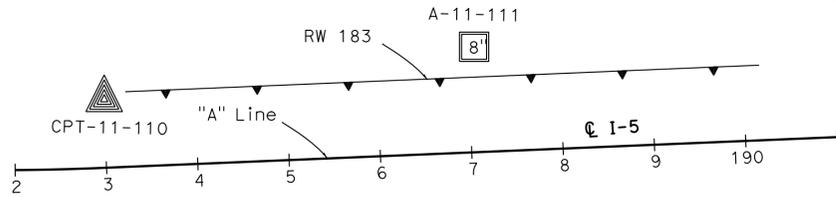


BENCH MARK:  
 DESIGNATION: 3Y-38-91 ELEV 252.197' NAVD88

DESCRIBED BY OCS 2003 - FOUND 3 3/4" OCS ALUMINUM BENCH MARK DISK STAMPED "3Y-38-91", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 17 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF INTERSECTION OF AVENIDA PICO AND AVENIDA LA PATA, 50 FT. SOUTHERLY OF THE CENTERLINE OF AVENIDA LA PATA AND 90 FT. EASTERLY OF THE AVENIDA PICO. MONUMENT IS SET LEVEL WITH THE TOP OF THE CURB.

- NOTES:
- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
  - (2) 2.4" samples were taken using a California Modified Sampler.
  - (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
  - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.

← To San Diego



**PLAN**

1" = 100'

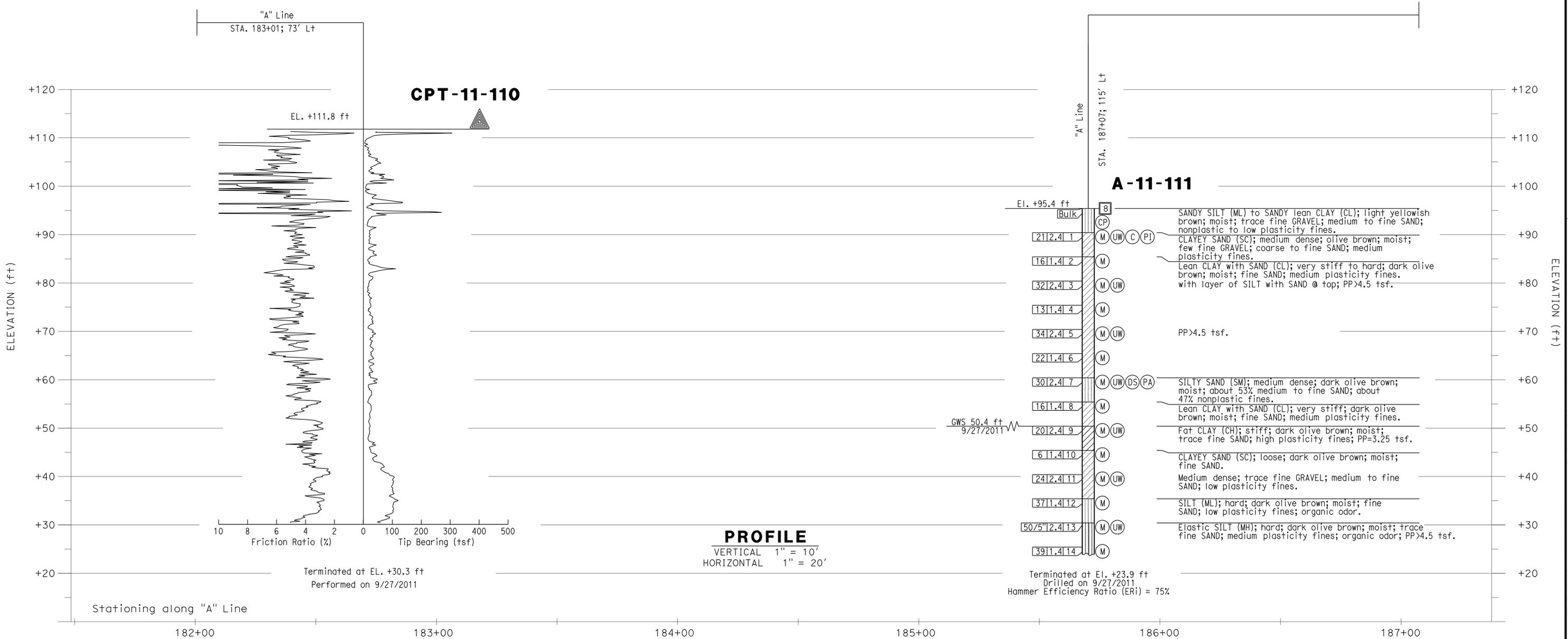
To Los Angeles →

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	601	635

  
 4/26/13  
 GEOTECHNICAL PROFESSIONAL DATE  
 3-10-14  
 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.



ORANGE COUNTY TRANSPORTATION AUTHORITY  
 550 S. MAIN STREET  
 ORANGE, CA 92863-1584  
 EARTH MECHANICS, INC.  
 17800 NEWHOPE STREET, SUITE B  
 FOUNTAIN VALLEY, CA 92708



  
 DESIGN OR SIGNATURE  
 7-10-13  
 SIGN OFF DATE

DRAWN BY J. FANG  
 CHECKED BY M. KAPUSKAR

R. JIE; K. KAEKUL; C. PONGSAKORNPATARA  
 FIELD INVESTIGATION BY:  
 DATE: 9/2011

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

M. KAPUSKAR  
 PROJECT ENGINEER  
 BRIDGE NO. 55E0140  
 POST MILES 3.3

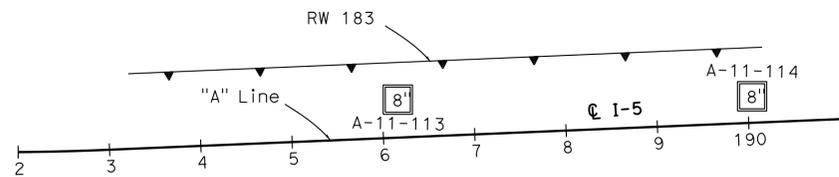
**RETAINING WALL 183**  
**LOG OF TEST BORINGS 1 OF 2**

BENCH MARK:  
 DESIGNATION: 3Y-38-91 ELEV 252.197' NAVD88

DESCRIBED BY OCS 2003 - FOUND 3 3/4" OCS ALUMINUM BENCH MARK DISK STAMPED "3Y-38-91", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 17 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF INTERSECTION OF AVENIDA PICO AND AVENIDA LA PATA, 50 FT. SOUTHERLY OF THE CENTERLINE OF AVENIDA LA PATA AND 90 FT. EASTERLY OF THE AVENIDA PICO. MONUMENT IS SET LEVEL WITH THE TOP OF THE CURB.

- NOTES:
- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
  - (2) 2.4" samples were taken using a California Modified Sampler.
  - (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
  - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.

← To San Diego



**PLAN**

1" = 100'

→ To Los Angeles

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	602	635

*Mike Kapuskar* 4/26/13  
 GEOTECHNICAL PROFESSIONAL DATE

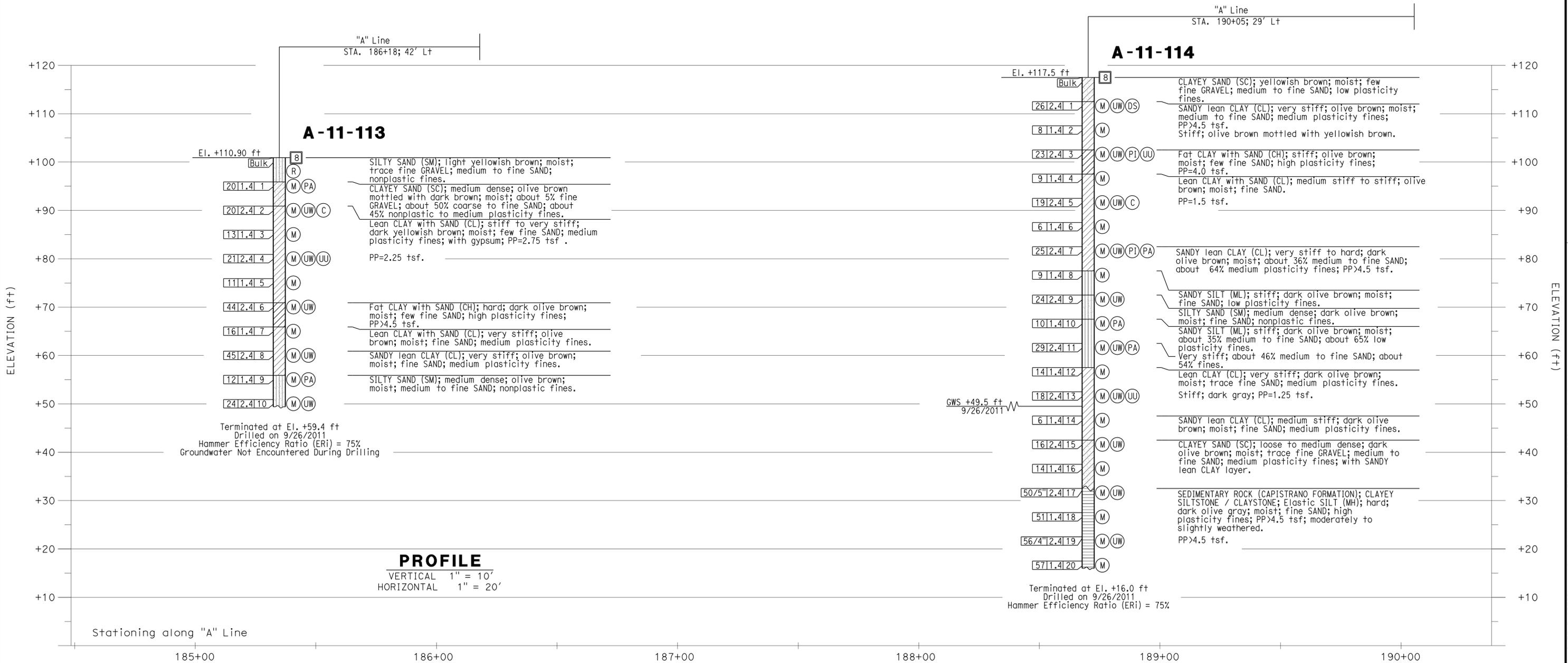
3-10-14  
 PLANS APPROVAL DATE

*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.*



ORANGE COUNTY TRANSPORTATION AUTHORITY  
 550 S. MAIN STREET  
 ORANGE, CA 92863-1584

EARTH MECHANICS, INC.  
 17800 NEWHOPE STREET, SUITE B  
 FOUNTAIN VALLEY, CA 92708



**PROFILE**

VERTICAL 1" = 10'  
 HORIZONTAL 1" = 20'

*Luqi Yang*  
 DESIGN OR SIGNATURE  
 7-10-13  
 SIGN OFF DATE

DRAWN BY J. FANG  
 CHECKED BY M. KAPUSKAR

R. JIE; K. KAEKUL; C. PONGSAKORNPATARA  
 FIELD INVESTIGATION BY:  
 DATE: 9/2011

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

M. KAPUSKAR  
 PROJECT ENGINEER

BRIDGE NO. 55E0140  
 POST MILES 3.3

**RETAINING WALL 183**

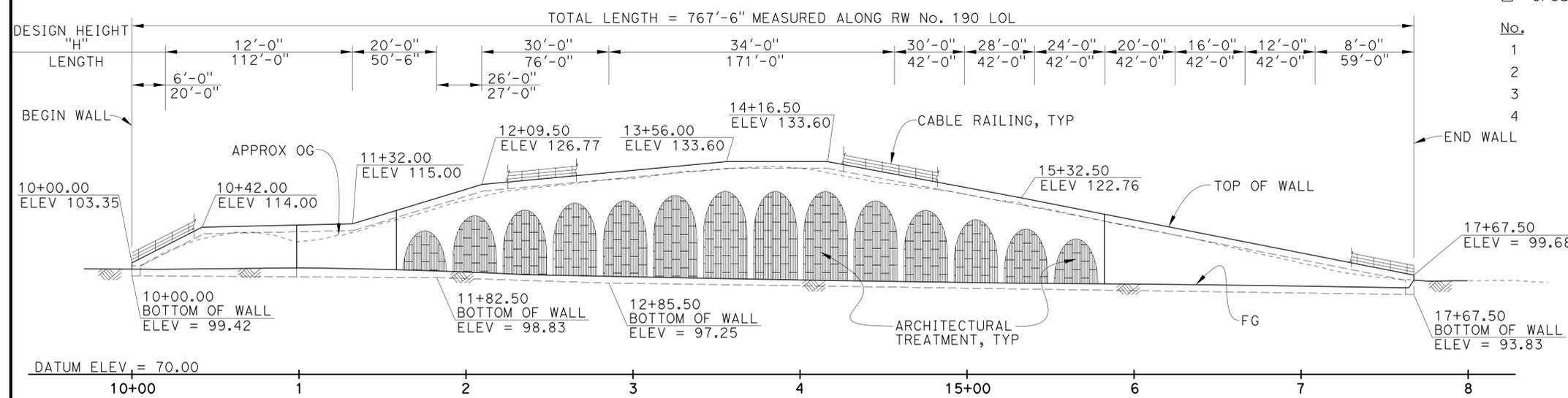
**LOG OF TEST BORINGS 2 OF 2**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	603	635

4/26/13  
 REGISTERED CIVIL ENGINEER DATE  
 3-10-14  
 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.



**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



**DEVELOPED ELEVATION**

RETAINING WALL NO. 190 QUANTITIES

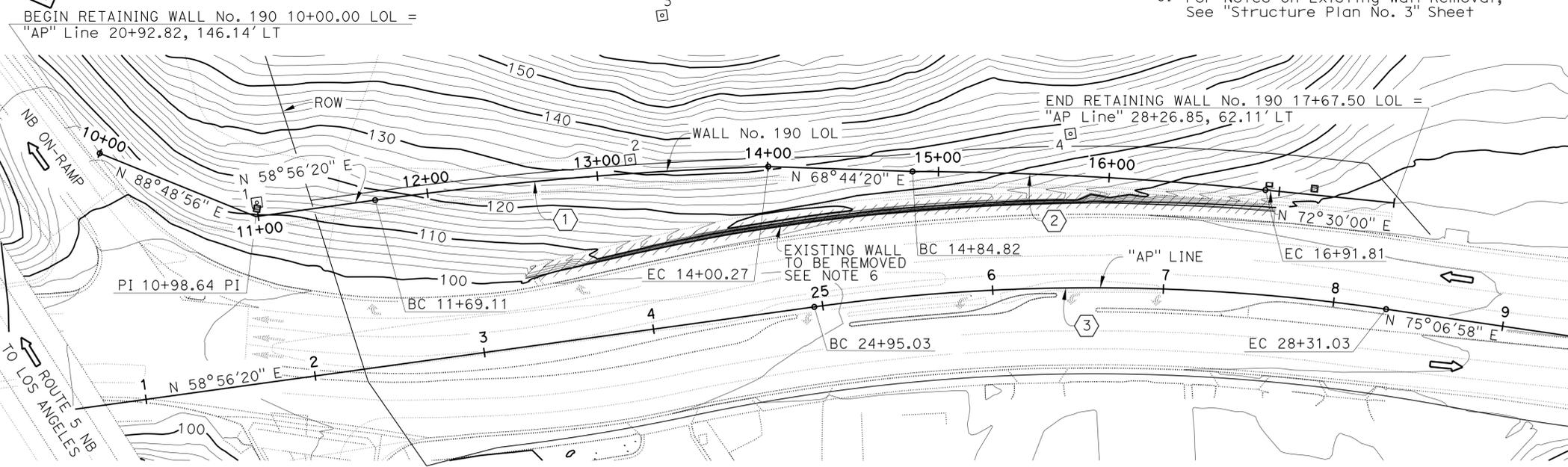
REMOVE RETAINING WALL (PORTION) (LF)	460	LF
STRUCTURE EXCAVATION (GROUND ANCHOR WALL)	1,480	CY
STRUCTURE BACKFILL (GROUND ANCHOR WALL)	57	CY
GROUND MONITORING LUMP SUM		
GROUND ANCHOR (SUBHORIZONTAL)	632	EA
STRUCTURAL CONCRETE, RETAINING WALL	815	CY
ARCHITECTURAL TREATMENT	6,600	SQFT
BAR REINFORCING STEEL (RETAINING WALL)	248,500	LB
STRUCTURAL SHOTCRETE	616	CY
CABLE RAILING	770	LF

