2	CISS PP 18"X3/8"	N/A	150	70	-69.0 (1), -31.0 (2)	-69.0 (1)
Bent 3	CISS PP 18"X3/8"	N/A	150	70	-66.5 (1), -31.0 (2)	-66.5 (1)
Abutment 4	CISS PP 18"X3/8"	70	140	0	-55.5 (1)	-55.5 (1)

Note: Design Pile Tip Elevation is controlled by the following demands:
(1) Compression (2) Lateral Load

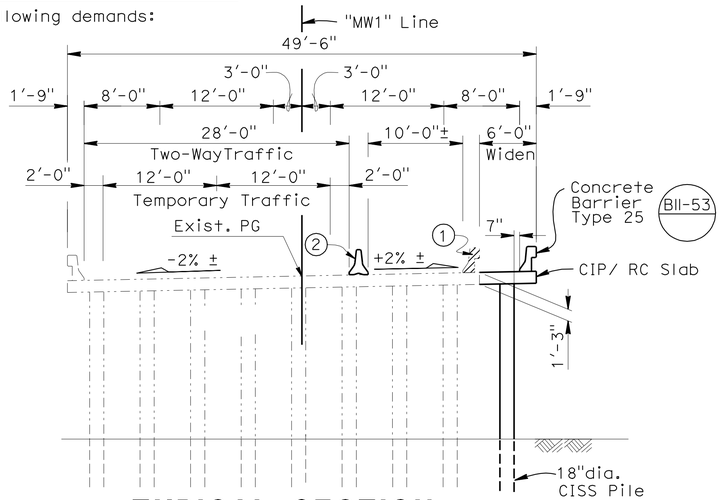


ELEVATION

1" = 10'

NOTES:
1. Remove "Existing Concrete Barrier"
2. Temporary Rail (Type K)
3. Temporary Crash Cushion
4. MBGR see "Road Plans"

Indicates Limits of removal
Indicates existing structure
Indicates new structure



TYPICAL SECTION

1/8" = 1'-0"

PLAN

1" = 10'

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

INDEX TO PLANS

STANDARD PLANS DATED MAY 2006

SHT NO.	TITLE
B0-1	Bridge Details
B0-5	Bridge Details
B2-5	Pile Details-Class 90 and Class 140
B11-53	Concrete Barrier Type 25

Standard Plan Sheet No.
Detail No.

KELLOGG CREEK BRIDGE — BRIDGE NO. 28-0032

QUANTITIES

BRIDGE REMOVAL (PORTION)	LUMP	SUM
STRUCTURE EXCAVATION (BRIDGE)	25	CY
STRUCTURE BACKFILL (BRIDGE)	16	CY
FURNISH 18" CAST-IN-STEEL SHELL CONCRETE PILING	273	LF
DRIVE 18" CAST-IN-STEEL SHELL CONCRETE PILE	4	EA
STRUCTURAL CONCRETE, BRIDGE	39	CY
DRILL AND BOND DOWEL	410	LF
REFINISH BRIDGE DECK	150	SQFT
BAR REINFORCING STEEL (BRIDGE)	8,847	LB
CONCRETE BARRIER (TYPE 25)	110	LF

DESIGN ENGINEER

DESIGN	BY Phuong Vu	CHECKED Q. Zhao	LOAD FACTOR DESIGN	LIVE LOADING: HS20-44 & ALTERNATIVE TRUCK; PERMIT DESIGN VEHICLE			
DETAILS	BY S. Daplas	CHECKED Q. Zhao	LAYOUT	BY Phuong Vu	CHECKED Q. Zhao		
QUANTITIES	BY Phuong Vu	CHECKED Margie Thach	SPECIFICATIONS	BY Iwa Y. Huang	PLANS AND SPECS COMPARED Iwa Y. Huang		

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 13

CU 04
EA 0A8401

BRIDGE NO. 28-0032
POST MILE 45.56

KELLOGG CREEK BRIDGE WIDENING
GENERAL PLAN

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 10-29-08 | 11-26-08 | 01-28-08 | 03-27-08 | 04-03-08 | 04-11-08 | 04-21-08 | 05-29-09 | 06-30-09

SHEET 1 OF 10

STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.07-24-06)

FILE => 28-0032-010-gp01.dgn

USERNAME => rrienard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:22

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	202	217

REGISTERED CIVIL ENGINEER — 11-3-09 DATE

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — QI ZHAO — No. 62197 — Exp. 9-30-11 — CIVIL — STATE OF CALIFORNIA

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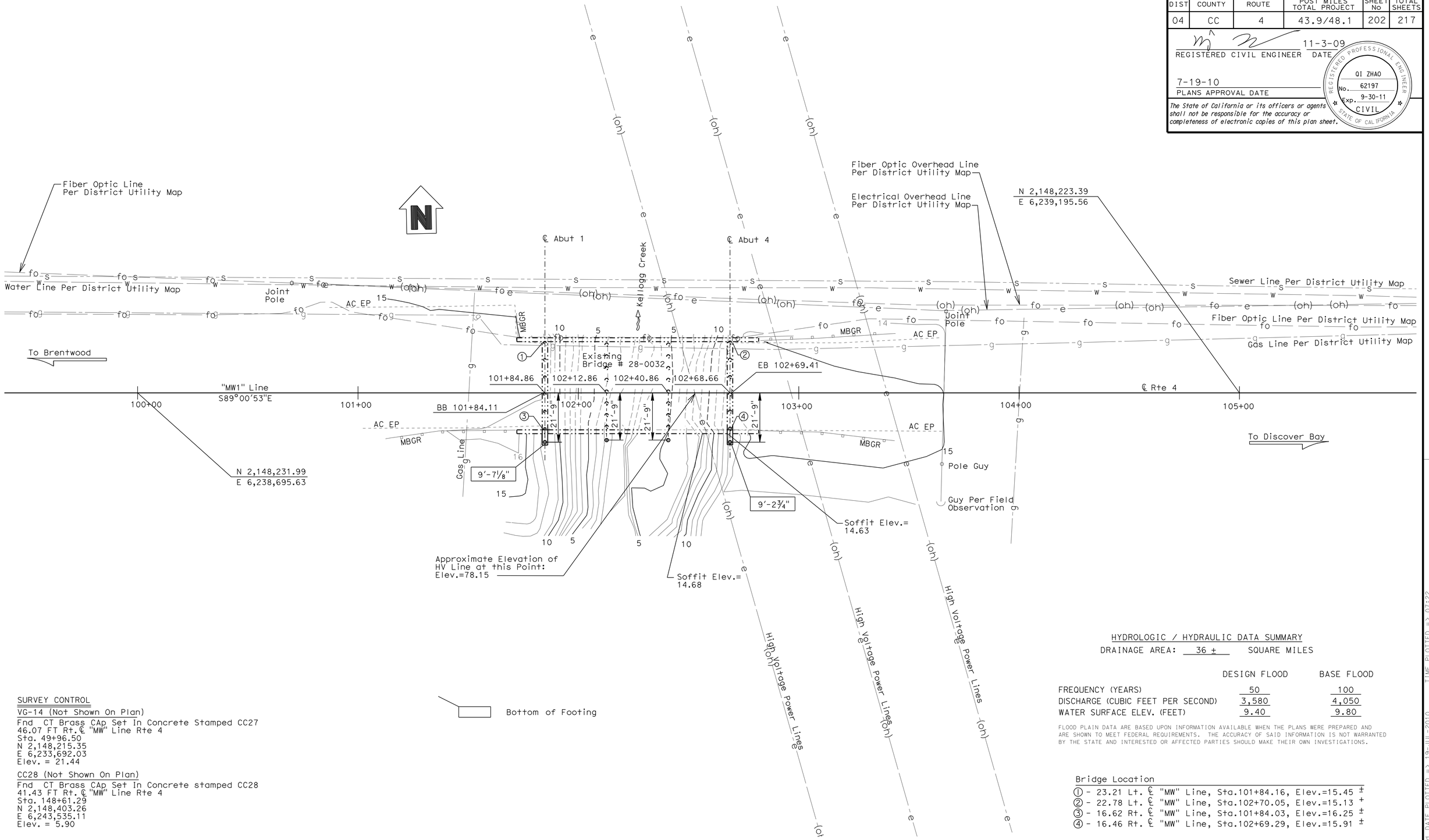

SURVEY CONTROL

VG-14 (Not Shown On Plan)
Fnd CT Brass CAp Set In Concrete Stamped CC27
46.07 FT Rt.℄ "MW" Line Rte 4
Sta. 49+96.50
N 2,148,215.35
E 6,233,692.03
Elev. = 21.44

CC28 (Not Shown On Plan)
Fnd CT Brass CAp Set In Concrete stamped CC28
41.43 FT Rt.℄ "MW" Line Rte 4
Sta. 148+61.29
N 2,148,403.26
E 6,243,535.11
Elev. = 5.90

HYDROLOGIC / HYDRAULIC DATA SUMMARY

DRAINAGE AREA: 36 ± SQUARE MILES

	DESIGN FLOOD	BASE FLOOD
FREQUENCY (YEARS)	50	100
DISCHARGE (CUBIC FEET PER SECOND)	3,580	4,050
WATER SURFACE ELEV. (FEET)	9.40	9.80

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

Bridge Location
① - 23.21 Lt. ℄ "MW" Line, Sta.101+84.16, Elev.=15.45 ±
② - 22.78 Lt. ℄ "MW" Line, Sta.102+70.05, Elev.=15.13 ±
③ - 16.62 Rt. ℄ "MW" Line, Sta.101+84.03, Elev.=16.25 ±
④ - 16.46 Rt. ℄ "MW" Line, Sta.102+69.29, Elev.=15.91 ±

PRELIMINARY INVESTIGATION SECTION

SCALE 1"=20'	VERT.DATUM NAVD88	PHOTOGRAMMETRY AS OF: X					
	HORZ.DATUM NAD83 (2000.86)	SURVEYED	BY District/J.Borden	CHECKED	BY T.Gillett	02/2009	
	ALIGNMENT TIES Dist.Traverse Sheet	DRAFTED	BY T.Zolnikova 02/2009	CHECKED	BY T.Schmalz	02/2009	

DESIGN	BY Phuong Vu	CHECKED Q. Zhao	
DETAILS	BY S. Daplas	CHECKED Q. Zhao	
QUANTITIES	BY Phuong Vu	CHECKED Margie Thach	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 13

BRIDGE NO. 28-0032
POST MILE 45.56

KELLOGG CREEK BRIDGE WIDENING
FOUNDATION PLAN

STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 10/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 03/04/09 | 03/16/09 | 04/06/09 | 04/08/09 | 04/13/09 | 05/28/09 | 06/30/09

SHEET 2 OF 10

FILE => 28-0032-020-fp.dgn

USERNAME => trienard DATE PLOTTED => 13-JUL-2010 TIME PLOTTED => 07:22

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	203	217

REGISTERED CIVIL ENGINEER — DATE 11-3-09

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — QI ZHAO, No. C 62197, Exp. 9-30-11, CIVIL, STATE OF CALIFORNIA