**LEGEND:**  
 → Indicates Direction of Traffic  
 (Circle with arrow) Standard Plan Sheet No.  
 (Circle with 'X') Detail No.  
 --- Indicates Ground Anchor Wall LOL  
 [Hatched] Existing Keystone Retaining Wall LOL to be removed

- NOTES:**
- For Index To Plans, See "Structure Plan No. 1" Sheet
  - For General Notes, See "Sub Horizontal Ground Anchor Details" Sheet
  - For Design Notes, See "Retaining Wall Sections" Sheet
  - For Architectural Features, See "Architectural Details" Sheet
  - For Bonded Length Information, See "Retaining Wall Sections" And "Sub Horizontal Ground Anchor Details" Sheet
  - For Notes On Existing Wall Removal, See "Structure Plan No. 3" Sheet

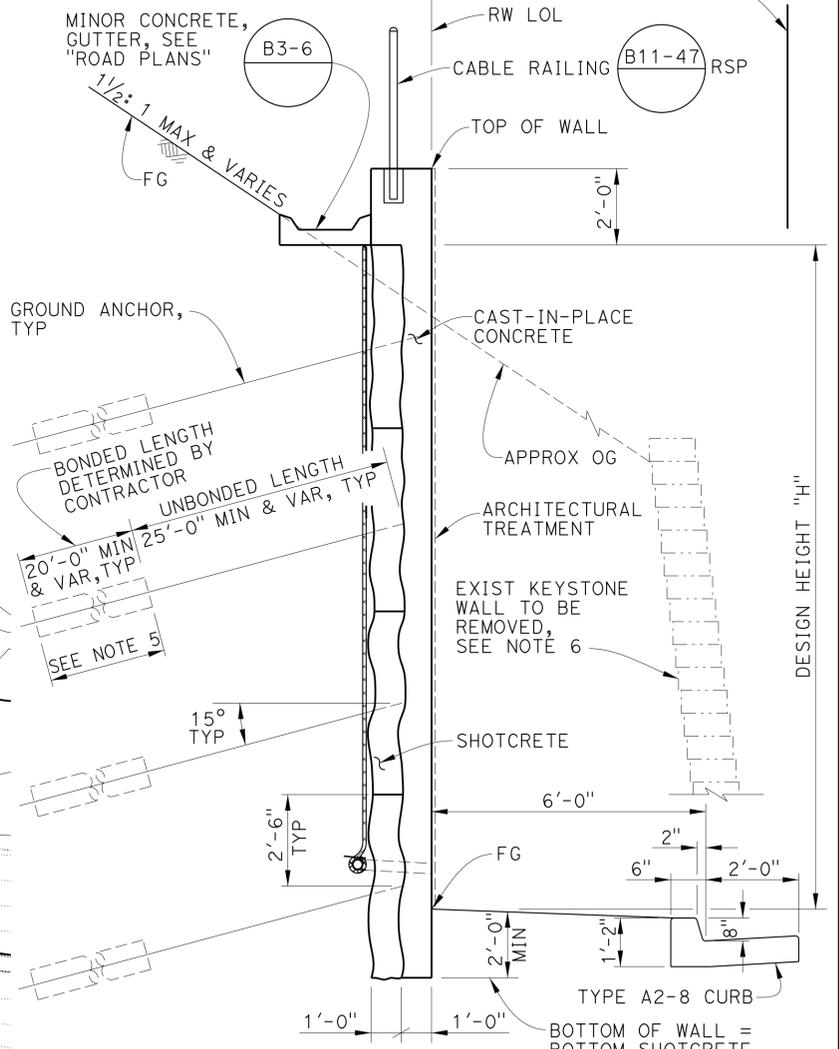
**CURVE DATA**

①	②	③
R = 2210.00'	R = 2206.00'	R = 1190.00'
Δ = 5°59'35"	Δ = 5°22'34"	Δ = 16°10'38"
T = 115.69'	T = 103.57'	T = 169.12'
L = 231.16'	L = 206.99'	L = 335.99'



**PLAN**  
 1" = 40'

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



**TYPICAL SECTION**  
 NO SCALE

NOTE: For information not shown, see "Section A-A" on "Retaining Wall Sections" sheet.

DESIGN: Luqi Yang 1-14-14 SIGN OFF DATE	DESIGN BY: E. Mobo CHECKED: M. Sinha	LOAD & RESISTANCE FACTOR DESIGN LAYOUT BY: E. Johnson CHECKED: M. Sinha	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE CHECKED: M. Sinha	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	MOHSEN MOHSENI PROJECT ENGINEER	BRIDGE NO.: 55E-0141 POST MILES: 3.4	<b>RETAINING WALL No. 190</b> <b>GENERAL PLAN</b>
	QUANTITIES BY: J. Fix CHECKED: M. Sinha	SPECIFICATIONS BY: G. Matesic CHECKED: M. Sinha	PLANS AND SPECS COMPARED CHECKED: M. Sinha	MOHSEN MOHSENI PROJECT ENGINEER	MOHSEN MOHSENI PROJECT ENGINEER	REVISION DATES: 5/28/12, 11/13/12, 03/04/13, 4/26/13 SHEET 1 OF 16	

DESIGN GENERAL PLAN SHEET (ENGLISH) (REV.7/16/10) ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3 UNIT: PROJECT NUMBER & PHASE: 12000202771 CONTRACT NO.: 12-0F96A4 DISREGARD PRINTS BEARING EARLIER REVISION DATES USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 FILE => 55e-0141-a-gp01.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Ora	5	3.0/3.7	604	635

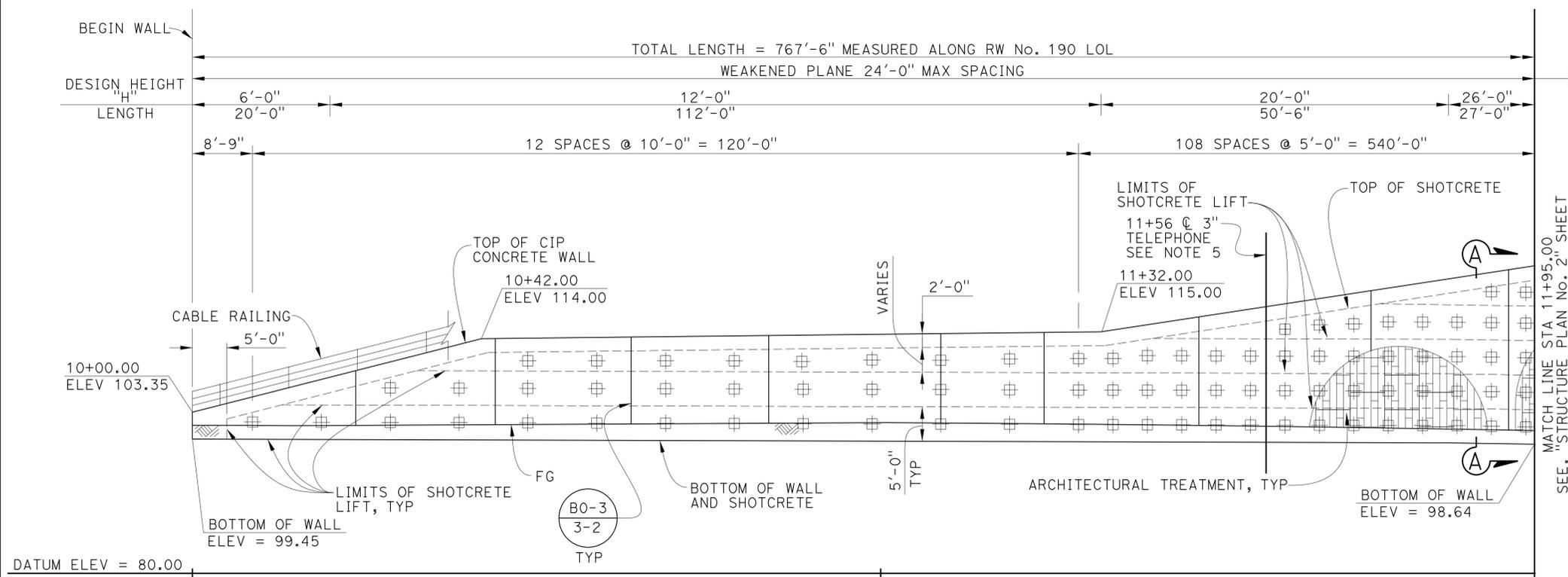
REGISTERED CIVIL ENGINEER DATE 4/26/13

3-10-14 PLANS APPROVAL DATE

EFREN T. MOBO No. C49439 Exp. 09/30/14 CIVIL STATE OF CALIFORNIA

**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612

**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



- LEGEND:**
- ➔ Indicates Direction of Traffic
  - ⊕ Standard Plan Sheet No.
  - ⊙ Detail No.
  - Indicates Ground Anchor Wall LOL
  - ⊕ Denotes Ground Anchor Assembly
- NOTES:**
- Ground Anchor Assembly Are At Mid Height Of Shotcrete Lift.
  - For Section A-A, See "Retaining Wall Sections" Sheet.
  - Weakened Planes To Be Placed At Corner Of Wall And Midway Between Ground Anchors.
  - For Architectural Layout And Detail, See "Architectural Details" Sheet.
  - Pipe Locations To Be Adjusted As Necessary And Be Centered Between Anchors, See "Road Plans" For Details.
  - For Notes On Existing Wall Removal, See "Structure Plan No. 3" Sheet

**DEVELOPED ELEVATION**  
1" = 10'

**CURVE DATA** ①

R = 2210.00'  
 Δ = 5°59'35"  
 T = 115.69'  
 L = 231.16'

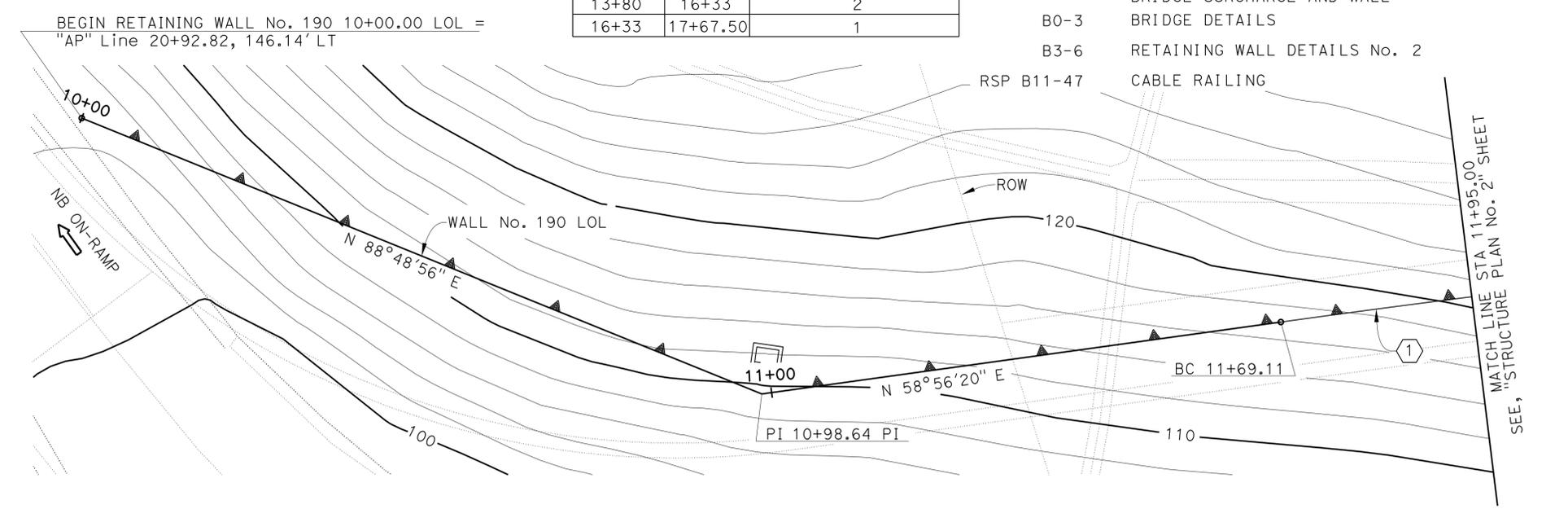
**STABILITY TESTS TABLE**

WALL LOL	STATION	MINIMUM NO. OF TESTS
START	END	
10+00	11+32	1
11+32	13+80	1
13+80	16+33	2
16+33	17+67.50	1

- STANDARD PLANS DATED 2010**
- A10A ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
  - A10B ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
  - A10F LEGEND-SOIL (SHEET 1 OF 2)
  - A10G LEGEND-SOIL (SHEET 2 OF 2)
  - A10H LEGEND-ROCK
  - A62B LIMITS OF PAYMENT FOR EXCAVATION BACKFILL BRIDGE SURCHARGE AND WALL
  - B0-3 BRIDGE DETAILS
  - B3-6 RETAINING WALL DETAILS No. 2

**INDEX TO PLANS**

SHEET NO.	TITLE
1.	GENERAL PLAN
2.	STRUCTURE PLAN No. 1
3.	STRUCTURE PLAN No. 2
4.	STRUCTURE PLAN No. 3
5.	STRUCTURE PLAN No. 4
6.	RETAINING WALL SECTIONS
7.	TIEBACK DETAILS
8.	WALL DRAIN DETAILS
9.	ARCHITECTURAL DETAILS
10.	LOG OF TEST BORINGS NO. 1 OF 7
11.	LOG OF TEST BORINGS NO. 2 OF 7
12.	LOG OF TEST BORINGS NO. 3 OF 7
13.	LOG OF TEST BORINGS NO. 4 OF 7
14.	LOG OF TEST BORINGS NO. 5 OF 7
15.	LOG OF TEST BORINGS NO. 6 OF 7
16.	LOG OF TEST BORINGS NO. 7 OF 7



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

DESIGNER: Luqi Yang  
 1-14-14  
 SIGN OFF DATE

DESIGN	BY: E. Mobo	CHECKED: M. Sinha
DETAILS	BY: P. Johnson	CHECKED: M. Sinha
QUANTITIES	BY: J. Fix	CHECKED: M. Sinha

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

MOHSEN MOHSENI  
PROJECT ENGINEER

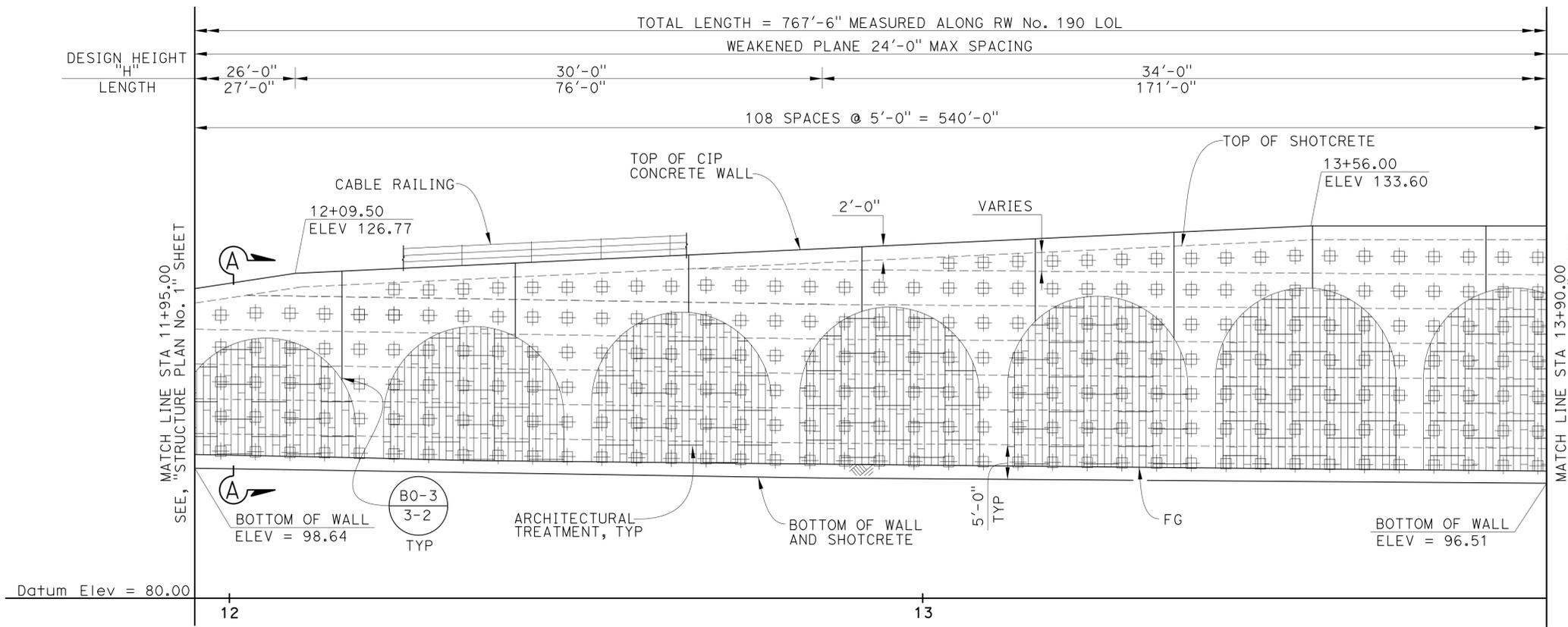
BRIDGE NO. 55E-0141  
POST MILES 3.4

**RETAINING WALL No. 190  
STRUCTURE PLAN No. 1**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Ora	5	3.0/3.7	605	635