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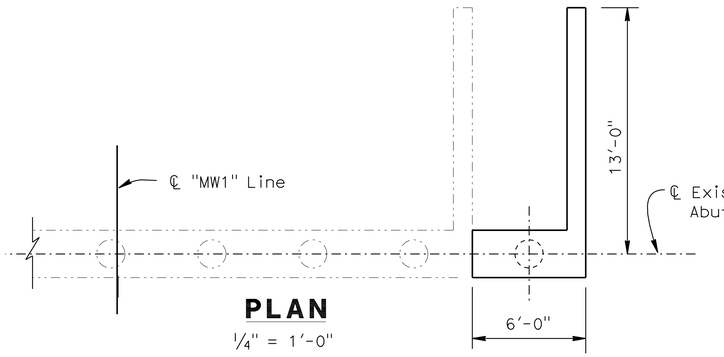
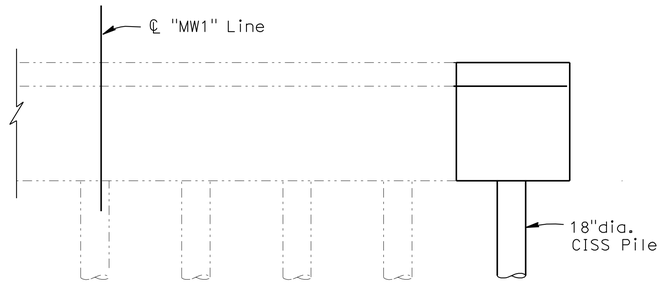
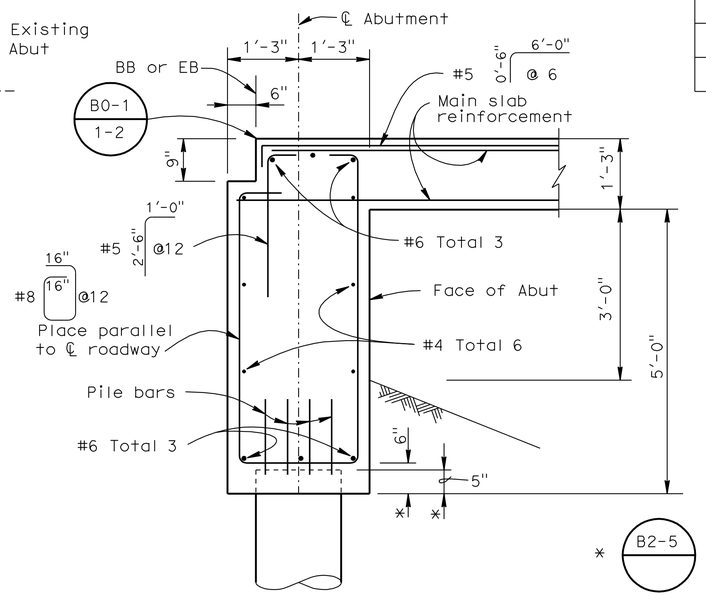


PLAN
1/4" = 1'-0"



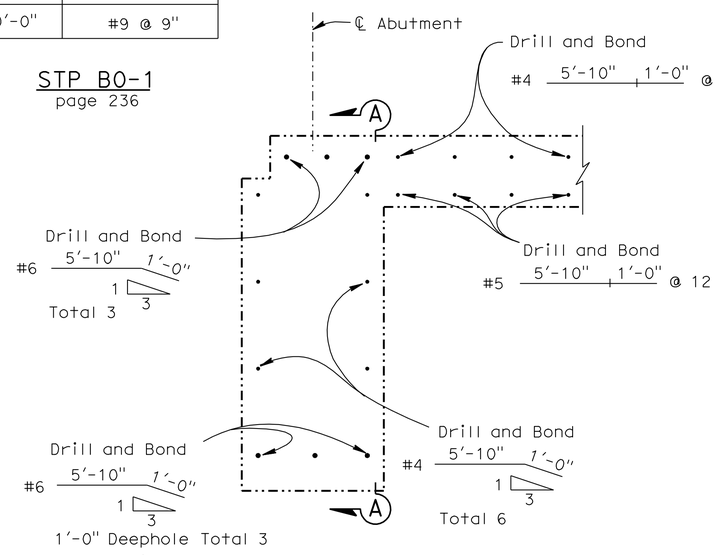
ELEVATION
1/4" = 1'-0"



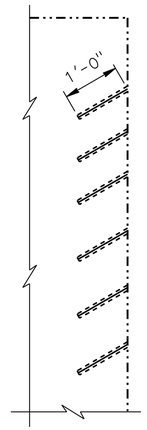
ABUTMENT SECTION
3/4" = 1'-0"

"L"	"C" Bars
12'-0"	#5 @ 9"
14'-0"	#6 @ 9"
16'-0"	#7 @ 9"
18'-0"	#8 @ 9"
20'-0"	#9 @ 9"

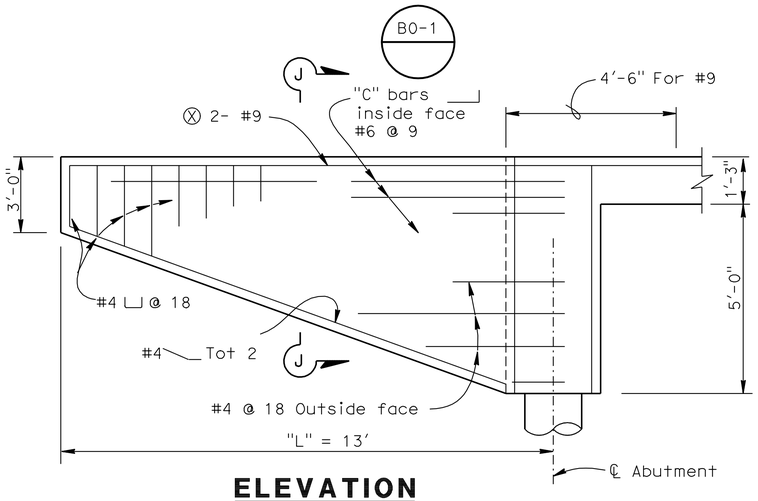
STP B0-1
page 236



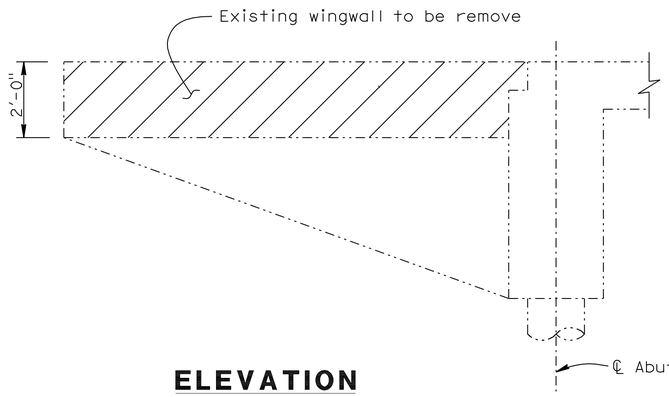
DRILL AND BOND
3/4" = 1'-0"



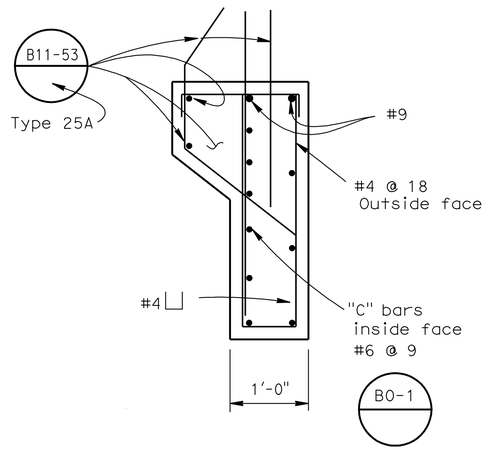
SECTION A-A
3/4" = 1'-0"



ELEVATION
SLOPING WINGWALL
1/2" = 1'-0"



ELEVATION
EXISTING WINGWALL REMOVING LIMIT
1/2" = 1'-0"



SECTION J-J
No Scale

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

DESIGN	BY Phuong Vu	CHECKED Q. Zhao	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN — DESIGN BRANCH 13	BRIDGE NO. 28-0032
DETAILS	BY S. Daplas	CHECKED Phuong Vu			POST MILE 45.56
QUANTITIES	BY Phuong Vu	CHECKED Margie Thach			

KELLOGG CREEK BRIDGE WIDENING
ABUTMENT DETAILS

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

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 1-14-09 | 1-26-09 | 5-28-09

SHEET 3 OF 10

FILE => 28-0032-030-abt.dgn

USERNAME => trlenard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 01:22

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	204	217

REGISTERED CIVIL ENGINEER — 11-3-09 DATE

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — QI ZHAO — No. 62197 — Exp. 9-30-11 — CIVIL — STATE OF CALIFORNIA

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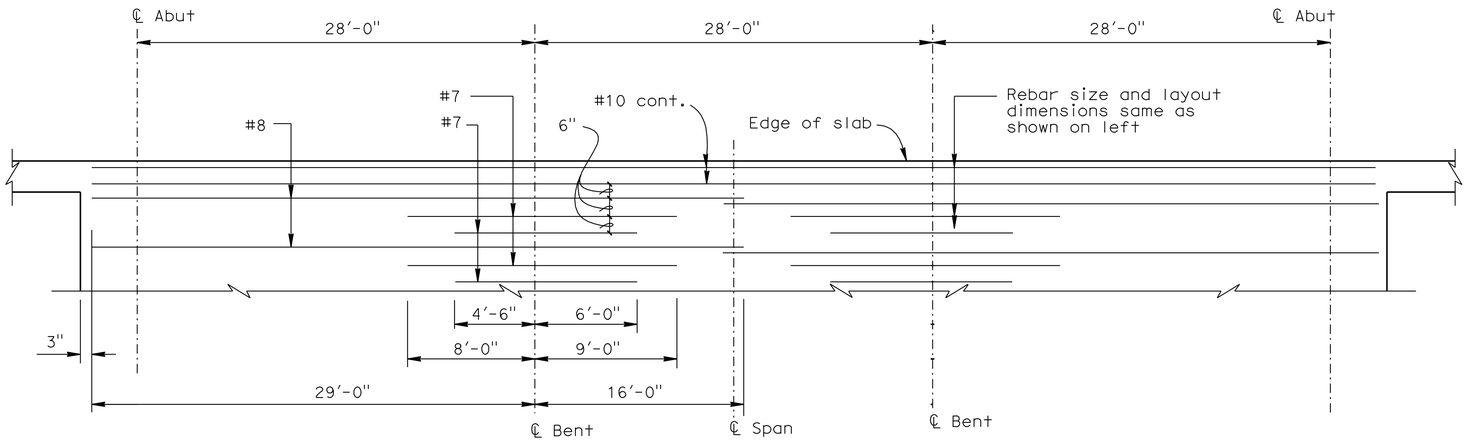
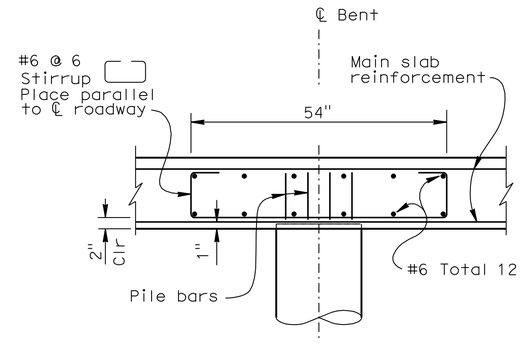