REGISTERED CIVIL ENGINEER DATE 4/26/13  
 EFREN T. MOBO  
 No. C49439  
 Exp. 09/30/14  
 CIVIL  
 STATE OF CALIFORNIA

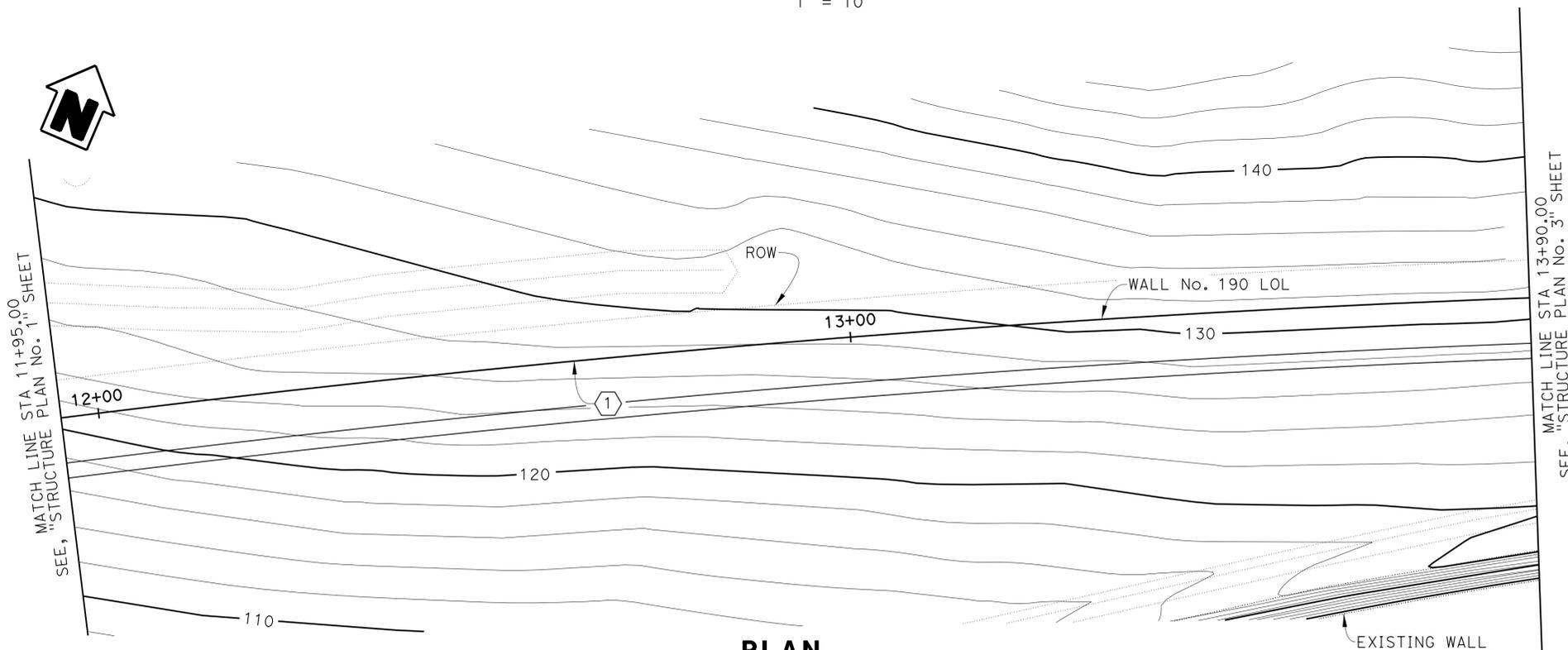
**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



**DEVELOPED ELEVATION**  
1" = 10'

**NOTES:**

1. Ground Anchor Assembly Are At Mid Height Of Shotcrete Lift.
2. For Legend, See "Structure Plan No. 1" Sheet.
3. For Section A-A, See "Retaining Wall Sections" Sheet.
4. Weakened Planes To Be Placed At Corner Of Wall And Midway Between Ground Anchors.
5. For Stability Tests Requirements, See "Structure Plan No. 1" Sheet.
6. For Architectural Layout And Detail, See "Architectural Details" Sheet.
7. For Notes On Existing Wall Removal, See "Structure Plan No. 3" Sheet.



**PLAN**  
1" = 10'

**CURVE DATA (1)**  
 R = 2210.00'  
 Δ = 5°59'35"  
 T = 115.69'  
 L = 231.16'

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

Luqi Yang  
 DESIGNER  
 1-14-14  
 SIGN OFF DATE

DESIGN	BY E. Mobo	CHECKED M. Sinha
DETAILS	BY P. Johnson	CHECKED M. Sinha
QUANTITIES	BY J. Fix	CHECKED M. Sinha

**PREPARED FOR THE STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION  
 MOHSEN MOHSENI  
 PROJECT ENGINEER

BRIDGE NO.	55E-0141
POST MILES	3.4

**RETAINING WALL No. 190**  
**STRUCTURE PLAN No. 2**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-0F96A4

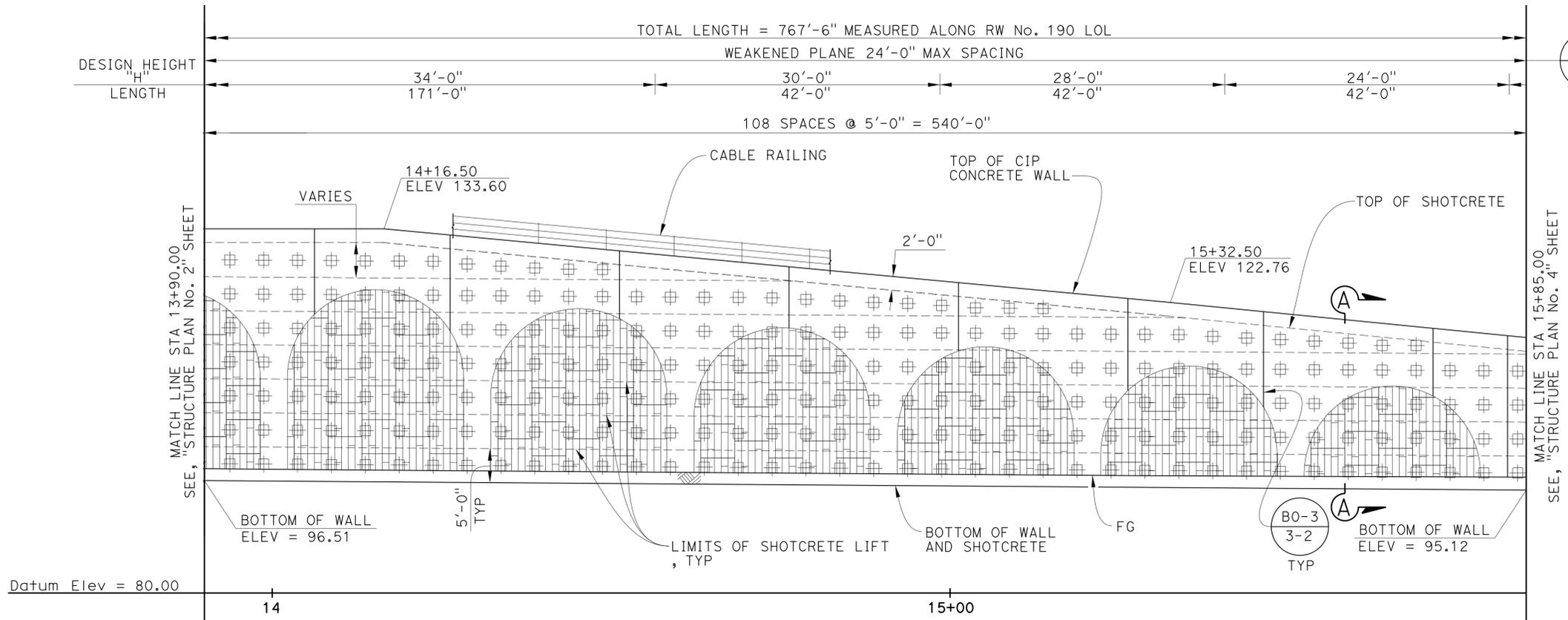
DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/28/12 11/23/12 03/04/13 4/26/13	3	16

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	606	635


 REGISTERED CIVIL ENGINEER DATE 4/26/13  
 PLANS APPROVAL DATE 3-10-14  
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.

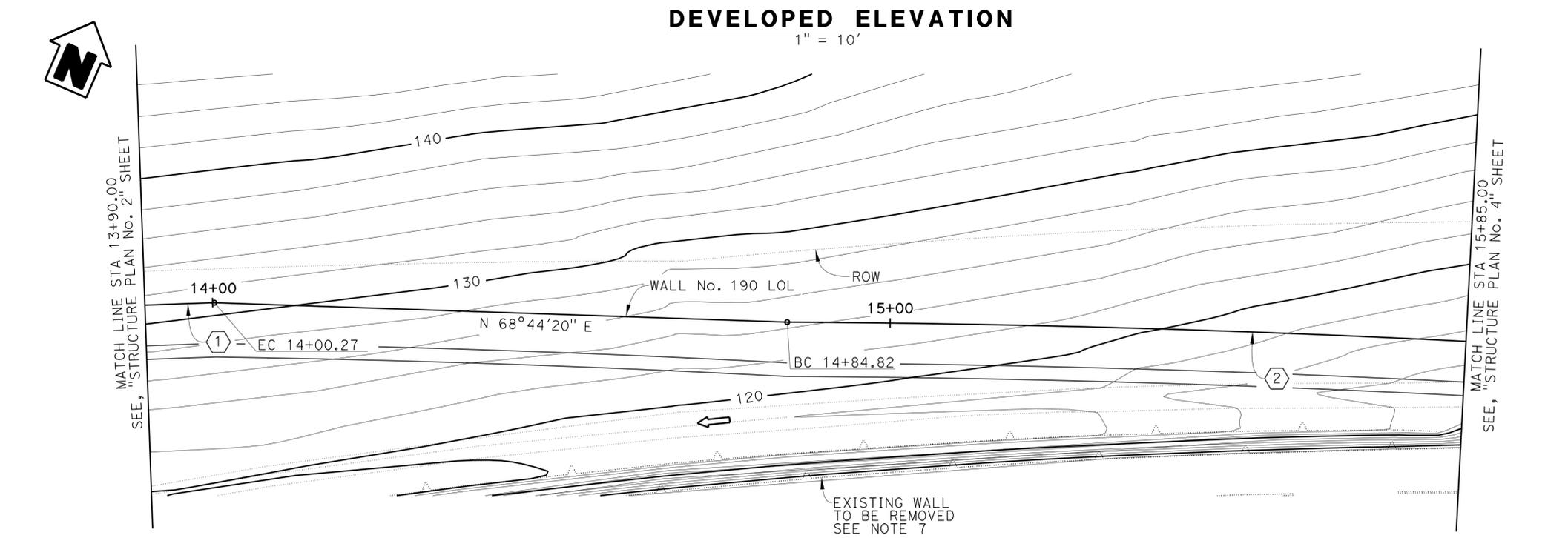
**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



B0-3  
3-2 SEE NOTE 4

**NOTES:**

1. Ground Anchor Assembly Are At Mid Height Of Shotcrete Lift.
2. For Legend, See "Structure Plan No. 1" Sheet.
3. For Section A-A, See "Retaining Wall Sections" Sheet.
4. Weakened Planes To Be Placed At Corner Of Wall And Midway Between Ground Anchors.
5. For Stability Tests Requirements, See "Structure Plan No. 1" Sheet.
6. For Architectural Layout And Detail, See "Architectural Details" Sheet.
7. Prior to the removal of existing retaining wall, contractor to submit a work plan that will subject to review and approval by the Engineer. Removal of the portions of the existing wall must be coordinated with construction of portions of the new wall. The contractor must take precautionary measures to prevent movements of the existing wall and existing slope during construction of the new wall.



CURVE DATA ①	CURVE DATA ②
R = 2210.00'	R = 2206.00'
Δ = 5°59'35"	Δ = 5°22'34"
T = 115.69'	T = 103.57'
L = 231.16'	L = 206.99'

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

Luqi Yang  
 DESIGN SUPERVISOR  
 1-14-14  
 SIGN OFF DATE

DESIGN	BY E. Mobo	CHECKED M. Sinha
DETAILS	BY P. Johnson	CHECKED M. Sinha
QUANTITIES	BY J. Fix	CHECKED M. Sinha

**PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION**  
 MOHSEN MOHSENI  
 PROJECT ENGINEER

BRIDGE NO.	55E-0141
POST MILES	3.4

**RETAINING WALL No. 190**  
**STRUCTURE PLAN No. 3**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-0F96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/28/12 11/23/12 03/04/13 4/26/13	4	16