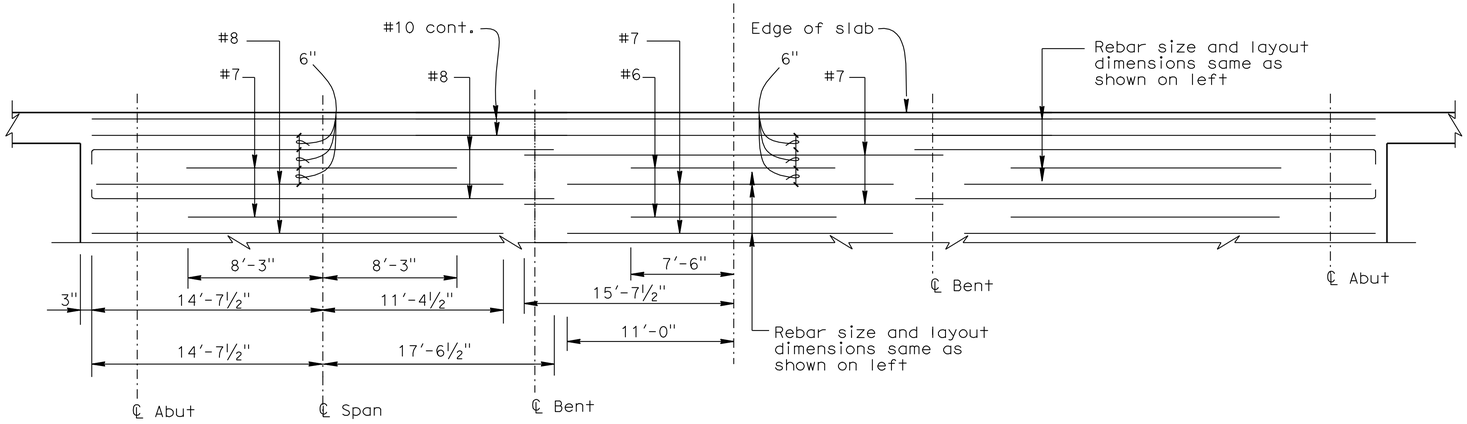
REINFORCEMENT - TOP OF SLAB

No Scale



BENT CAP

¾″ = 1′-0″



REINFORCEMENT - BOTTOM OF SLAB

No Scale

NOTE:
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DESIGN	BY Phuong Vu	CHECKED Q. Zhao	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 13	BRIDGE NO. 28-0032
DETAILS	BY S. Daplas	CHECKED Q. Zhao			POST MILE 45.56
QUANTITIES	BY Phuong Vu	CHECKED Margie Thach			

KELLOGG CREEK BRIDGE WIDENING
SLAB AND SUPPORT DETAILS

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

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 02-03-09 | 02-23-09 | 03-16-09 | 04-17-09 | 05-28-09 | 06-30-09

SHEET 4 OF 10

FILE => 28-0032-040-sdet01.dgn

USERNAME => rrichard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:22

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	205	217

11-3-09
REGISTERED CIVIL ENGINEER DATE

QI ZHAO
No. 62197
Exp. 9-30-11
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

7-19-10
PLANS APPROVAL DATE

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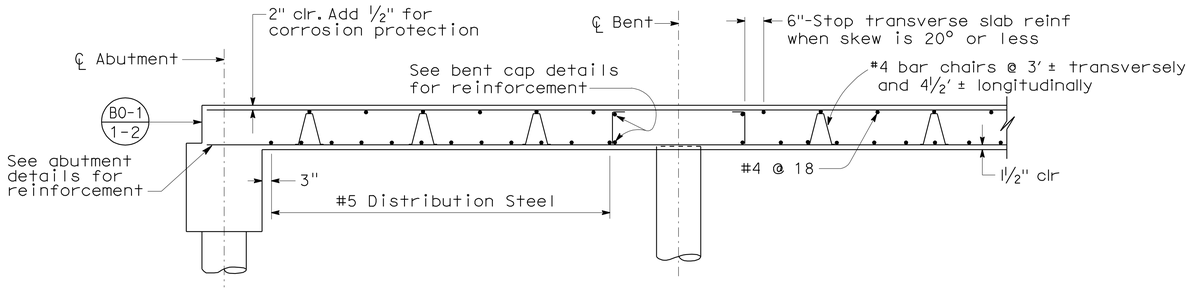
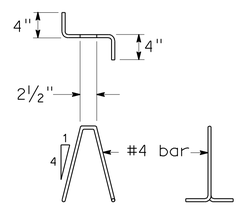
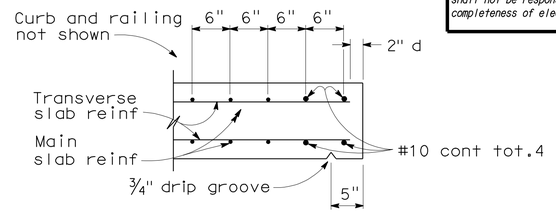


LONGITUDINAL SECTION



BAR CHAIR DETAIL



EDGE OF SLAB DETAILS

BAR SPLICE LENGTH								
Bar size	#4	#5	#6	#7	#8	#9	#10	#11
All bars, except top bars in spans over 24'	23"	28"	34"	39"	45"	68"	76"	85"
Top bars in spans over 24'	23"	28"	34"	53"	60"	77"	97"	120"

REINFORCEMENT NOTES:

Splices in top main bars to be located near center of span.
Splices in bottom main bars to be located near bent.
Spacing of all transverse bars is measured along ℄ roadway.
Skew 0°to 20°: Place all transverse bars parallel to bent.

GENERAL NOTES
LOAD FACTOR DESIGN

DESIGN: Caltrans Bridge Design Specifications April 2000 (LFD) (1996 AAHTO with interims and revisions by Caltrans)

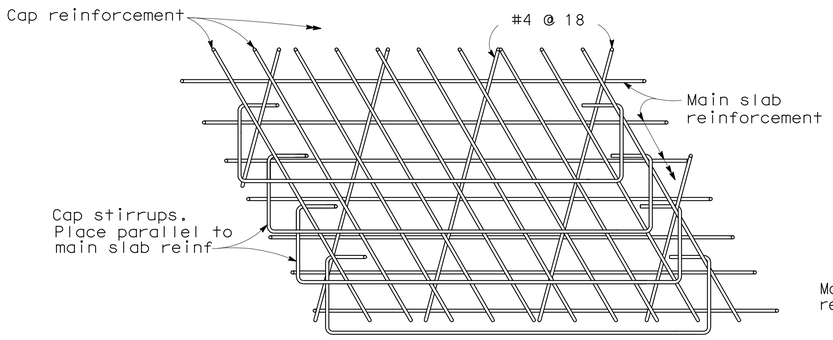
SEISMIC DESIGN: Caltrans Seismic Design Criteria (SDC) Version 1.4 February 2004 with modifications

DEAD LOAD: Includes 35 psf for future wearing surface.

LIVE LOADING: HS20-44 and alternative and permit design load.

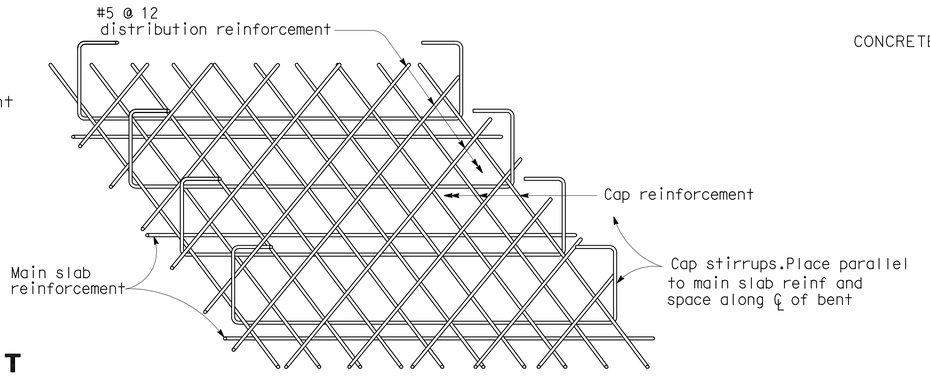
SEISMIC LOADING: California Seismic Design Criteria type D soil profile. Peak Bedrock Acceleration (PBA) = 0.3g

CONCRETE: fy = 60,000 psi
f'c = 3,250 psi
n = 9



TOP SLAB REINFORCEMENT AT BENT

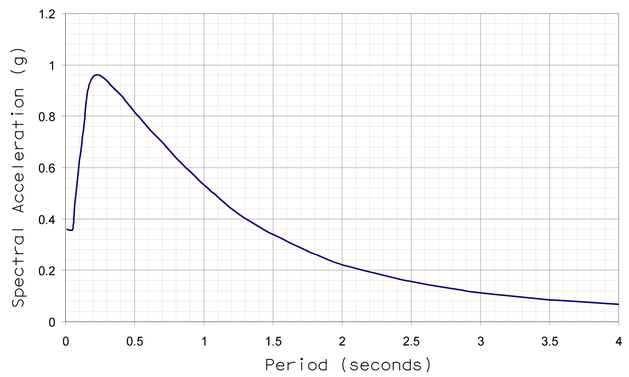
Note: View for main span over 24'
Bar placement similar for spans under 24'



FLUSH CAP

BOTTOM SLAB REINFORCEMENT AT BENT

Acceleration Response Spectrum for Kellogg Creek Bridge



ARS CURVE

No Scale

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

DESIGN	BY Phuong Vu	CHECKED Q. Zhao	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DESIGN BRANCH 13	BRIDGE NO. 28-0032
DETAILS	BY S. Daplas	CHECKED Phuong Vu			POST MILE 45.56
QUANTITIES	BY Phuong Vu	CHECKED Margie Thach			

KELLOGG CREEK BRIDGE WIDENING
SLAB REINFORCEMENT DETAILS

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

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 2-12-09 | 4-13-09 | 5-28-09 | 9-30-09

SHEET 5 OF 10

FILE => 28-0032-050-sdet02.dgn

USERNAME => rtriebord DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:22

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	206	217

REGISTERED CIVIL ENGINEER — 11-3-09 DATE

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — QI ZHAO — No. 62197 — Exp. 9-30-11 — CIVIL — STATE OF CALIFORNIA