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	607	635

REGISTERED CIVIL ENGINEER DATE 4/26/13

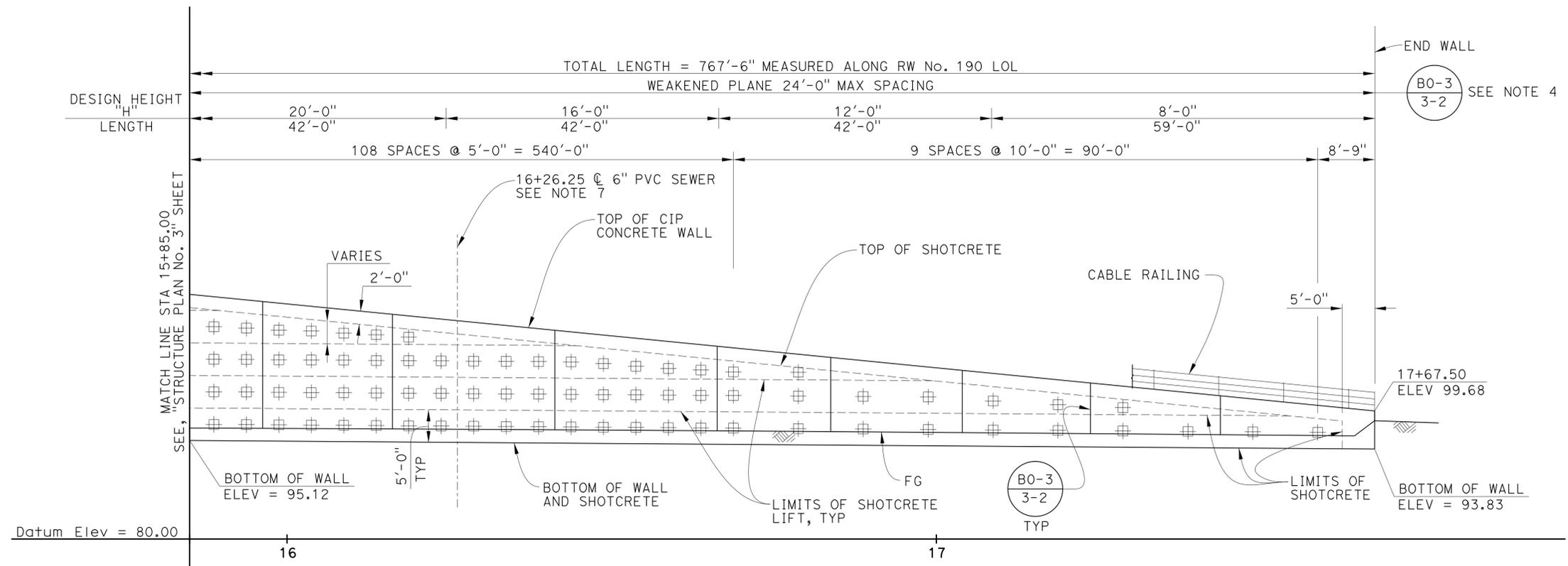
PLANS APPROVAL DATE 3-10-14

EFREN T. MOBO  
No. C49439  
Exp. 09/30/14  
CIVIL  
STATE OF CALIFORNIA

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

**PARSONS** 2201 DUPONT DRIVE  
SUITE 200  
IRVINE, CA 92612

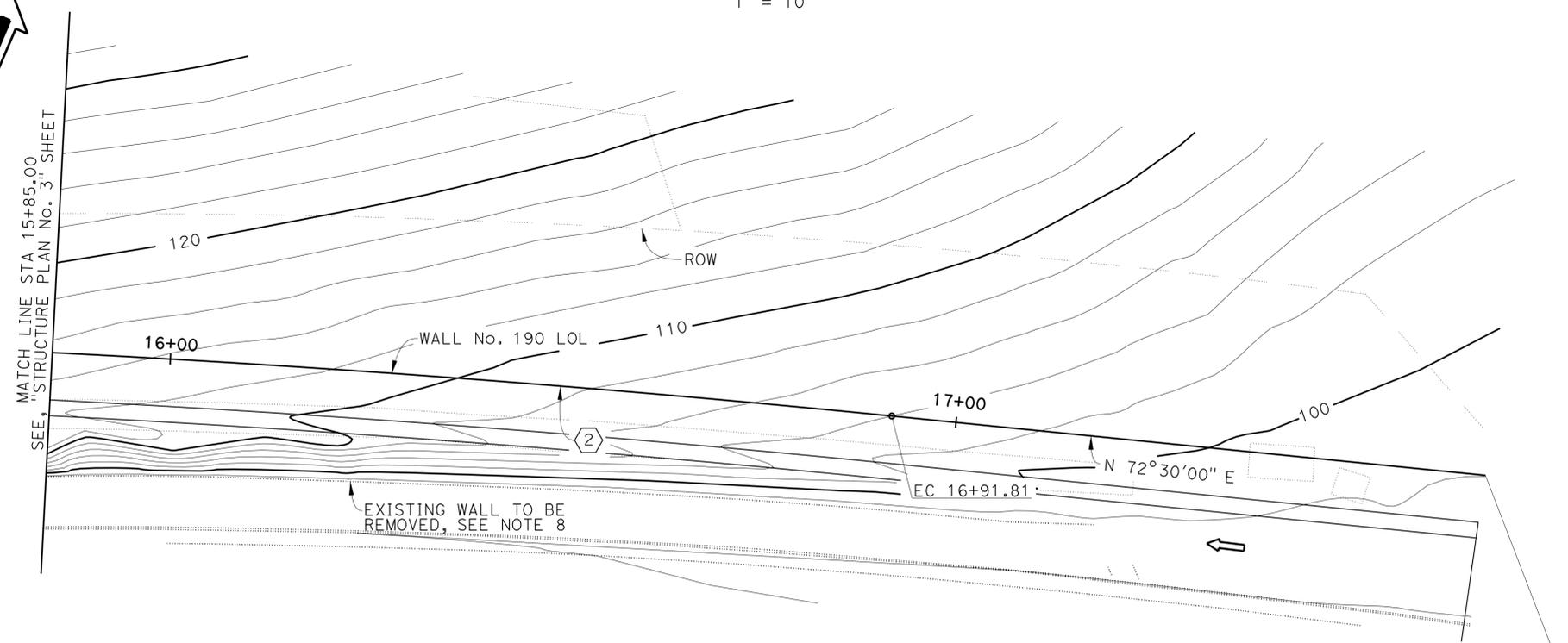
**OCTA** 550 SOUTH MAIN STREET  
ORANGE, CA 92863



**DEVELOPED ELEVATION**  
1" = 10'

**NOTES:**

1. Ground Anchor Assembly Are At Mid Height Of Shotcrete Lift.
2. For Legend, See "Structure Plan No. 1" Sheet.
3. For Typical Wall Section and Details, See "Retaining Wall Sections" Sheet.
4. Weakened Planes To Be Placed At Corner Of Wall And Midway Between Ground Anchors.
5. For Stability Tests Requirements, See "Structure Plan No. 1" Sheet.
6. For Architectural Layout And Detail, See "Architectural Details" Sheet.
7. Pipe location To Be Adjusted As Necessary And Be Centered Between Anchors, See "Road Plans" For Details.
8. For Notes On Existing Wall Removal, See "Structure Plan No. 3" Sheet.



**CURVE DATA** (2)

R = 2206.00'  
Δ = 5°22'34"  
T = 103.57'  
L = 206.99'

**PLAN**  
1" = 10'

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

END RETAINING WALL No. 190 17+67.50 LOL = "AP Line" 28+26.85, 62.11' LT

DESIGN BY: Luqi Yang  
SIGN OFF DATE: 1-14-14

DESIGN	BY: E. Mobo	CHECKED: M. Sinha
DETAILS	BY: P. Johnson	CHECKED: M. Sinha
QUANTITIES	BY: J. Fix	CHECKED: M. Sinha

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

MOHSEN MOHSENI  
PROJECT ENGINEER

BRIDGE NO.	55E-0141
POST MILES	3.4

**RETAINING WALL No. 190  
STRUCTURE PLAN No. 4**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-0F96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/28/12, 11/23/12, 03/04/13, 4/26/13	5	16

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	608	635

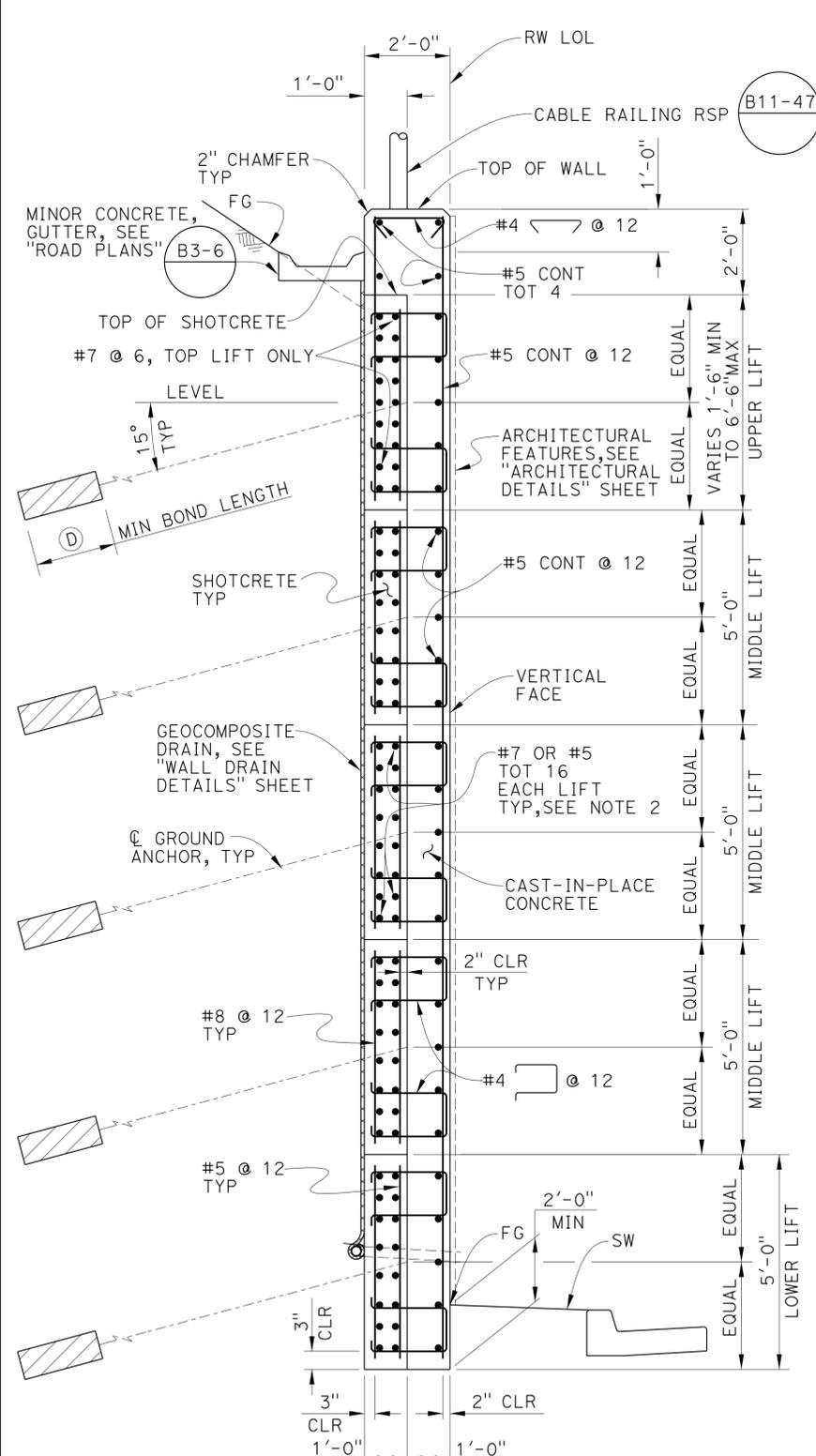
4/26/13  
REGISTERED CIVIL ENGINEER DATE

3-10-14  
PLANS APPROVAL DATE

EFREN T. MOBO  
No. C49439  
Exp. 09/30/14  
CIVIL  
STATE OF CALIFORNIA

PARSONS  
2201 DUPONT DRIVE  
SUITE 200  
IRVINE, CA 92612

OCTA  
550 SOUTH MAIN STREET  
ORANGE, CA 92863



NOTE:  
Five lifts shown, other number of lifts similar.

**SECTION A-A**

1/2" = 1'-0"

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

Luqi Yang  
DESIGN OR SIGN OFF DATE  
1-14-14

DESIGN	BY E. Mobo	CHECKED M. Sinha
DETAILS	BY P. Johnson	CHECKED M. Sinha
QUANTITIES	BY J. Fix	CHECKED M. Sinha

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

MOHSEN MOHSENI  
PROJECT ENGINEER

BRIDGE NO. 55E-0141  
POST MILES 3.4

**RETAINING WALL No. 190**  
**RETAINING WALL SECTIONS**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

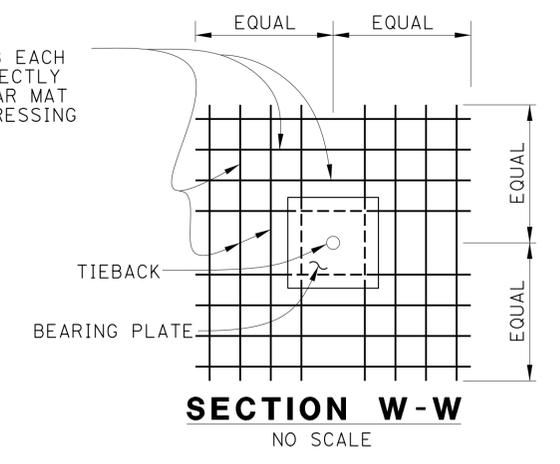
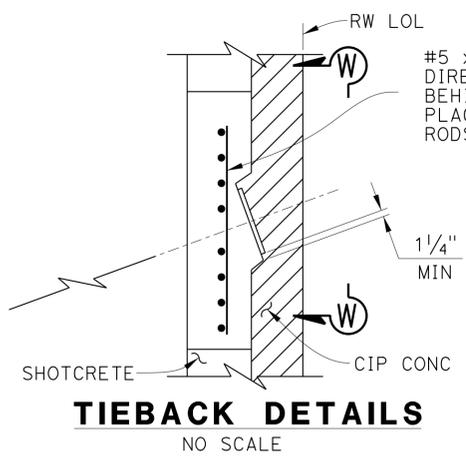
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-0F96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/28/12 11/23/12 03/04/13 4/26/13	6	16



**DESIGN NOTES:**

Design: AASHTO LRFD Bridge Design Specifications, 4th edition With California Amendments.

Reinforced Concrete:

Cast-In-Place:  $f'_c = 3,600$  psi  
 $f_y = 60,000$  psi

Shotcrete:  $f'_c = 4,000$  psi  
 $f_{ci} = 4,000$  psi at Stressing  
 $f_y = 60,000$  psi

Structural Steel: A36,  $f_y = 36$  ksi

Soil Parameters:  
(For determination of design lateral earth pressures)  
 $\gamma = 122$  pcf (soil unit weight)  
 $k_a = 0.43$  (active earth pressure coefficient)  
 $k_{ae} = 0.71$  (seismic earth pressure coefficient)

Seismic:  $K_h = 0.19$ ,  $K_v = 0.0$

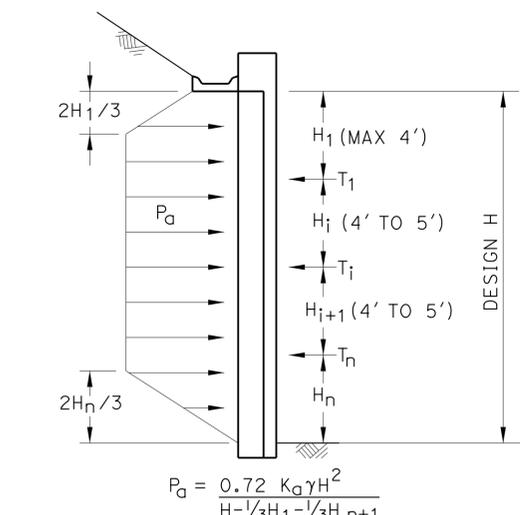
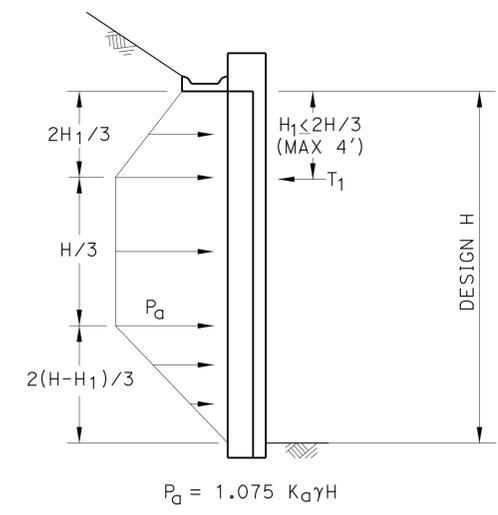
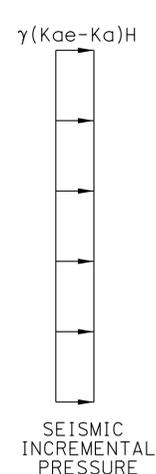
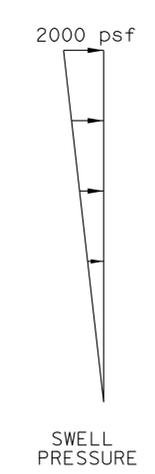
Prestressing Steel: (See "General Notes" on "Sub Horizontal Ground Anchors Details" Sheet)

**GROUND ANCHOR DESIGN FORCE TABLE**

UPPER, MIDDLE & LOWER LIFTS

ANCHOR LOCATION (STATION)	FDL (KIPS)	FTL (KIPS)	LL (KIPS)	MIN (D) (FT)	MIN (E) (FT)
10+00.00 TO 11+82.50	127.3	127.3	70.0	30.0	45.0
11+82.50 TO 12+85.50	109.1	109.1	60.0	25.0	30.0
12+85.50 TO 15+40.50	145.5	145.5	80.0	35.0	30.0
15+40.50 TO 16+66.50	90.9	90.9	50.0	20.0	25.0
16+66.50 TO 17+67.50	100.0	100.0	55.0	20.0	25.0

- NOTES:**
- FDL = Factored Design Load per anchor (kips)  
LL = Lock Off Load per Anchor (kips)  
For information on FTL, (D) and (E) see "Sub Horizontal Ground Anchors Details" sheet.
  - #7 Bars at Wall Stations 10+00.00 to 11+32.00 and 16+66.50 to 17+67.50.  
#5 Bars at Wall Station 11+32.00 to 16+66.50.