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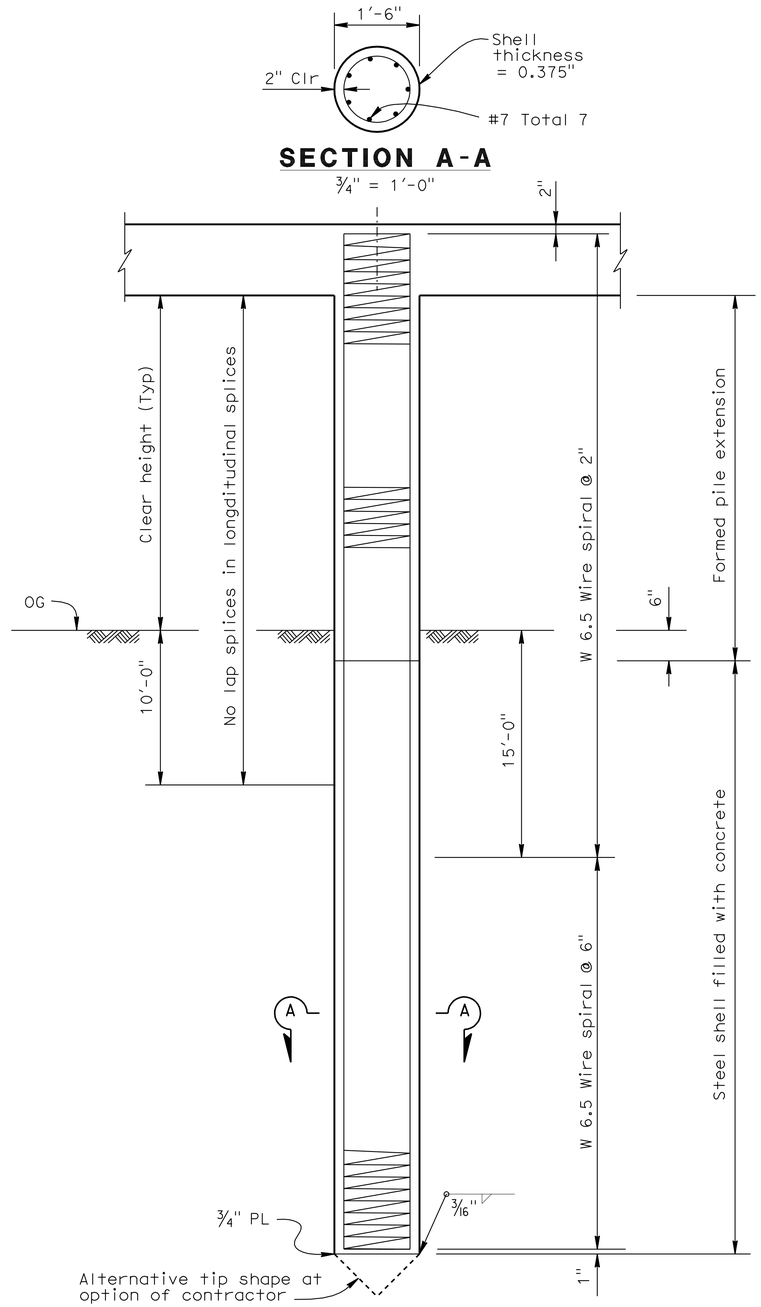

SECTION A-A

3/4" = 1'-0"

CAST-IN-STEEL SHELL CONCRETE PILE

NO SCALE

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

DESIGN	BY Phuong Vu	CHECKED Q. Zhao	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 13	BRIDGE NO. 28-0032	KELLOGG CREEK BRIDGE WIDENING
DETAILS	BY S. Daplas	CHECKED Q. Zhao			POST MILE 45.56	SLAB BRIDGE PILE DETAILS
QUANTITIES	BY Phuong Vu	CHECKED Margie Thach				

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

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 01-29-09 | 04-17-09 | 05-26-09 | 06-30-09

SHEET 6 OF 10

FILE => 28-0032-060-pdet.dgn

USERNAME => rtriebard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:22

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	207	217

REGISTERED CIVIL ENGINEER — 04-21-09 DATE

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Samuel Awad — No. 64589 — Exp. 6-30-09 — CIVIL — STATE OF CALIFORNIA

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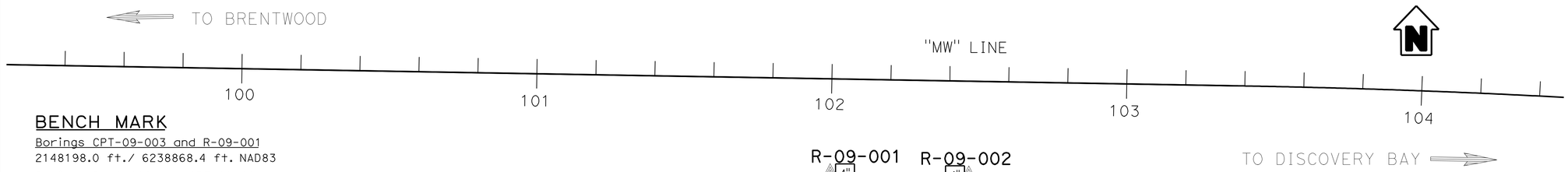


BENCH MARK

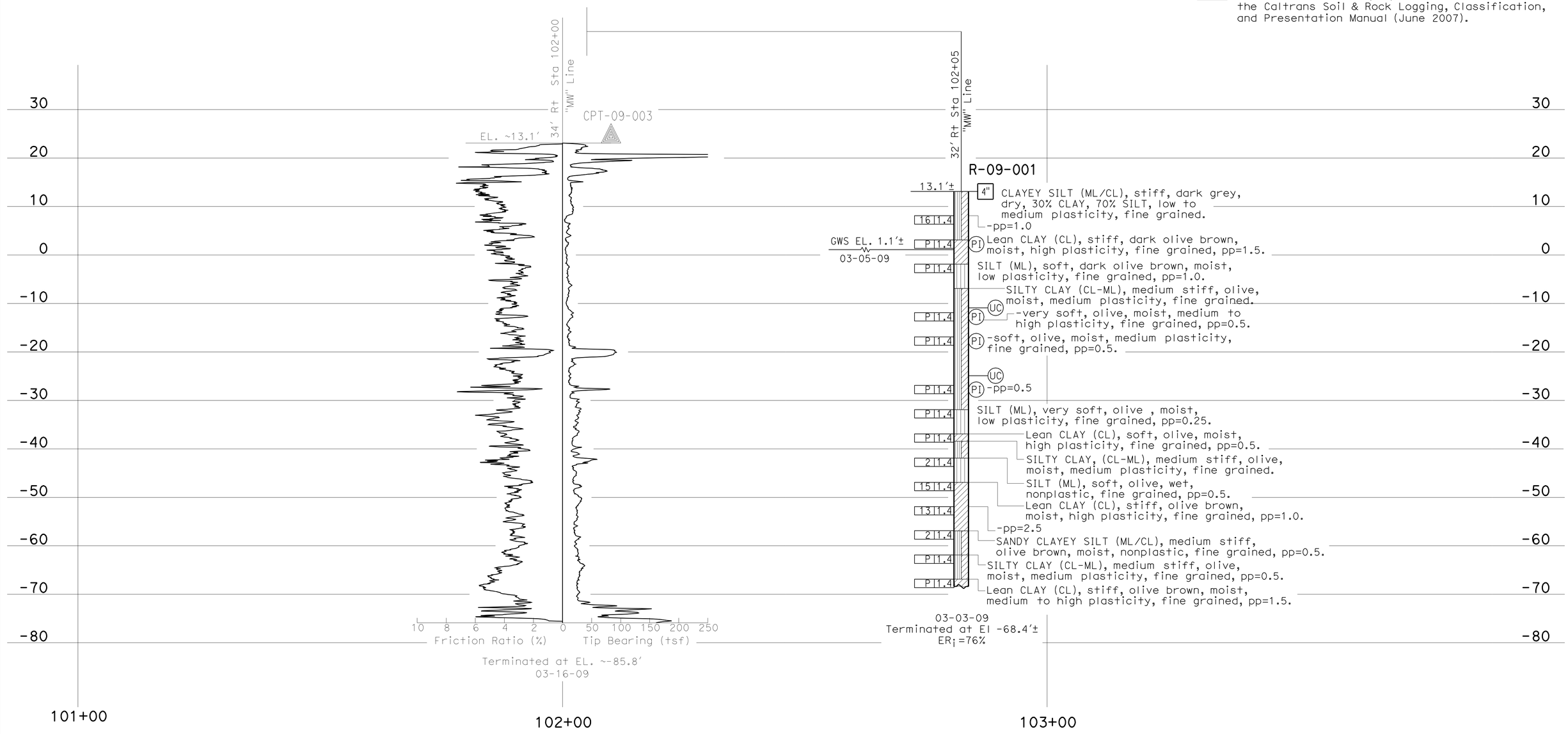
Borings CPT-09-003 and R-09-001
2148198.0 ft./ 6238868.4 ft. NAD83

Borings R-09-002 and CPT-09-004
2148196.8 ft./ 6238970.5 ft. NAD83

PLAN

1" = 20'

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



ENGINEERING SERVICES		GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH	BRIDGE NO. 28-0032	KELLOGG CREEK BRIDGE WIDENING
FUNCTIONAL SUPERVISOR NAME: H. Nikoui	DRAWN BY: M. Reynolds CHECKED BY: Vahid Khata-O-Khotan	FIELD INVESTIGATION BY: S. Awad			POST MILES 45.6	LOG OF TEST BORINGS
OGS CIVIL LOG OF TEST BORINGS SHEET	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3			CU 04 EA 0A8401	DISREGARD PRINTS BEARING EARLIER REVISION DATES →	REVISION DATES / SHEET 7 OF 10

FILE => 28-0032-070-lltb01.dgn

USERNAME => trtenard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:22

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	208	217

REGISTERED CIVIL ENGINEER — DATE 04-21-09

7-19-10
PLANS APPROVAL DATE

Samuel Awad
No. 64589
Exp. 6-30-09
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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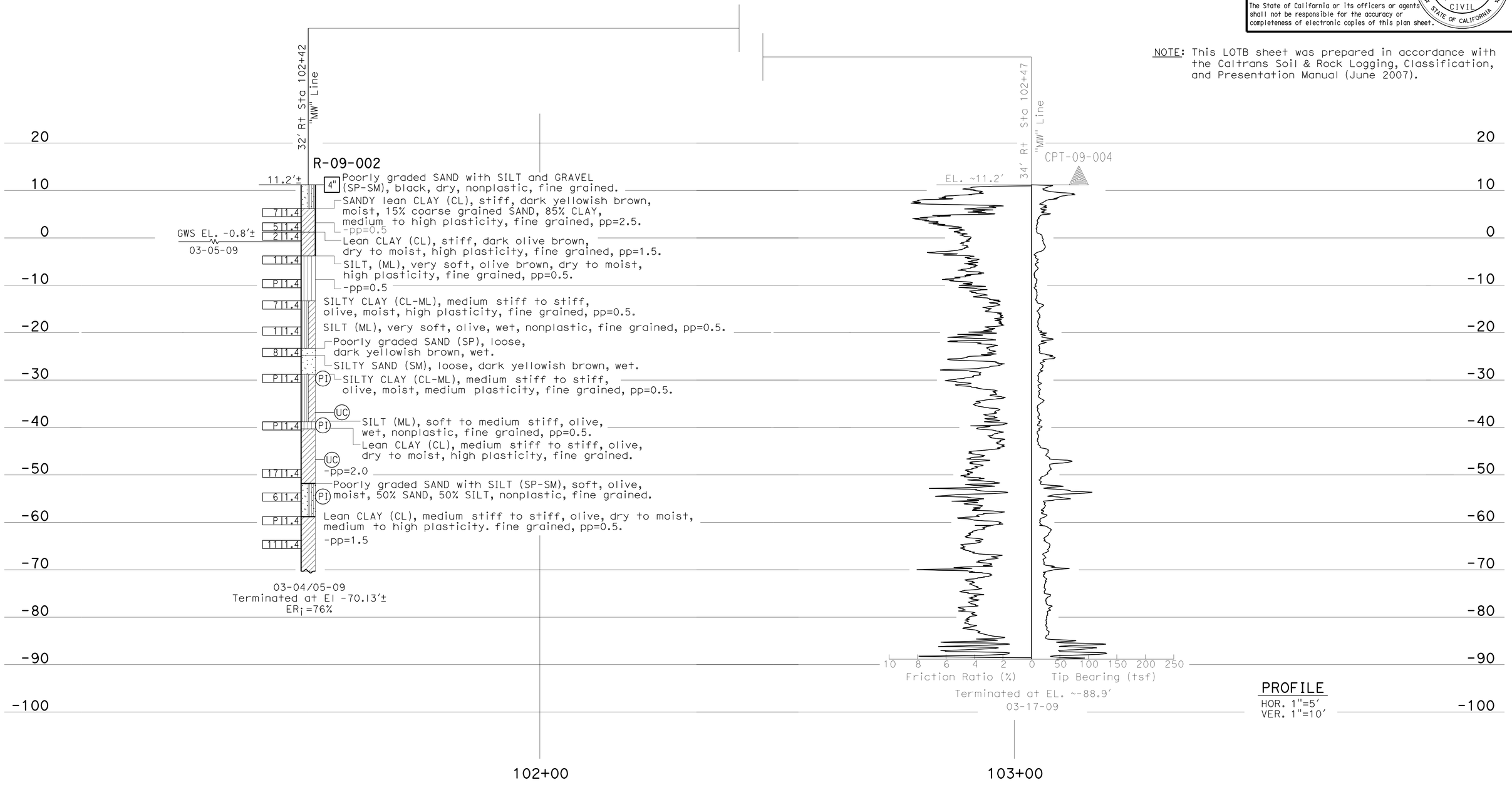
FOR PLAN VIEW, SEE
"LOG OF TEST BORINGS" 1 OF 5

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



ENGINEERING SERVICES		GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH	BRIDGE NO. 28-0032	KELLOGG CREEK BRIDGE WIDENING
FUNCTIONAL SUPERVISOR	DRAWN BY: M. Reynolds	FIELD INVESTIGATION BY: S. Awad			POST MILES 45.6	LOG OF TEST BORINGS
NAME: H. Nikoui	CHECKED BY: N. Name					

OGS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES

SHEET 8 OF 10

FILE => 28-0032-080-ltb02.dgn

USERNAME => trleonard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:23

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	209	217

04-21-09
REGISTERED CIVIL ENGINEER — DATE

Samuel Awad
No. 64589
Exp. 6-30-09
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

7-19-10
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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
Size	A	Auger Boring
Size	R P	Rotary drilled boring Rotary percussion boring (air)
Size	R	Rotary drilled diamond core
Size	HD HA	Hand driven (1-inch soil tube) Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778-95)
⬚	O	Other

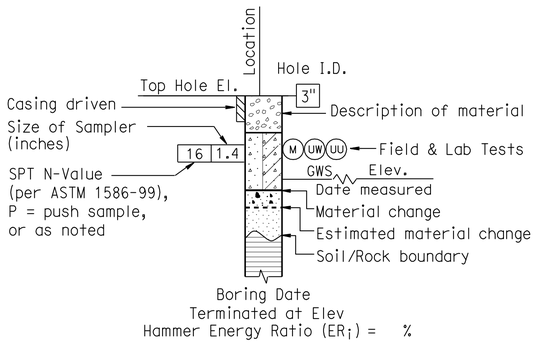
Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS

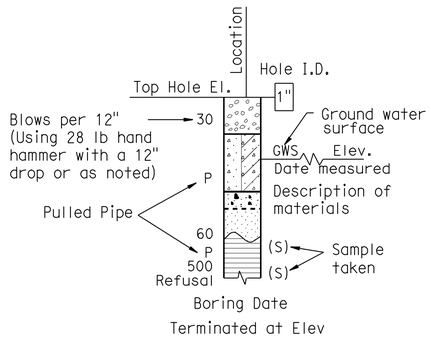
Description	Unconfined Compressive Strength (tsf)	Pocket Penetrometer Measurement (tsf)	Torvane Measurement (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 to 0.50	0.25 to 0.50	0.12 to 0.25	Easily penetrated several inches by thumb
Medium Stiff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

PLASTICITY OF FINE-GRAINED SOILS

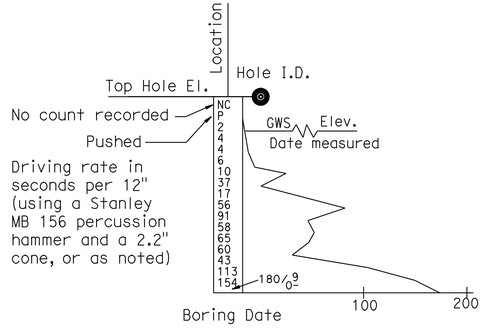
Description	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be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



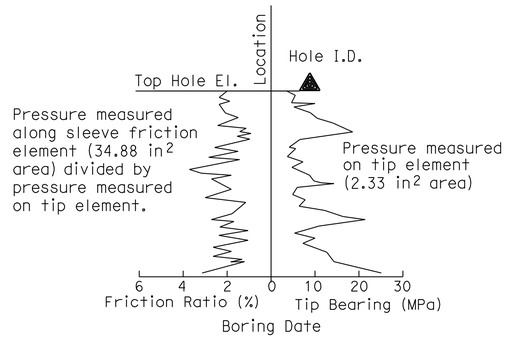
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) SOUNDING

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH	BRIDGE NO. 28-0032	SOIL LEGEND
PREPARED BY M. Reynolds				POST MILE 45.6	LOG OF TEST BORINGS
CHECKED BY Vahid Khata-O-Khotan	S. Awad				

GS LOTB SOIL LEGEND

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES

SHEET 9 OF 10

FILE => 28-0032-090-ltb03.dgn

USERNAME => rtriepord DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:23

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	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
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	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
	COBBLES 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
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	210	217

04-21-09
REGISTERED CIVIL ENGINEER — DATE

Samuel Awad
No. 64589
Exp. 6-30-09
REGISTERED PROFESSIONAL ENGINEER
CIVIL
STATE OF CALIFORNIA

7-19-10
PLANS APPROVAL DATE

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APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

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

PERCENT OR PROPORTION OF SOILS

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

PARTICLE SIZE

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

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH	BRIDGE NO. 28-0032 / POST MILE 45.6	SOIL LEGEND LOG OF TEST BORINGS
PREPARED BY M. Reynolds					
CHECKED BY Vahid Khata-O-Khotan	S. Awad				

GS LOTB SOIL LEGEND

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES

SHEET 10 OF 10

FILE => 28-0032-100-ltb04.dgn

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	211	217

REGISTERED CIVIL ENGINEER — 11-3-09 DATE

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — QI ZHAO — No. C62197 — Exp. 9-30-11 — CIVIL — STATE OF CALIFORNIA

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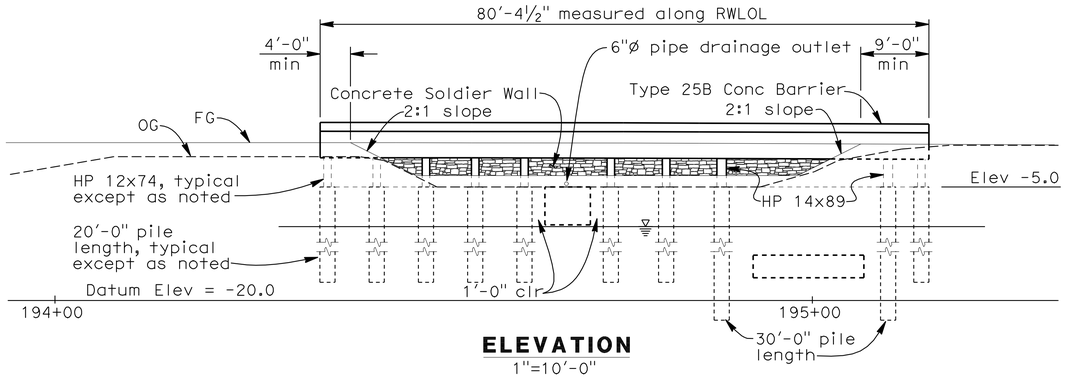
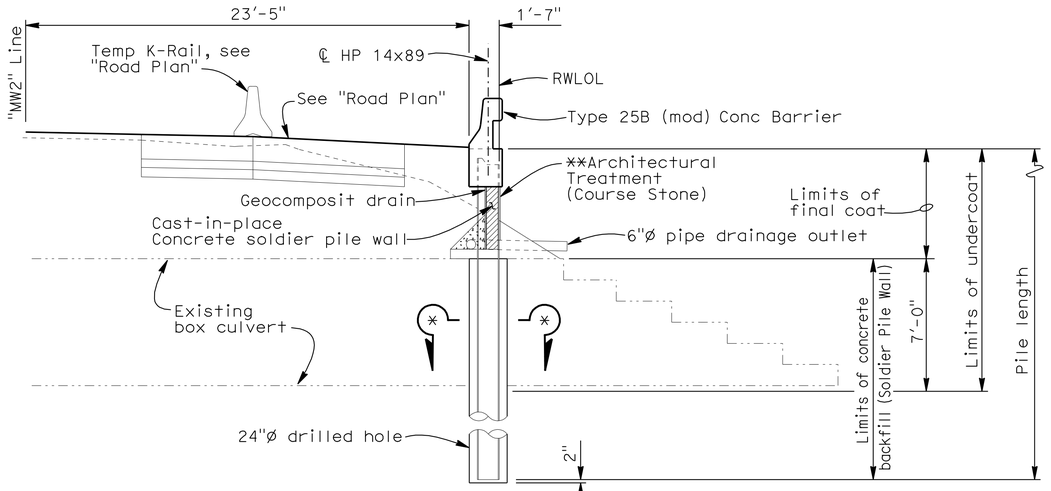
QUANTITIES

STRUCTURE EXCAVATION (SOLDIER PILE WALL)	295	CY
STRUCTURE BACKFILL (SOLDIER PILE WALL)	280	CY
CONCRETE BACKFILL (SOLDIER PILE WALL)	19	CY
24" DRILLED HOLE	160	LF
FURNISH HP 14 X 89 STEEL PILES	60	LF
FURNISH HP 12 X 74 STEEL PILES	160	LF
STRUCTURAL CONCRETE, RETAINING WALL	9	CY
ARCHITECTURAL TREATMENT (COURSE STONE)	350	SQFT
BAR REINFORCING STEEL (RETAINING WALL)	2,477	LB
CLEAN & PAINT STEEL SOLDIER PILING	LUMP	SUM
6" PERFORATED PLASTIC PIPE UNDERDRAIN	85	LF
GEOCOMPOSITE DRAIN	320	SQFT
CONCRETE BARRIER (TYPE 25B)	80	LF