SINGLE-LEVEL GROUND ANCHOR WALL

MULTI-LEVEL GROUND ANCHOR WALL

**LOADING DIAGRAM**

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:11

# GENERAL NOTES

**DESIGN:**  
AASHTO LRFD Bridge Design Specifications,  
4th Edition with California Amendments.

**PRESTRESSING STEEL:**

Bars - ASTM Designation: A722 Type II (150 ksi)

Strand Tendons-ASTM Designation: A416  
(270 Ksi Low Relaxation steel)

FTL = Factored Test Load per anchor (Kips)

fpu = Minimum tensile strength of prestressing steel

As = Minimum cross sectional area of prestressing  
steel in ground anchor (square inch)

$$As(\text{Min}) = \frac{1.0 \text{ FTL}}{0.75 \text{ fpu}} \text{ (Strands)}$$

$$As(\text{Min}) = \frac{1.0 \text{ FTL}}{0.80 \text{ fpu}} \text{ (Bars)}$$

**NOTES:**

- (A) Level of initial grouting for drilled hole 6" in diameter or smaller.
- (B) Level of secondary grouting.
- (C) Level of initial grouting inside corrugated sheathing.
- (D) Bonded length shall be determined by the contractor. For minimum bonded length, see "RETAINING WALL SECTIONS" sheet.
- (E) For minimum unbonded length, see "RETAINING WALL SECTIONS" sheet.
- (F) For inclination, see "GENERAL PLAN" sheet.
- (G) Face of Wall Excavation.

**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 (Min thickness = 1/4") welded to bearing plate. Galvanize assembly after fabrication.
- 5. Steel tube welded to bearing plate. Inside diameter of steel tube (Min thickness = 1/4") to be 1" greater than outside diameter of smooth sheathing.
- 6. Galvanize assembly after fabrication.
- 7. For other wall details, see "Retaining Wall Sections" sheet.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	609	635

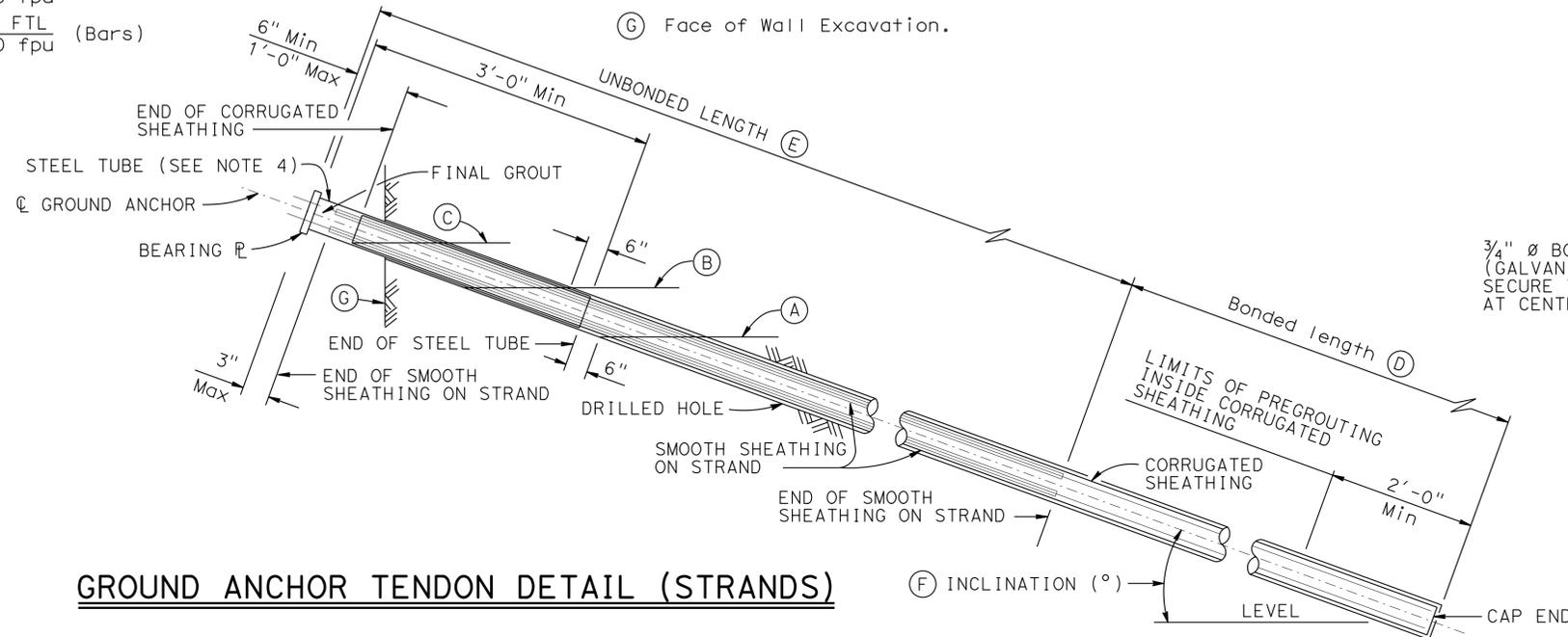
REGISTERED CIVIL ENGINEER DATE 4/26/13

PLANS APPROVAL DATE 3-10-14

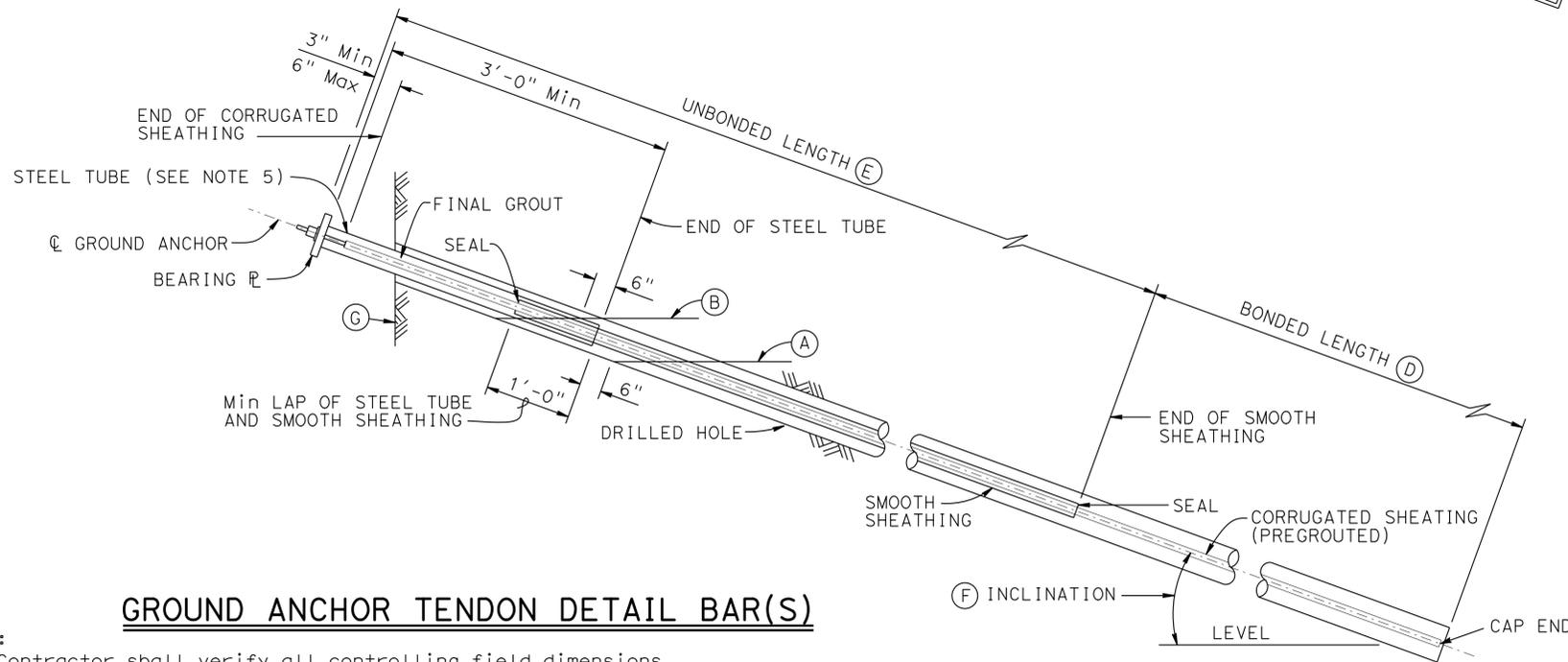
EFREN T. MOBO  
No. C49439  
Exp. 09/30/14  
CIVIL  
STATE OF CALIFORNIA

PARSONS 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612

OCTA 550 SOUTH MAIN STREET ORANGE, CA 92663

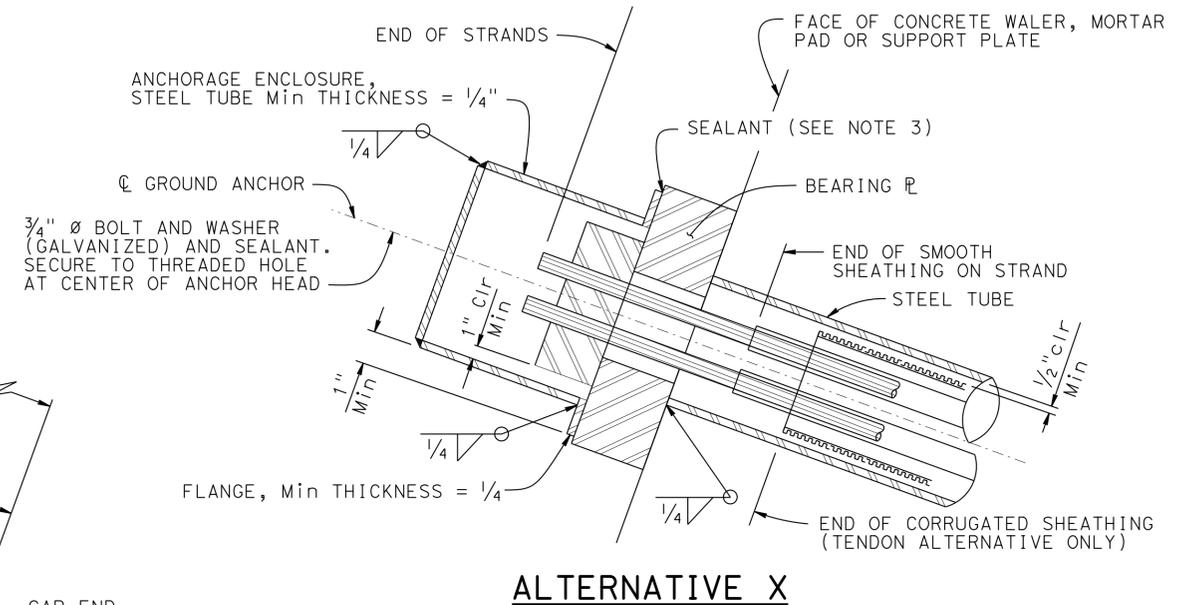


**GROUND ANCHOR TENDON DETAIL (STRANDS)**

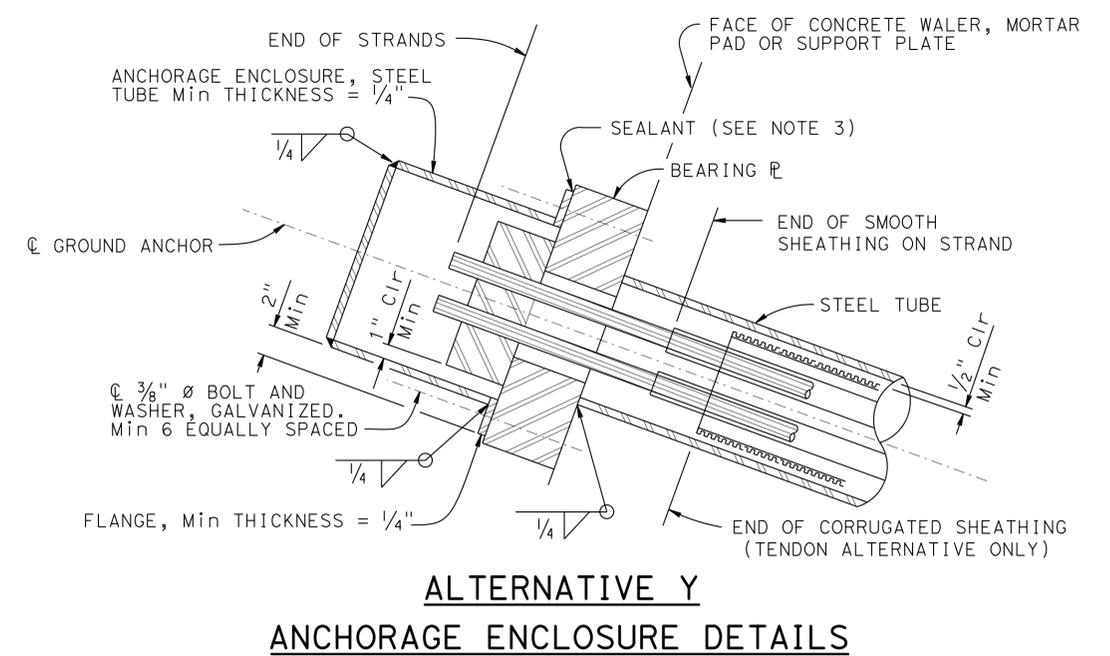


**GROUND ANCHOR TENDON DETAIL BAR(S)**

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



**ALTERNATIVE X**



**ALTERNATIVE Y ANCHORAGE ENCLOSURE DETAILS**

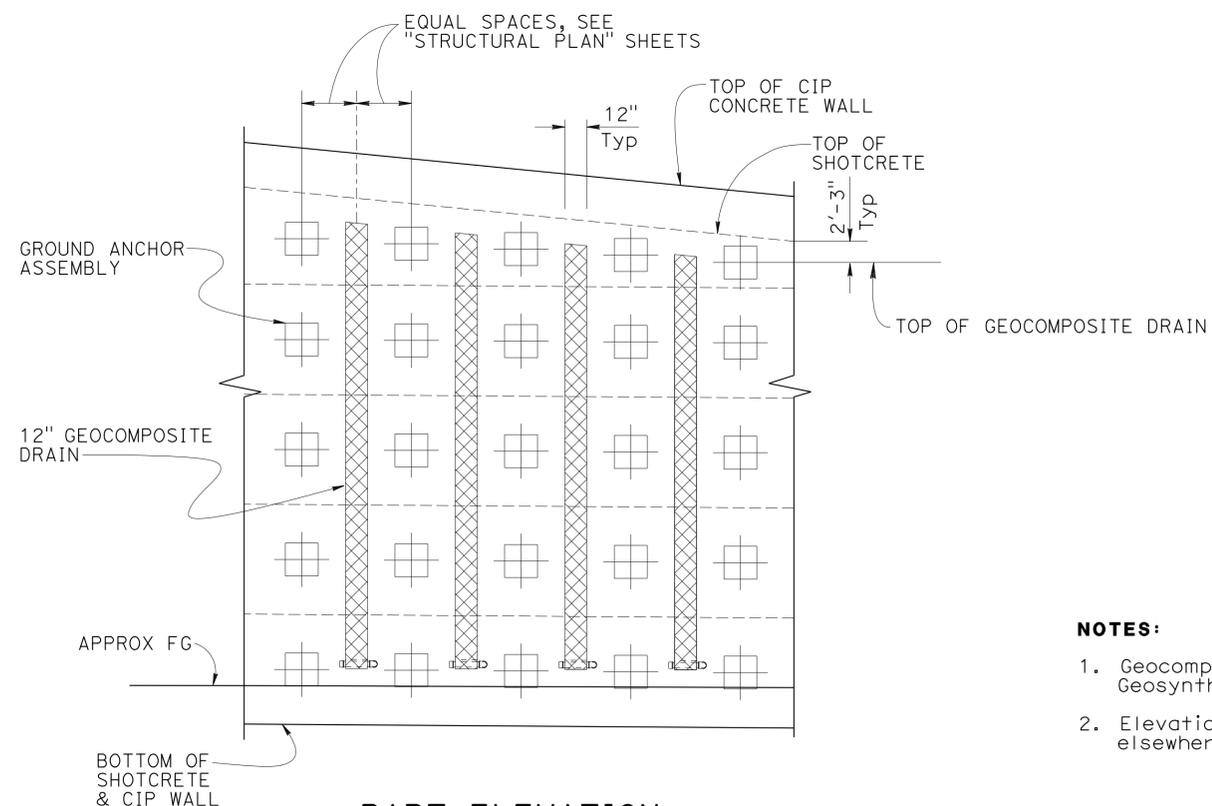
NO SCALE

STANDARD DRAWING		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF ENGINEERING SERVICES		BRIDGE NO. 55E-0141 POST MILE 3.4		RETAINING WALL No. 190			
FILE NO. xs12-040	APPROVAL DATE January 2012							SUB HORIZONTAL GROUND ANCHOR DETAILS			
UNIT: PROJECT NUMBER & PHASE: 12000202771 CONTRACT NO.: 12-0F96A4						DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES		SHEET 7	OF 16