ELEVATION
1"=10'-0"

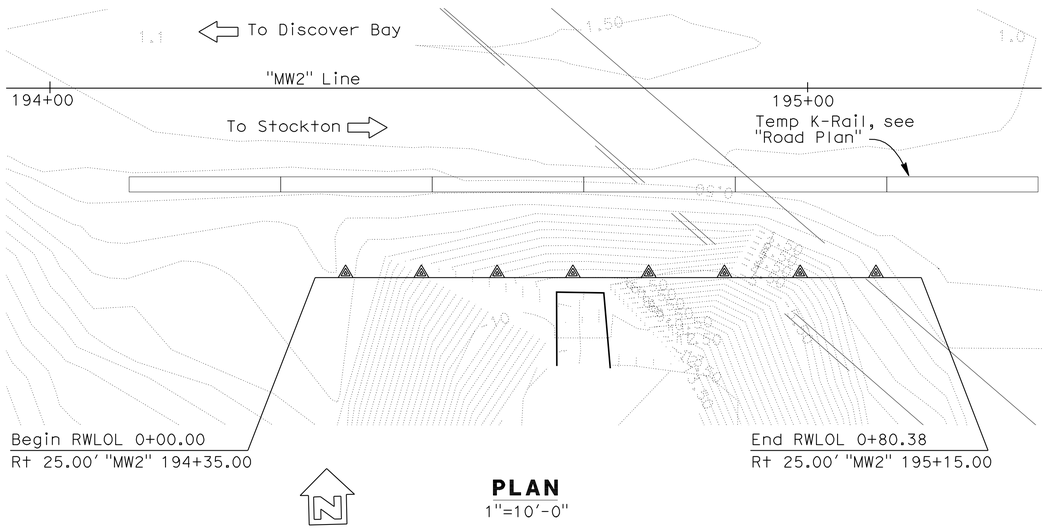


TYPICAL SECTION
¼"=1'-0"

Note:
See "Wall Details No. 1" sheet for Sections A-A and B-B

*Use Section A-A for HP 12x74 and Section B-B for HP 14x89, see "WALL DETAILS NO. 1" sheet for details.

**For Architectural Treatment, see "Wall Details No. 1" sheet



PLAN
1"=10'-0"

INDEX TO PLANS

STANDARD PLANS DATED MAY 2006

SHT NO.	TITLE
A10A	Abbreviations
A10B	Symbols
A62C	Limits of Payment for Excavation and Backfill - Bridge
B11-53	Concrete Barrier Type 25

Standard Plan Sheet No.
Detail No.

GENERAL NOTES

DESIGN: BRIDGE DESIGN SPECIFICATIONS
(2009 AASHTO with Interims and Revisions by CALTRANS)

SOIL PARAMETERS:
(For determination of design lateral earth pressures)
ø = 30°
c = 500psf
γm = 125 lb/ft³

REINFORCED CONCRETE:
f'c = 3.5 ksi (Concrete compressive strength at 28 days)
fy = 60 ksi (Yield strength of reinforcement)

STRUCTURAL STEEL:
Min Fy = 50 ksi
fs = 27.5 ksi

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

DESIGN ENGINEER

	BY	CHECKED	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	
DESIGN	Qi Zhao	John Railey			
DETAILS	A. Onodera	Qi Zhao/John Railey	LAYOUT	Qi Zhao	John Railey
QUANTITIES	Qi Zhao	John Railey	SPECIFICATIONS	Iwa Y Huang	PLANS AND SPECS COMPARED Iwa Y Huang

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 13

CU 04
EA 0A8401

BRIDGE NO. 28E0048
POST MILE 47.36

SOLDIER PILE WALL
GENERAL PLAN

DISREGARD PRINTS BEARING EARLIER REVISION DATES →
REVISION DATES: 8-17-09 | 10-01-09 | 10-06-09 | 10-07-09 | 10-08-09 | 10-13-09 | 10-19-09 | 10-25-09 | 10-27-09

SHEET 1 OF 7

STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.07-24-06)

FILE => 28e0048_010_agp01.dgn

USERNAME => trlenard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:23

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04	CC	4	43.9/48.1	212	217

REGISTERED CIVIL ENGINEER — 11-3-09 DATE

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — QI ZHAO, No. C62197, Exp. 9-30-11, CIVIL, STATE OF CALIFORNIA

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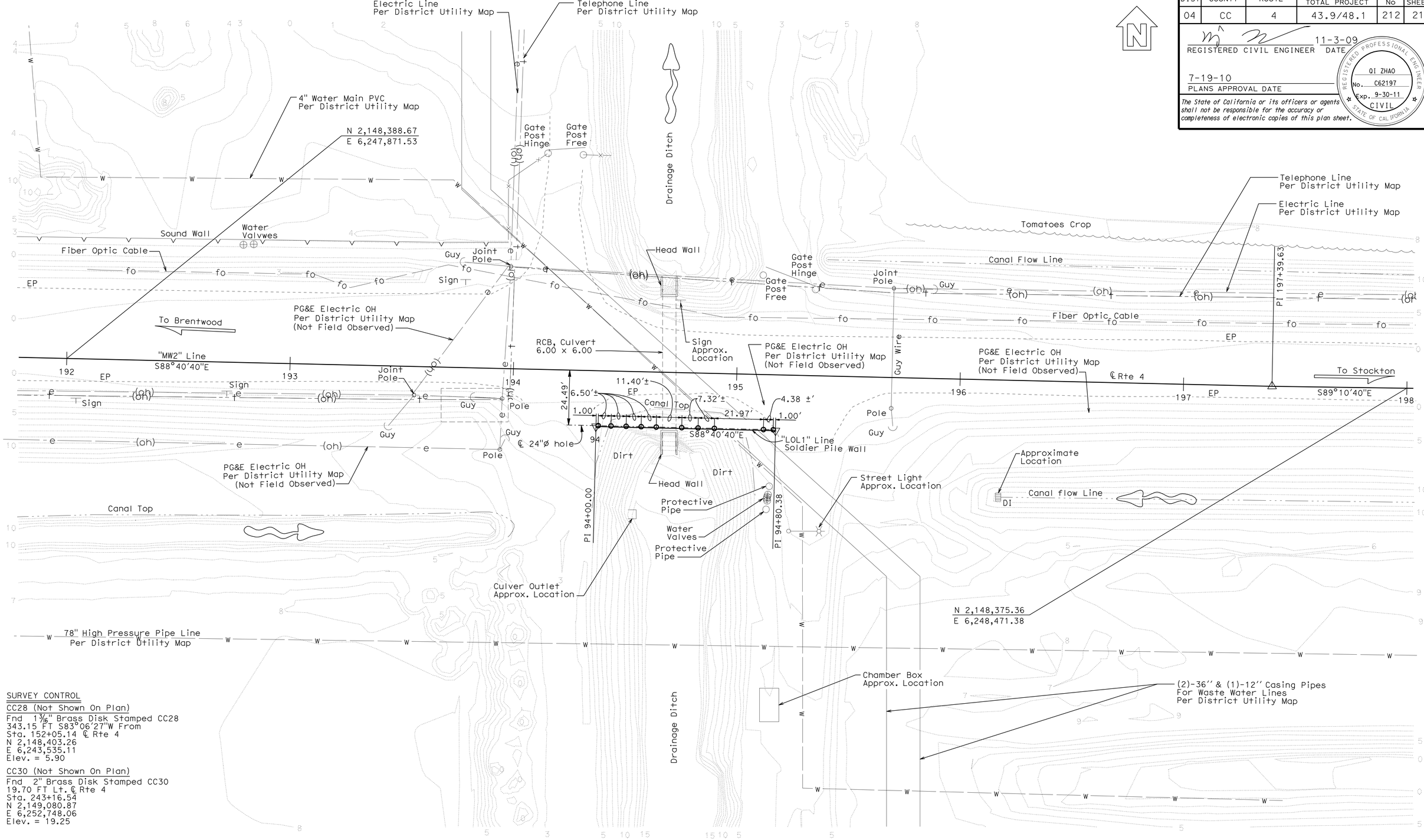

SURVEY CONTROL

CC28 (Not Shown On Plan)
Fnd 1 3/16" Brass Disk Stamped CC28
343.15 FT S83°06'27"W From
Sta. 152+05.14 ℄ Rte 4
N 2,148,403.26
E 6,243,535.11
Elev. = 5.90

CC30 (Not Shown On Plan)
Fnd 2" Brass Disk Stamped CC30
19.70 FT Lt. ℄ Rte 4
Sta. 243+16.54
N 2,149,080.87
E 6,252,748.06
Elev. = 19.25

PRELIMINARY INVESTIGATION SECTION

SCALE	VERT.DATUM NAVD88	PHOTOGRAMMETRY AS OF: X					
1"=20'	HORZ.DATUM NAD83 (1991.35)	SURVEYED	BY	District/ J.Borden	CHECKED	BY T.Gillett	09/2009
ALIGNMENT TIES Dist.Traverse Sheet		DRAFTED	BY	T.Zolnikova 09/2009	CHECKED	BY T.Schmalz	09/2009

DESIGN	BY Qi Zhao	CHECKED John Railey	
DETAILS	BY A. Onodera	CHECKED Qi Zhao/John Railey	
QUANTITIES	BY Qi Zhao	CHECKED John Railey	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 13

BRIDGE NO. 28E0048
POST MILE 47.36

SOLDIER PILE WALL
FOUNDATION PLAN

STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 10/25/05)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 09/25/09 | 10-07-09 | 10-08-09 | 10-13-09 | 10-27-09

SHEET 2 OF 7

FILE => 28e0048_020_fpl01.dgn

USERNAME => rtreford DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:23

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	213	217

11-3-09
REGISTERED CIVIL ENGINEER DATE

7-19-10
PLANS APPROVAL DATE

QI ZHAO
No. C62197
Exp. 9-30-11
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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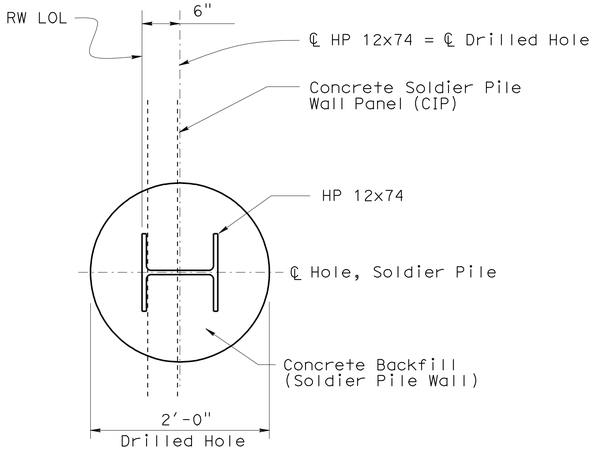
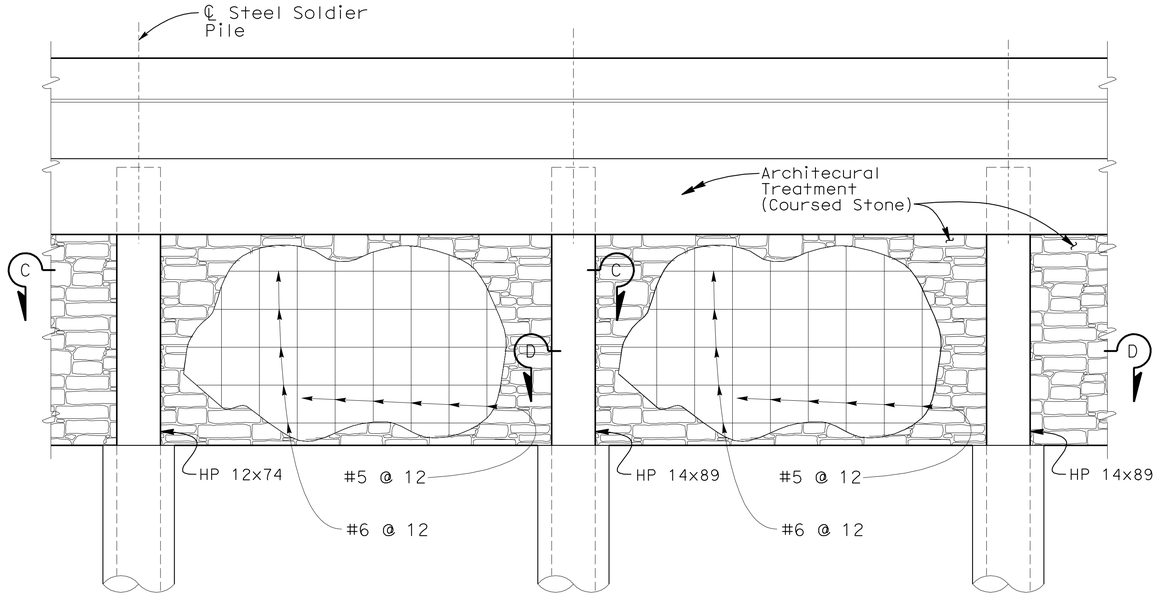
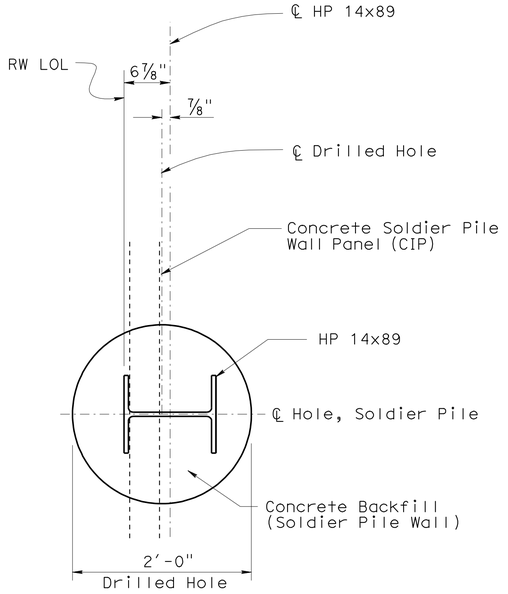


SECTION A-A
No scale

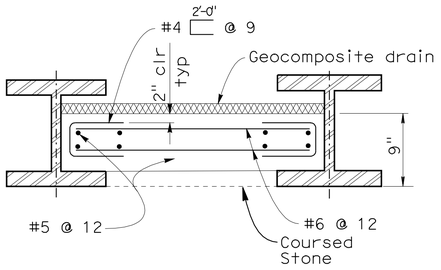


PANEL DETAIL
No Scale



SECTION B-B
No scale

Note:
For location of "Section A-A" and "Section B-B", see General Plan sheet



SECTION C-C
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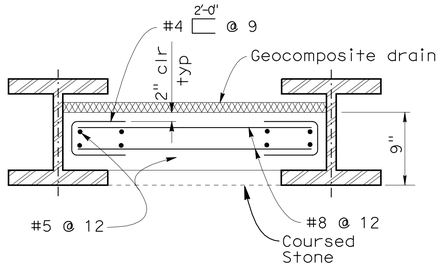

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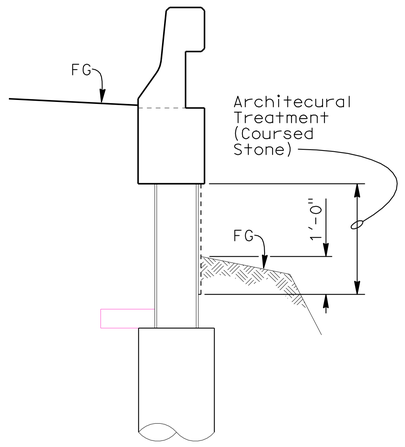
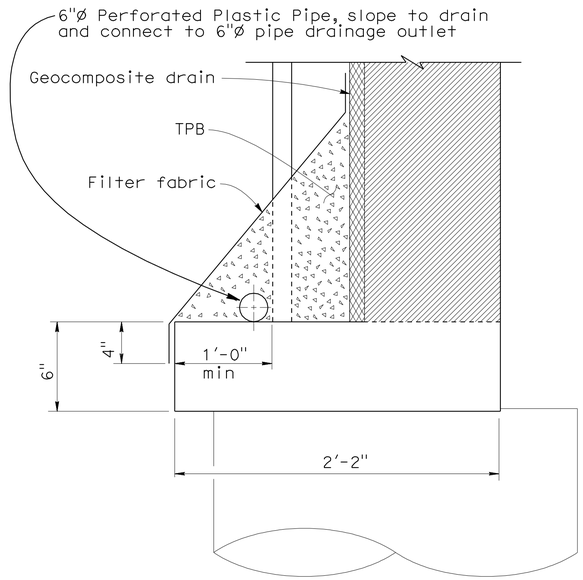


LIMITS OF PAYMENT FOR ARCHITECTURAL TREATMENT
No Scale



PAD DETAIL
No Scale

DESIGN	BY Qi Zhao	CHECKED John Railey	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 13	BRIDGE NO. 28E0048	SOLDIER PILE WALL	
DETAILS	BY A. Onodera/J.Sam	CHECKED Qi Zhao/John Railey			POST MILE 47.36	WALL DETAILS NO. 1	
QUANTITIES	BY Qi Zhao	CHECKED John Railey					

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

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

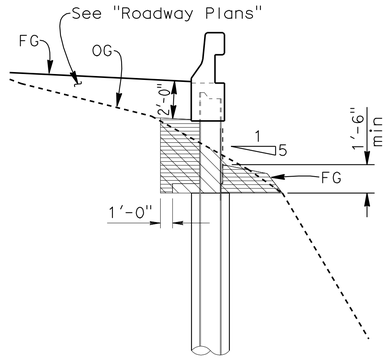
DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 9-18-09 | 10-06-09 | 10-07-09 | 10-08-09 | 10-13-09 | 10-19-09 | 10-25-09 | 10-27-09

SHEET 3 OF 7

FILE => 28e0048_030_walldet01.dgn

USERNAME => rtreford DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:23



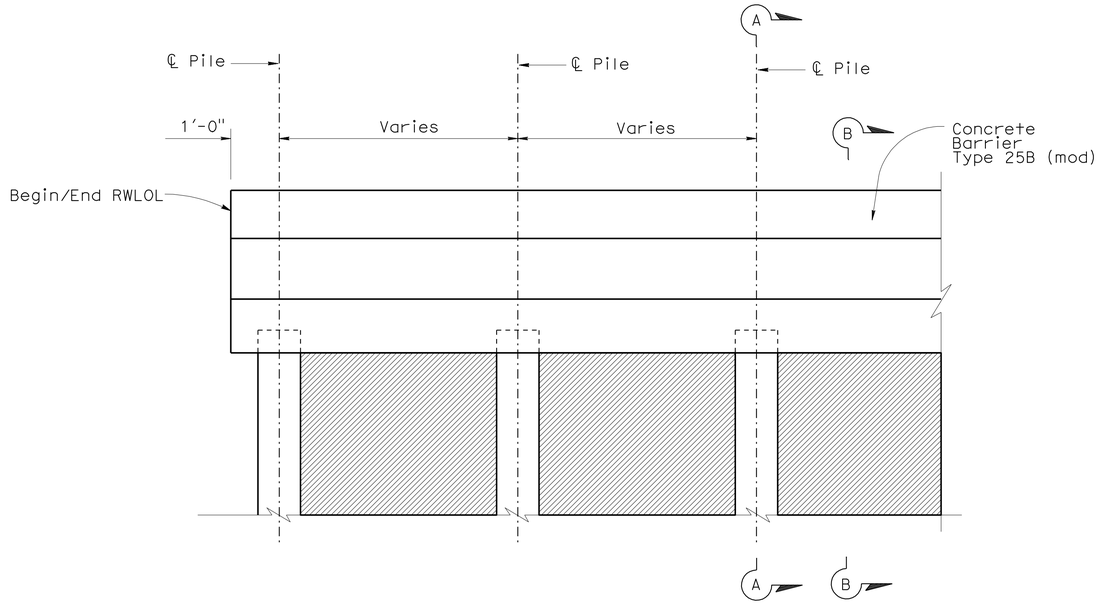
LEGEND

Structure Excavation (Soldier pile wall)

Structure Backfill (Soldier pile wall)

LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL BETWEEN PILES

No Scale



PART ELEVATION

No Scale

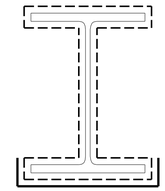
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	214	217

11-3-09
REGISTERED CIVIL ENGINEER DATE

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
QI ZHAO
No. C62197
Exp. 10-12-09
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.