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Ora	5	3.0/3.7	610	635

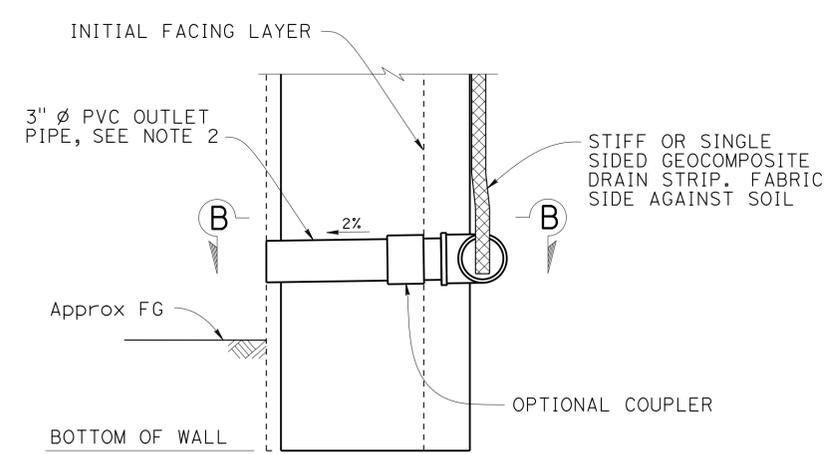
REGISTERED CIVIL ENGINEER DATE 4/26/13  
 EFREN T. MOBO  
 No. C49439  
 Exp. 09/30/14  
 CIVIL  
 STATE OF CALIFORNIA

**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863

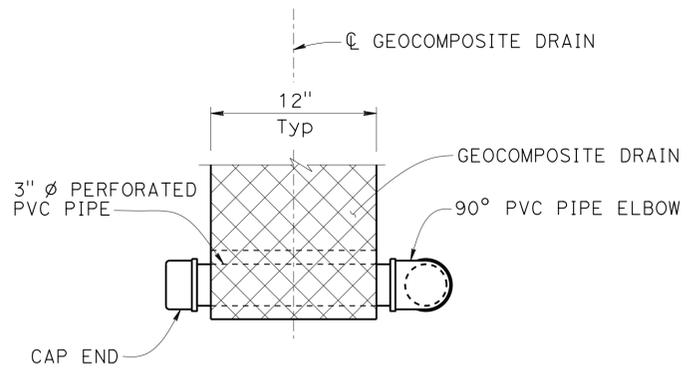


**PART ELEVATION**  
**GEOCOMPOSITE DRAIN**  
 No scale

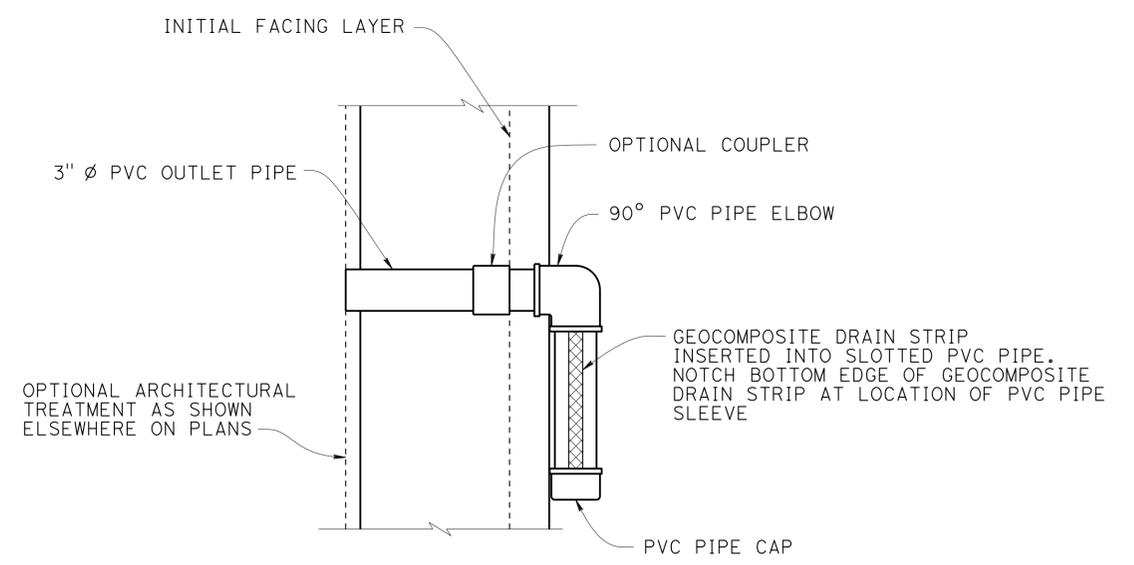
- NOTES:**
1. Geocomposite drain strip per Section 88 Geosynthetics of the Standard Specifications
  2. Elevation of drains and weepholes as shown elsewhere on plans



**WALL DRAIN DETAIL AT WEEPHOLE**  
 No scale



**VIEW A-A**  
 No scale



**SECTION B-B**  
 No Scale

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

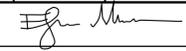
Caltrans' Wall Specialist recommended to start the geocomposite drain 2'-3" below the bottom of the gutter. The reason is to prevent surface water from getting into the geocomposite drain.

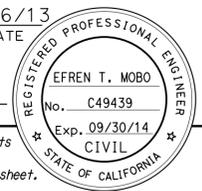
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION

**DIVISION OF ENGINEERING SERVICES**

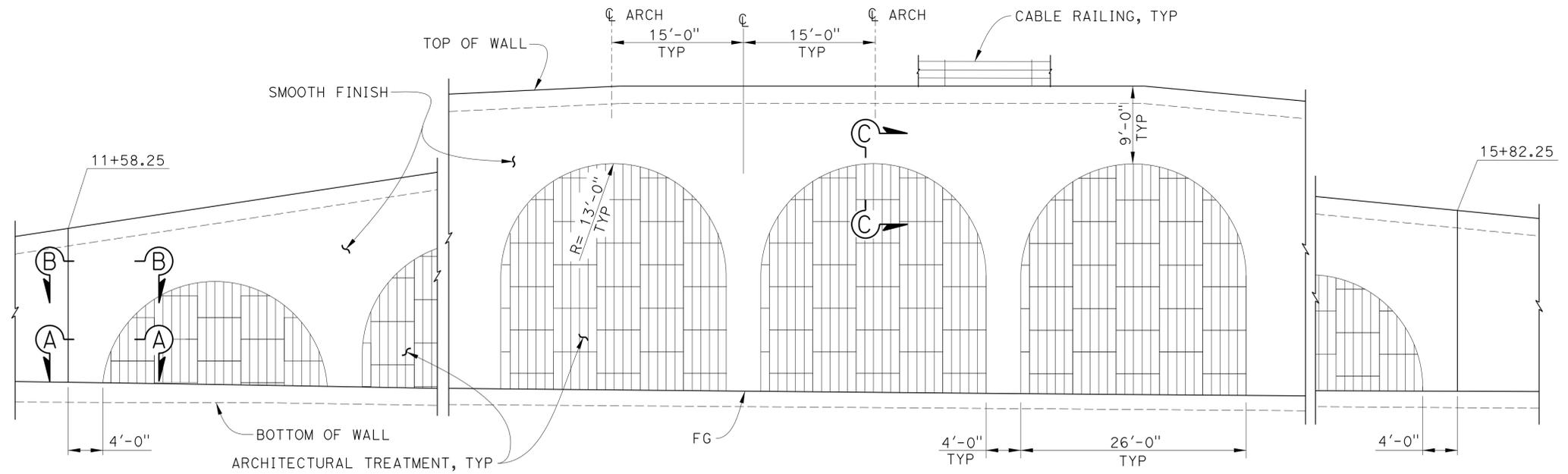
**RETAINING WALL No. 190**  
**WALL DRAIN DETAILS**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
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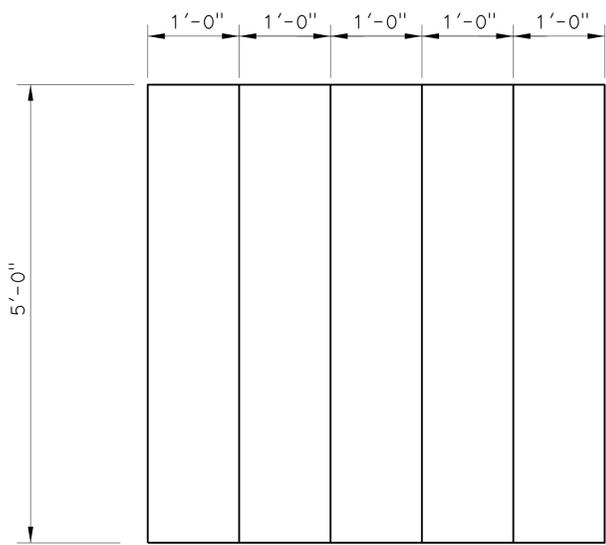
  
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 PLANS APPROVAL DATE 3-10-14  
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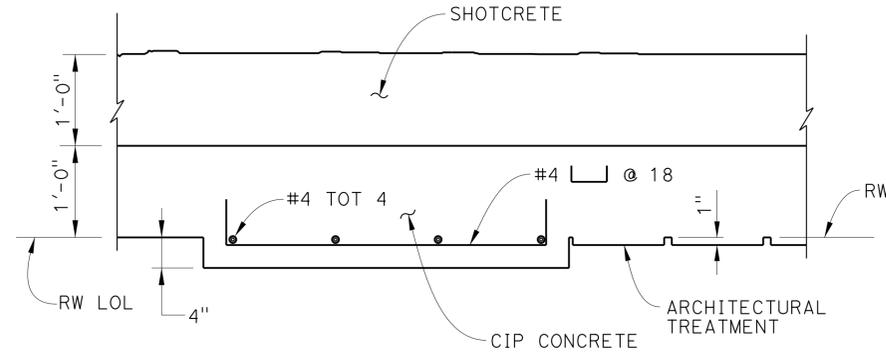
**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



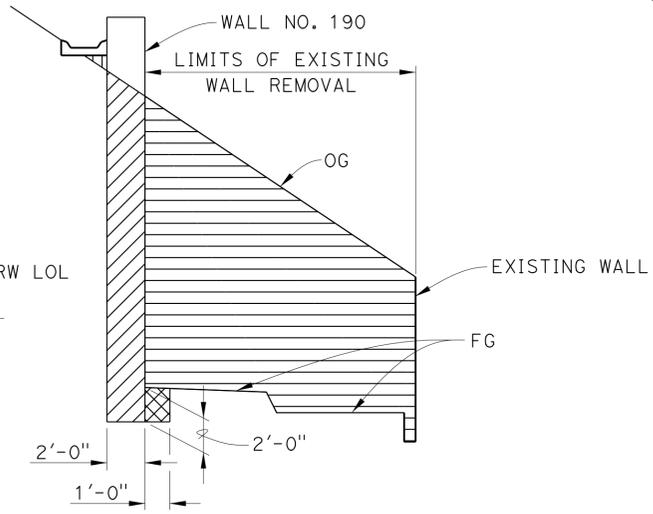
**PARTIAL ELEVATION**  
SCALE: 1/8" = 1'-0"



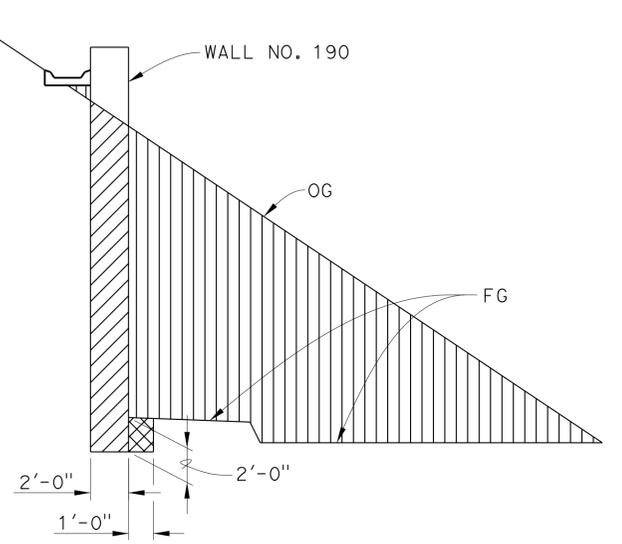
**ARCHITECTURAL TREATMENT**  
1" = 1'-0"



**SECTION A-A**  
1" = 1'-0"

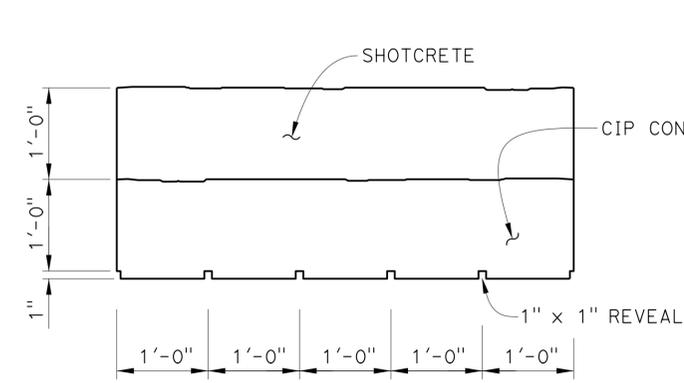


**WITHIN EXISTING WALL**

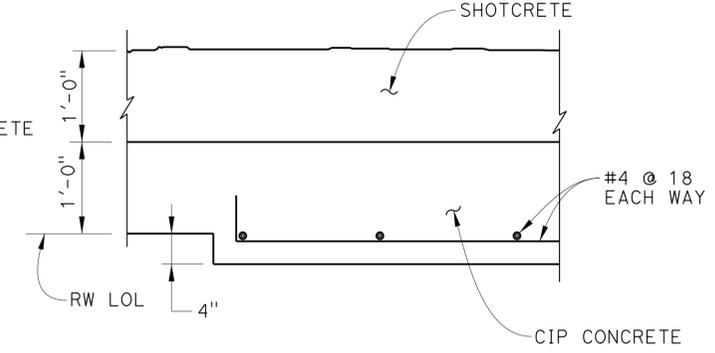


**AT ALL OTHER LOCATIONS**

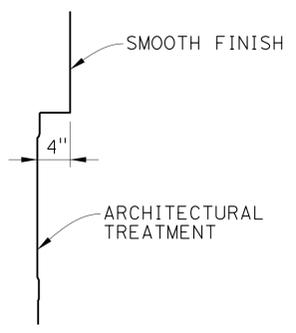
**EXCAVATION AND BACKFILL**  
NO SCALE



**ARCHITECTURAL TREATMENT**  
1" = 1'-0"



**SECTION B-B**  
1" = 1'-0"



**SECTION C-C**  
1" = 1'-0"

- LEGEND:**
-  Roadway Excavation (see Road Plans)
  -  Structure Excavation (Ground Anchor Wall)
  -  Structure Backfill (Ground Anchor Wall)
  -  Existing Retaining Wall removal

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

DESIGN BY Luqi Yang  
 Luqi Yang  
 1-14-14  
 SIGN OFF DATE

DESIGN	BY E. Mobo	CHECKED M. Sinha
DETAILS	BY P. Johnson	CHECKED M. Sinha
QUANTITIES	BY J. Fix	CHECKED M. Sinha

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

MOHSEN MOHSENI  
 PROJECT ENGINEER  
 BRIDGE NO. 55E-0141  
 POST MILES 3.4

**RETAINING WALL No. 190**  
**ARCHITECTURAL DETAILS**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-0F96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/28/12 11/12/12 03/04/13 4/26/13	9	16

FILE => 55e-0141-u-misc02.dgn

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:11

BENCH MARK:  
 DESIGNATION: 3Y-38-91 ELEV 252.197' NAVD88

DESCRIBED BY OCS 2003 - FOUND 3 3/4" OCS ALUMINUM BENCH MARK DISK STAMPED "3Y-38-91", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 17 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF INTERSECTION OF AVENIDA PICO AND AVENIDA LA PATA, 50 FT. SOUTHERLY OF THE CENTERLINE OF AVENIDA LA PATA AND 90 FT. EASTERLY OF THE AVENIDA PICO. MONUMENT IS SET LEVEL WITH THE TOP OF THE CURB.