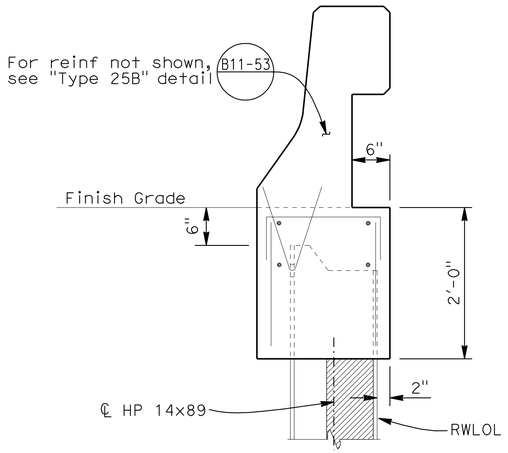


------ Limits of under Coat

——— Limits of Final Coat

PAINT LIMITS

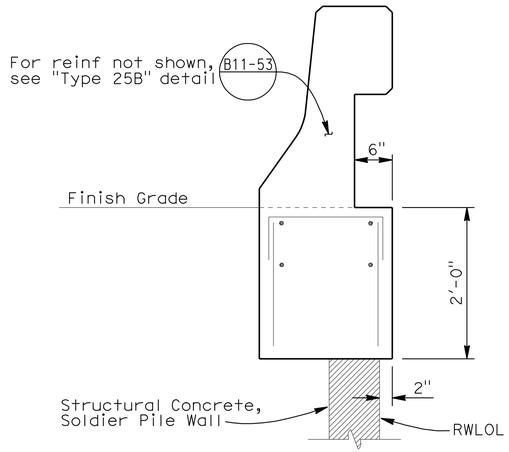
No Scale



Note:
HP 14x89 shown
HP 12x74 similar

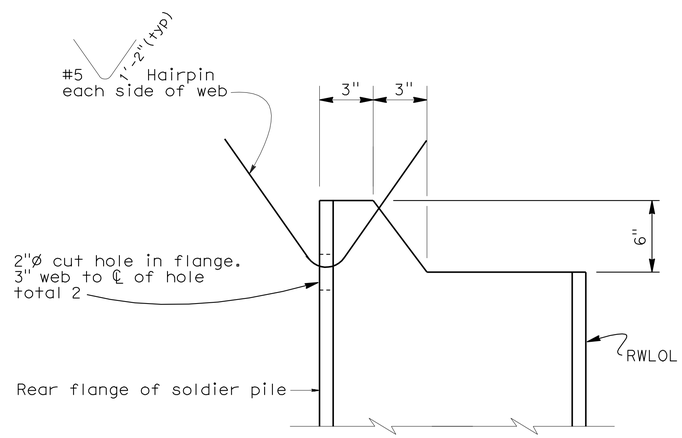
SECTION A-A

1"=1'-0"



SECTION B-B

1"=1'-0"



DETAIL "A" STEEL PILE ANCHOR

No Scale

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

DESIGN	BY Qi Zhao	CHECKED John Railey	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
DETAILS	BY A. Onodera/J. Sam	CHECKED Qi Zhao/John Railey	
QUANTITIES	BY Qi Zhao	CHECKED John Railey	

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 13

BRIDGE NO. 28E0048
POST MILE 47.36

SOLDIER PILE WALL
WALL DETAILS NO. 2

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

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 9-18-09 | 10-06-09 | 10-07-09 | 10-08-09 | 10-15-09 | 10-19-09 | 10-27-09

SHEET 4 OF 7

FILE => 28e0048_040_walldet02.dgn

USERNAME => trienard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:23

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	215	217

REGISTERED CIVIL ENGINEER — DATE 10-08-09

Samuel Awad — No. 64589 — Exp. 6-30-11 — CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

7-19-10
PLANS APPROVAL DATE

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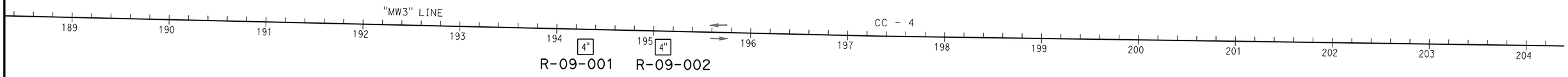
BENCH MARK

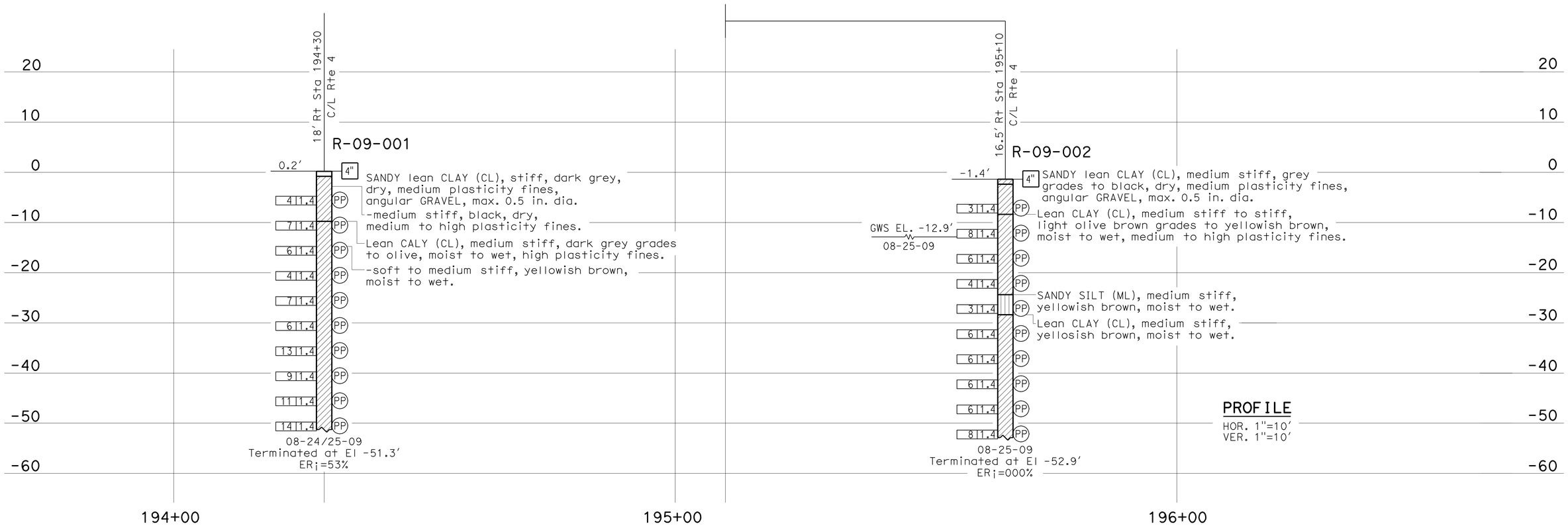
R-09-001: 2,148,354.6 ft./ 6,248,107.0 ft. NAD83
R-09-002: 2,148,357.8 ft./ 6,248,183.0 ft. NAD83

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



PLAN

1"=50'



PROFILE

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

ENGINEERING SERVICES	GEOTECHNICAL SERVICES		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH	BRIDGE NO. 28E0048	MEDIAN BUFFER ZONE & UPDATE SHOULDERS
FUNCTIONAL SUPERVISOR	DRAWN BY: M. Reynolds	FIELD INVESTIGATION BY: S. Awad			POST MILES D47.4	LOG OF TEST BORINGS 1 of 3
NAME: H. Nikoui	CHECKED BY: R. Nashed					

OGS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 04
EA 0A8401

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES

SHEET 5 OF 7

FILE => 28e0048_050_ltb01.dgn

USERNAME => ttrenard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:23

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	216	217

REGISTERED CIVIL ENGINEER — DATE 10-08-09

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Samuel Awad — No. 64589 — Exp. 6-30-11 — CIVIL — 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
Size	A	Auger Boring
Size	R P	Rotary drilled boring Rotary percussion boring (air)
Size	R	Rotary drilled diamond core
Size	HD HA	Hand driven (1-inch soil tube) Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778-95)
⬚	O	Other

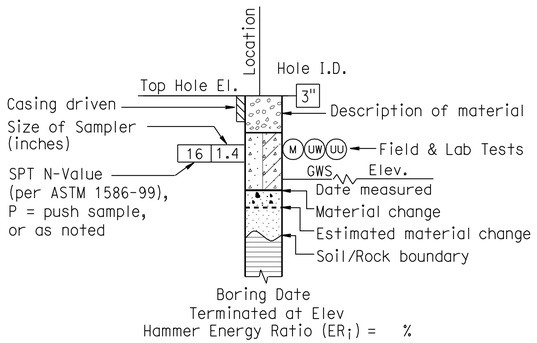
Note: Size in inches.

CONSISTENCY OF COHESIVE SOILS

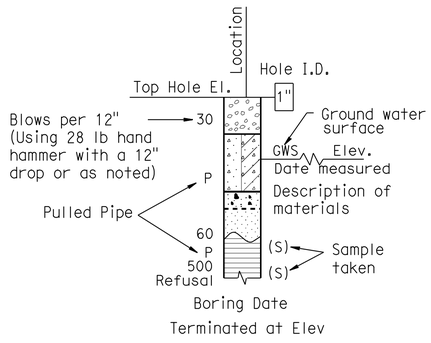
Description	Unconfined Compressive Strength (tsf)	Pocket Penetrometer Measurement (tsf)	Torvane Measurement (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 to 0.50	0.25 to 0.50	0.12 to 0.25	Easily penetrated several inches by thumb
Medium Stiff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

PLASTICITY OF FINE-GRAINED SOILS

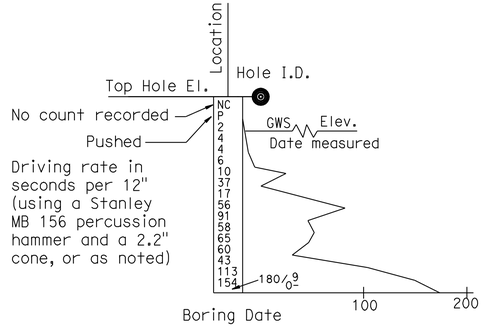
Description	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be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



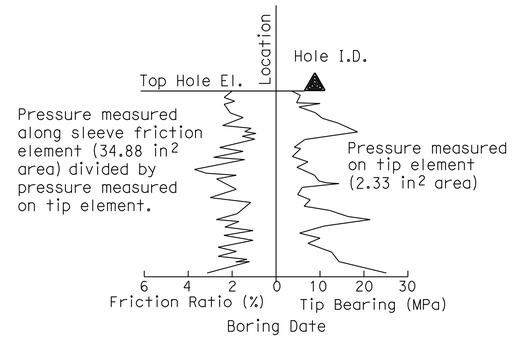
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) SOUNDING

ENGINEERING SERVICES	GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH	BRIDGE NO. 28E0048	SOIL LEGEND
FUNCTIONAL SUPERVISOR — PREPARED BY M. Reynolds				POST MILE D47.4	LOG OF TEST BORINGS 2 of 3
NAME: H. Nikoui — CHECKED BY R. Nashed	S. Awad		CU 04 EA 0A8401		

GS LOTB SOIL LEGEND

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES

SHEET 6 OF 7

FILE => 28e0048_060_ltb02.dgn

USERNAME => ttriepard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:23

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	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
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	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
	COBBLES 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
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	4	43.9/48.1	217	217

REGISTERED CIVIL ENGINEER — DATE 10-08-09

7-19-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Samuel Awad — No. 64589 — Exp. 6-30-11 — CIVIL — STATE OF CALIFORNIA

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APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

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

PERCENT OR PROPORTION OF SOILS

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

PARTICLE SIZE

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

ENGINEERING SERVICES		GEOTECHNICAL SERVICES
FUNCTIONAL SUPERVISOR	PREPARED BY M. Reynolds	
NAME: H. Nikoui	CHECKED BY R. Nashed	S. Awad

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
OFFICE OF GEOTECHNICAL
DESIGN BRANCH

BRIDGE NO. 28E0048
POST MILE D47.4

CU 04
EA 0A8401

SOIL LEGEND
LOG OF TEST BORINGS 3 of 3

GS LOTB SOIL LEGEND

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES

SHEET 7 OF 7

FILE => 28e0048_070_ltb03.dgn

USERNAME => trfenard DATE PLOTTED => 19-JUL-2010 TIME PLOTTED => 07:24