**NOTES:**

- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
- (2) 2.4" samples were taken using a California Modified Sampler.
- (3) An automatic trip hammer system or a rope and pulley hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
- (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	612	635

*Mike Kapuskar* 4/26/13  
 GEOTECHNICAL PROFESSIONAL DATE

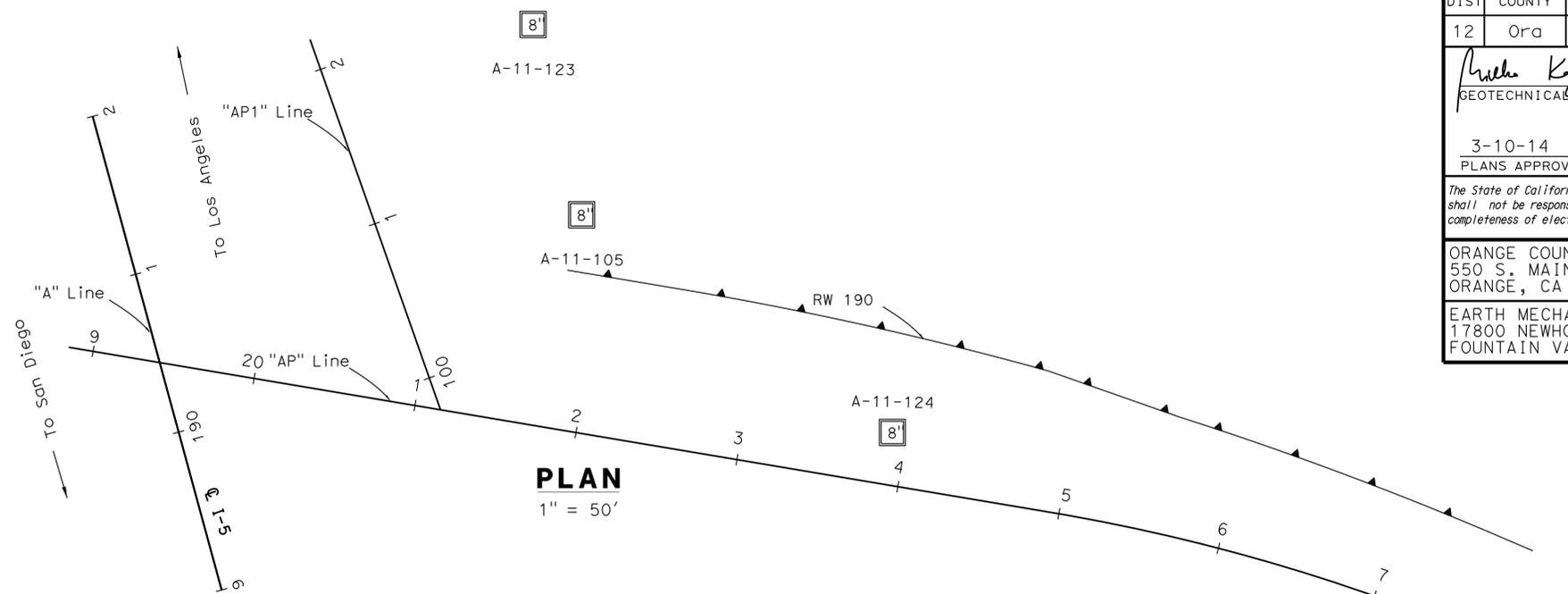
3-10-14  
 PLANS APPROVAL DATE

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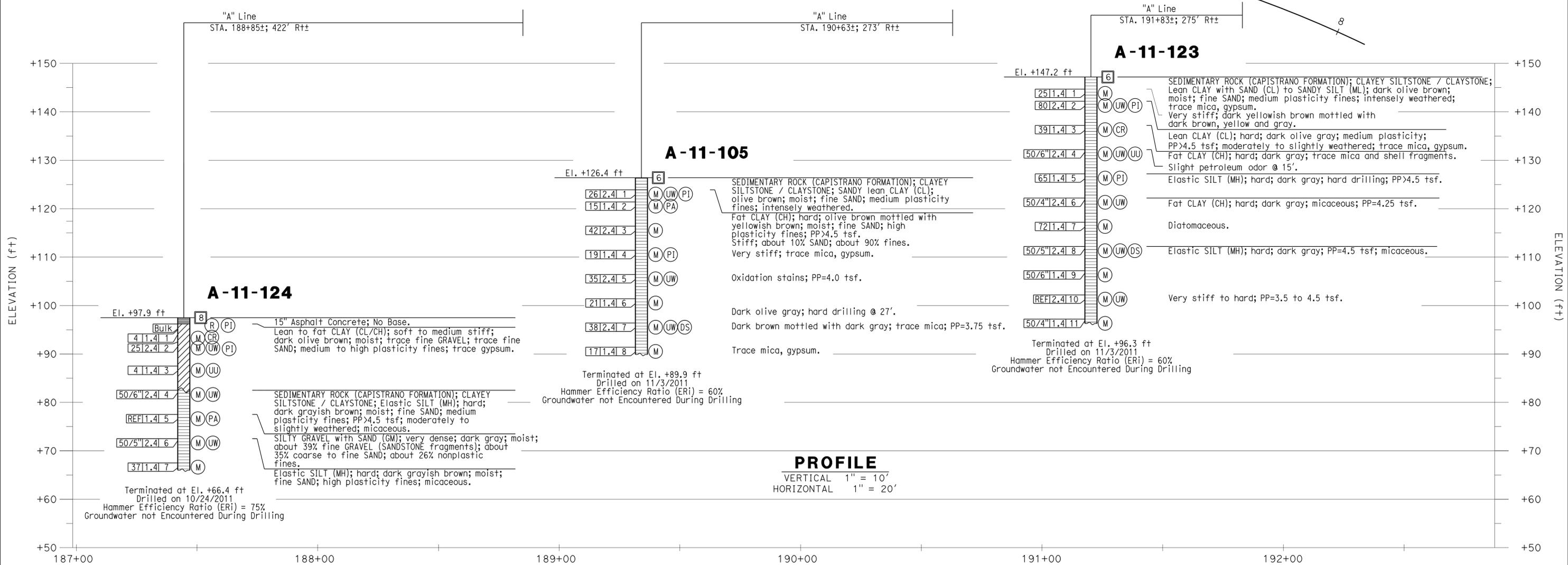


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 ORANGE, CA 92863-1584

EARTH MECHANICS, INC.  
 17800 NEWHOPE STREET, SUITE B  
 FOUNTAIN VALLEY, CA 92708



**PLAN**  
 1" = 50'



**PROFILE**  
 VERTICAL 1" = 10'  
 HORIZONTAL 1" = 20'

DESIGN OVERSIGHT <i>Luqi Yang</i> 1-14-14 SIGN OFF DATE	DRAWN BY J. FANG	R. JIE; K. KAEKUL; C. PONGSAKORNPATARA	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO. 55E-0141	<b>RETAINING WALL 190</b>
	CHECKED BY M. KAPUSKAR	FIELD INVESTIGATION BY: DATE: 10/2011, 11/2011		PROJECT ENGINEER M. KAPUSKAR	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Ora	5	3.0/3.7	613	635

# GEOTECHNICAL BORING LOG B-1

Date 3-13-99 Sheet 1 of 2  
 Project U.M.A. Pico Project No. 1980306-01  
 Drilling Co. Peter Drilling Type of Rig Bucket  
 Hole Diameter 24 Drive Weight 140 lb Drop 30"  
 Elevation Top of Hole 114' Location Pico Slope, East

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
115	0								@0-50' - Capistrano Formation (Tc) -	
120	5			R-1	13	83.9	19.9		@5' Sample: Medium brown, fine sandy SILTSTONE, slightly moist, slightly stiff; some pores and carbonates, faint horizontal laminations, oxidation staining @7-10' Bag Sample (B-1) (as above)	MD, CR, AL, DS
125	10			R-2	30/10				@10' Sample: Medium gray, mottled with brown fine sandy SILTSTONE, slightly moist, stiff; gypsum lined joints with iron oxide staining @12' Planar gypsum lined joint	DS
130	15			R-3	45	84.3	29.6	Tc	@15' Sample: Medium gray and maroon SILTSTONE, slightly moist, very stiff to hard; iron oxide staining on surface @16' Joint, no gypsum	
135	20			R-4	50	85.8	27.1		@20' Sample: Medium gray SILTSTONE, slightly moist, very stiff to hard; planar gypsum lined joints to 21' @23' Gypsum lined joint	
140	25			R-5	45	93.9	26.9		@25' Sample Olive green gray SILTSTONE, slightly moist, very stiff; iron oxide staining along fractures, subparallel joints @26-29' Increased oxidation @26-29' Bag Sample (B-2) Orangish brown mottled with gray, moist, soft to slightly stiff	
145	30								@29' Seepage along joint	

**SAMPLE TYPES:**  
 S SPLIT SPOON  
 R RING SAMPLE  
 B BULK SAMPLE  
 T TUBE SAMPLE

**TYPE OF TESTS:**  
 G GRAB SAMPLE  
 C CORE SAMPLE  
 DS DIRECT SHEAR  
 MD MAXIMUM DENSITY  
 CN CONSOLIDATION  
 CR CORROSION  
 SA SIEVE ANALYSIS  
 AL ATTERBERG LIMITS  
 EI EXPANSION INDEX  
 RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

# GEOTECHNICAL BORING LOG B-1

Date 3-13-99 Sheet 2 of 2  
 Project U.M.A. Pico Project No. 1980306-01  
 Drilling Co. Peter Drilling Type of Rig Bucket  
 Hole Diameter 24 Drive Weight 140 lb Drop 30"  
 Elevation Top of Hole 114' Location Pico Slope, East

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	DESCRIPTION	Type of Tests
145	30			R-6	45	96.3	26.3		@30' Sample: Medium brown mottled with medium gray SILTSTONE, slightly moist, stiff; gypsum lined joints, iron staining @31' oxidized/unoxidized contact, maroon SILTSTONE, slightly moist, stiff; contact with dark gray SILTSTONE, slightly moist, stiff to very stiff @32' Near horizontal 2 inch long sand pockets	
150	35			R-7	55	97.8	22.7		@35' Sample: Dark gray SILTSTONE, slightly moist, very stiff	
155	40			B-3					@36-38' Bag Sample B-3: Dark gray SILTSTONE, slightly moist, very stiff to hard @37' CLAY bed, slightly undulatory, very thin, slightly broken and sheared	
160	45			R-8	50			Tc	@45' Dark gray SILTSTONE, slightly moist, very stiff to hard; homogeneous, massive	DS
165	50			R-9	60				@50' Sample: Dark gray, SILTSTONE, slightly moist, very stiff to hard	
170	55								Total depth 51 feet Seep at 29 feet No caving Downhole logged to 46 feet Backfilled and tamped 4/13/99	

**SAMPLE TYPES:**  
 S SPLIT SPOON  
 R RING SAMPLE  
 B BULK SAMPLE  
 T TUBE SAMPLE

**TYPE OF TESTS:**  
 G GRAB SAMPLE  
 C CORE SAMPLE  
 DS DIRECT SHEAR  
 MD MAXIMUM DENSITY  
 CN CONSOLIDATION  
 CR CORROSION  
 SA SIEVE ANALYSIS  
 AL ATTERBERG LIMITS  
 EI EXPANSION INDEX  
 RV R-VALUE

LEIGHTON AND ASSOCIATES, INC.

*Mike Kapuskar* 4/26/13  
 GEOTECHNICAL PROFESSIONAL DATE  
 3-10-14  
 PLANS APPROVAL DATE  
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 EARTH MECHANICS, INC.  
 17800 NEWHOPE STREET, SUITE B  
 FOUNTAIN VALLEY, CA 92708

DIVISION OF ENGINEERING SERVICES - GEOTECHNICAL SERVICES

As-Built Log of Test Borings sheet is considered an informational document only. As such, the State of California registration seal with signature, license number and registration certificate expiration date confirm that this is a true and accurate copy of the original document. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	POST MILES-TOTAL PROJECT	Sheet No.	Total Sheets

GEOTECHNICAL PROFESSIONAL \_\_\_\_\_ DATE \_\_\_\_\_

**RETAINING WALL 190**

**LOG OF TEST BORINGS 2 OF 7**

NOTE: A COPY OF THIS LOG OF TEST BORINGS IS AVAILABLE AT OFFICE OF STRUCTURE MAINTENANCE AND INVESTIGATIONS, SACRAMENTO, CALIFORNIA UNIT: PROJECT NUMBER & PHASE: 12000202771

BRIDGE No.	Sheet	of

NOTES:

- These boring logs are from a soil report entitled "GEOTECHNICAL ENGINEERING INVESTIGATION FOR THE PROPOSED AVENIDA PICO WIDENING TO THE EAST OF THE ON-RAMP TO NORTH-BOUND SAN DIEGO FREEWAY (I-5) CITY OF SAN CLEMENTE, CALIFORNIA, Project No. 1980306-1" dated June 8, 1999, by Leighton and Associates, Inc., Irvine, California.
- Elevation Top of Hole is 114'. All other elevations shown on this log should be ignored.

DESIGN OVERSIGHT \_\_\_\_\_  
 SIGN OFF DATE \_\_\_\_\_  
 DRAWN BY J. FANG  
 CHECKED BY M. KAPUSKAR  
 FIELD INVESTIGATION BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

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

M. KAPUSKAR  
 PROJECT ENGINEER

BRIDGE NO. \_\_\_\_\_  
 POST MILES \_\_\_\_\_

**RETAINING WALL 190**

**LOG OF TEST BORINGS 2 OF 7**

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

# GEOTECHNICAL BORING LOG B-2

Date 3-14-99 Sheet 1 of 2  
 Project U.M.A. Pico Project No. 1980306-01  
 Drilling Co. Peter Drilling Type of Rig Bucket  
 Hole Diameter 24 Drive Weight 140 lb Drop 30"  
 Elevation Top of Hole 133' Location Pico Slope, West

# GEOTECHNICAL BORING LOG B-2

Date 3-14-99 Sheet 2 of 2  
 Project U.M.A. Pico Project No. 1980306-01  
 Drilling Co. Peter Drilling Type of Rig Bucket  
 Hole Diameter 24 Drive Weight 140 lb Drop 30"  
 Elevation Top of Hole 133' Location Pico Slope, West

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orn	5	3.0/3.7	614	635

Signature: Mike Kapuskar 4/26/13  
 GEOTECHNICAL PROFESSIONAL DATE  
 3-10-14  
 PLANS APPROVAL DATE  
 REGISTERED PROFESSIONAL ENGINEER  
 MIKE KAPUSKAR  
 NO. GE 2564  
 EXP. 12-31-14  
 STATE OF CALIFORNIA  
 GEOTECHNICAL  
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 ORANGE, CA 92863-1584  
 EARTH MECHANICS, INC.  
 17800 NEWHOPE STREET, SUITE B  
 FOUNTAIN VALLEY, CA 92708

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class (U.S.C.S.)	DESCRIPTION	Type of Tests
135	0	N S							@0-40' Capistrano Formation (Tc)	
140	5	@2' J:N55E, 30NW		R-1	32	101.2	22.1		@5' Sample: Medium to dark gray mottled with medium brown SILTSTONE, moist, stiff to very stiff	DS
145	10	@6' J:N71E, 47SE		R-2	35	101.2	22.0		@10' Sample: Dark gray SILTSTONE, slightly moist very stiff, 1/16" clay lined microshear, from 8.5 to 11 feet	
150	15	@10' S:N26W, 52NE		R-3	40				@13' 1/16" Clay lined microshear	
155	20	@13' S:N27W, 54NE		R-4	65	98.5	24.7		@15' Sample: Dark gray with olive green SILTSTONE, Slightly moist, very stiff, drilling harder	DS
160	25	@17' S:N30W, 38NE		R-5	60/10	96.4	25.1		@17-23' Bag sample (B-1) as above except hard, 1/16" clay lined microshear, from 17 to 19 feet	
		@21.5' GB: N45W, 4NE							@20' Sample: Dark gray with olive green SILTSTONE, slightly moist, very stiff to hard; sulfur odor to 26', thin near horizontal sand pockets	
		@22' S:N32W, 56NE							@22' Material becomes fine sandy SILTSTONE, 1/16" clay lined microshear, some small white sand pockets	
		@25' S:N35W, 28NE							@24.5' 1/16" Clay lined microshear	
									@25' Sample: Dark gray with olive green fine sandy SILTSTONE, slightly moist, hard; homogeneous	
									@26' 1/16" clay lined microshear, less continuous than prior shears	

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class (U.S.C.S.)	DESCRIPTION	Type of Tests
165	30	N S		R-6	60	90.5	27.3		@30' Sample: Dark gray with olive green fine sandy SILTSTONE, slightly moist, hard; massive	
170	35	@34' J:N55E, 64SE		R-7	60				Tc @35' Sample: Dark gray with olive green fine sandy SILTSTONE, slightly moist, hard	DS
175	40			R-8	50	98.1	20.8		@40' Sample: Dark gray with olive green fine sandy SILTSTONE, slightly moist, hard; homogeneous, massive material	
180	45								Total depth 41 feet No groundwater Downhole logged to 36' Backfilled and tamped 4/14/99	

SAMPLE TYPES:  
 S SPLIT SPOON  
 R RING SAMPLE  
 B BULK SAMPLE  
 T TUBE SAMPLE

TYPE OF TESTS:  
 DS DIRECT SHEAR  
 MD MAXIMUM DENSITY  
 CN CONSOLIDATION  
 CR CORROSION  
 SA SIEVE ANALYSIS  
 AL ATTERBERG LIMITS  
 EI EXPANSION INDEX  
 RV R-VALUE



LEIGHTON AND ASSOCIATES, INC.

SAMPLE TYPES:  
 S SPLIT SPOON  
 R RING SAMPLE  
 B BULK SAMPLE  
 T TUBE SAMPLE

TYPE OF TESTS:  
 DS DIRECT SHEAR  
 MD MAXIMUM DENSITY  
 CN CONSOLIDATION  
 CR CORROSION  
 SA SIEVE ANALYSIS  
 AL ATTERBERG LIMITS  
 EI EXPANSION INDEX  
 RV R-VALUE



LEIGHTON AND ASSOCIATES, INC.

DESIGN OVERSIGHT	DRAWN BY J. FANG	FIELD INVESTIGATION BY:
SIGN OFF DATE	CHECKED BY M. KAPUSKAR	DATE:

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

BRIDGE NO.	RETAINING WALL 190
POST MILES	LOG OF TEST BORINGS 3 OF 7

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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
12	Ora	5	3.0/3.7	615	635

GEOTECHNICAL PROFESSIONAL DATE 10/28/12  
 3-10-14  
 PLANS APPROVAL DATE  
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 ORANGE, CA 92863-1584  
 EARTH MECHANICS, INC.  
 17800 NEWHOPE STREET, SUITE B  
 FOUNTAIN VALLEY, CA 92708

**GEOTECHNICAL BORING LOG**

DATE 12-12-79 DRILL HOLE No. B-1 SHEET 1 OF 2  
 PROJECT Reeves Ranch (I-5 - Avenida Pico Cut Slope) PROJECT No. 177307-05  
 DRILLING Co. Bo-Jac TYPE OF RIG Bucket Auger  
 HOLE DIAMETER 24" DRIVE WEIGHT 1500 lbs (0-25) 750 lbs (25-45) DROP 12 IN.  
 ELEVATION TOP OF HOLE 99' REF. OR DATUM 40 scale T.T. map

**GEOTECHNICAL BORING LOG**

DATE 12-12-79 DRILL HOLE No. B-1 SHEET 2 OF 2  
 PROJECT Reeves Ranch (I-5 - Avenida Pico Cut Slope) PROJECT No. 177307-05  
 DRILLING Co. Bo-Jac TYPE OF RIG Bucket Auger  
 HOLE DIAMETER 24" DRIVE WEIGHT 1500 lbs (0-25) 750 lbs (25-45) DROP 12 IN.  
 ELEVATION TOP OF HOLE 99' REF. OR DATUM 40 scale T.T. map

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0								LOGGED BY <u>LC</u> SAMPLED BY <u>DRH</u>
0-5								Qalo: Brn., moist - v/ moist, soft, sl/ sandy, clayey silt very bkn. + fragmented
5			①	11/6"	96.8	24.8	CL/ML	Drive grn. brn., v/ moist to wet, clayey silt-silty clay, matt. olive gry + brn., roots, gyp. seam (1/2" th.) FeO string.
10			2	3	95.2	29.3	CL/ML	very bkn. + mashed
15			3		90.8	32.6	ML	Bedrock: FeO string, broken + fractured. @ 14' increase in clay to silty clay @ 17' white granular gyp. in olive grn., silty clay @ 17.7' H <sub>2</sub> O along gyp. joint
20			4	15	99.6	26.3	CL/ML	@ 19' harder drilling, gyp. xls. dk. brn. - blk., moist, stiff, clayey sandy silt, massive @ 20' Grada. change to dk. gry. grn., moist, stiff, clayey siltstone.
25			5	11 (5 rings)	103.9	22.8	CL/ML	

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			6	24 @ 750	96.5	20.0	ML	very uniform a.a., no structure, little gyp., massive
35			7	32	108.3	20.7	ML	
40			8	35 (5 rings)	99.5	21.0	ML/CL	Notes: 1) Change to unoxidized @ 19' 2) seepage @ 17.7' 3) Total Depth 40'

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DIST.	COUNTY	ROUTE	POST MILES-TOTAL PROJECT	Sheet No.	Total Sheets

RETAINING WALL 190  
 LOG OF TEST BORINGS 4 OF 7  
 PROJECT NUMBER & PHASE: 12000202771  
 BRIDGE No. Sheet of

NOTES:  
 1. These boring logs are from a soil report entitled "GEOTECHNICAL INVESTIGATION OF PROPOSED INTERSECTION OF AVENIDA PICO AND NORTHBOUND SAN DIEGO FREEWAY ON-RAMP, TENTATIVE TRACT 8818, REEVES RANCH (MARBLEHEAD), SAN CLEMENTE, CALIFORNIA, Project No. 177307-05" dated March 24, 1980, by Leighton and Associates, Inc., Irvine, California.

4/26/13  
 GEOTECHNICAL PROFESSIONAL DATE  
 3-10-14  
 PLANS APPROVAL DATE  
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DIST.	COUNTY	ROUTE	POST MILES-TOTAL PROJECT	Sheet No.	Total Sheets

RETAINING WALL 190  
 LOG OF TEST BORINGS 5 OF 7  
 BRIDGE No. Sheet of

NOTES:

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**GEOTECHNICAL BORING LOG**  
 DATE 12-20-79 DRILL HOLE No. B-2 SHEET 1 OF 1  
 PROJECT REEVES RANCH (I-5 - Avenida Pico Cut Slope) PROJECT No. 177307-05  
 DRILLING Co. B+W TYPE OF RIG Bucket Auger  
 HOLE DIAMETER 24" DRIVE WEIGHT 350 lbs. (0-10'), 250 lbs (10-15'), 150 lbs (15-22') DROP 12 IN.  
 ELEVATION TOP OF HOLE 168' REF. OR DATUM \_\_\_\_\_

**GEOTECHNICAL BORING LOG**  
 DATE 12-28-79 DRILL HOLE No. B-5 SHEET 1 OF 1  
 PROJECT Reeves Ranch (I-5 - Avenida Pico Cut Slope) PROJECT No. 177307-05  
 DRILLING Co. B+W TYPE OF RIG Bucket Auger  
 HOLE DIAMETER 24" DRIVE WEIGHT 900 lbs (0-14'), 600 lbs (14-28') DROP 12 IN.  
 ELEVATION TOP OF HOLE 158' REF. OR DATUM \_\_\_\_\_

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0								Siltstone; lt. brn-oliv gry., moist, sl/stiff, silt, FeO strng., matt., broken, sect. gyp., occasional sand beds @ 3.3' to 6.7' J. w/ open struct., rt. hairs, FeO strng. @ 5.6' - 10' well bedded @ 8.1' - 8.2' vl. brn. concretion bed, hard, continuous, above and below concretion bed is granulated, plastic clay, moist @ 9' silt; med. brn. moist, silt, mica, w/ bleches of dk. gry. unoxidized silt. @ 10' becomes massive @ 12' lt. brn. silt w/ chunks of dk. gry. silt (cuttings) @ 14.7' grades to unoxidized silt, gry., sandy, unfractured, v/ firm @ 17' localized seepage @ 18.2' seepage through thin sand bed (1/8" th.) @ 21.1 end of reamed section NOTES: 1) Total Depth 23ft. 2) See PAGE 2 17' 3) Unconsolidated Siltstone @ 15'
0			1	29	102.5	18.1	ML	
5	J. N70E 87S		2	21	100.0	22.1	ML	
	B. N40-W 2N		3	50/8"	102.8	23.7	ML	
	B. N60E 5N		4	40	102.3	24.0	ML	
	B. N70E 12S		5	90/8"	99.9	23.5	ML/CL	
	B. N85E 8S		6	50/6"	102.6	21.6	CL	

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0								Col.; med brn., moist, soft, silt - sandy silt, abund. caliche stringers + blebs, root tubules @ 7' grades from Col. to silt. (slide debris), traces of gyp. along irregular contact, mashed above, bkn. silt. below Silt: @ 8' lt. gry + brn., moist, stiff, mica, silt, w/ discon. ss. lenses, mod. fract. w/ short discon. fract. @ 9' poss. bedding on mica parting (num. surfs. like this) @ 11' poss. bedding on gyp. coated surf. @ 12.5' gyp. seam, some open struc., poss. RS., some clay coating @ 14.5' gyp. seam @ 17.5' silty sand layers, traces of free H2O, w/ thin clay layer, sl/ softer, subhorizontal stratification @ 18.5' dk. gry. (unox.) silt, fissile, massive to TD. mica partings appear to have flat dip to S. @ 19' formans NOTES: 1) T.D. = 25' 2) No FREE H2O, No CAVING
0			1	15	102.7	19.5	CL	
5			2	12(?)	96.3	15.4	CL	
10	C. N68W 35S		3	20	101.9	20.8	CL	
	B(?) N72W 28S		4	20	101.5	23.2	CL	
	B(?) N72W 31S		5	50	103.1	22.5	CL	

505A(11/77) 505A(11/77)

DESIGN OVERSIGHT \_\_\_\_\_  
 DRAWN BY J. FANG  
 CHECKED BY M. KAPUSKAR  
 FIELD INVESTIGATION BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

PREPARED FOR THE  
**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION  
 M. KAPUSKAR  
 PROJECT ENGINEER  
 BRIDGE NO. \_\_\_\_\_  
 POST MILES \_\_\_\_\_

**RETAINING WALL 190**  
**LOG OF TEST BORINGS 5 OF 7**  
 UNIT: PROJECT NUMBER & PHASE: 12000202771 CONTRACT NO.: 12-OF96B1  
 DISREGARD PRINTS BEARING EARLIER REVISION DATES  
 REVISION DATES: 10/09/12 4/26/13  
 SHEET 14 OF 16

GEOTECHNICAL PROFESSIONAL DATE: 4/26/13  
 3-10-14  
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DIST.	COUNTY	ROUTE	POST MILES-TOTAL PROJECT	Sheet No.	Total Sheets

RETAINING WALL 190  
 LOG OF TEST BORINGS 6 OF 7  
 PROJECT NUMBER & PHASE: 12000202771  
 BRIDGE No. Sheet of

NOTES:  
 1. These boring logs are from a soil report entitled "GEOTECHNICAL INVESTIGATION OF PROPOSED INTERSECTION OF AVENIDA PICO AND NORTHBOUND SAN DIEGO FREEWAY ON-RAMP, TENTATIVE TRACT 8818, REEVES RANCH (MARBLEHEAD), SAN CLEMENTE, CALIFORNIA, Project No. 177307-05" dated March 24, 1980, by Leighton and Associates, Inc., Irvine, California.

GEOTECHNICAL BORING LOG

DATE 12-24-79 DRILL HOLE No. B-3 SHEET 1 OF 2  
 PROJECT Reeves Ranch (I-5 - Avenida Pico Cut Slope) PROJECT No. 177307-05  
 DRILLING Co. B+W TYPE OF RIG Bucket Auger  
 HOLE DIAMETER 24" DRIVE WEIGHT 350 lbs (0-10'), 250 lbs (10-15'), 150 lbs (15-22'), DROP 12 IN.  
 ELEVATION TOP OF HOLE 118' REF. OR DATUM 40 scale T.T. map ~200 lbs @ 25'

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0	S-N							Col. med brn., moist, sl/ soft - sl. stiff silt, (close to optimum moisture), w/ num. stringers and blebs of caliche, gyp xls. and stringers @ 3.6' poorly dev. shear LOGGED BY LC + RW SAMPLED BY JW
5	S-N55W 34E		1	50	103.0	22.2	CL	
10			2	35	95.7	14.6	CL/ML	
15			3	40	99.5	14.2	ML/CL	QALO: @ 11.7' poss. horiz. stratification @ 13.7-13.9' subrounded shale pebbles
20			4	40	98.0	19.4	CL	@ 16.8 grades to frags of silt. (B.R.?) in earthy matrix. @ 17' poss. horiz. stratification @ 18.5' more subrounded shale pebbles
25			5	30	89.2	19.8	CL	@ 19.6' fragmented + w/ bkn. B.R. @ 21' back to fragmented material (not B.R.) @ 21.2' soft Fe oxidized nodule
30			6	55	96.8	21.9	CL	@ 30' no B.R. yet

505A(11/77)

GEOTECHNICAL BORING LOG

DATE 12-24-79 DRILL HOLE No. B-3 SHEET 2 OF 2  
 PROJECT Reeves Ranch (I-5 - Avenida Pico Cut Slope) PROJECT No. 177307-05  
 DRILLING Co. B+W TYPE OF RIG Bucket Auger  
 HOLE DIAMETER 24" DRIVE WEIGHT ~200 lbs @ 20' and 35', ~275 lbs @ 40', DROP 12 IN.  
 ELEVATION TOP OF HOLE 118' REF. OR DATUM 40 scale T.T. map 650 lbs @ 45'

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30	S-N		7	40/10"	98.6	21.9	CL	Silt: @ 34.3' contact betn. material above and harder material below gyp + clay lined surf., (olive grn-gry. clay), FeO string., poss. grooves @ 36' end of reamed section bottom of hole (12-26-79) @ 36.3' 1/6" gyp seam, shear surf., clay coated, polished below becomes v/ stiff - material is gry. brn., siltstone, micaceous @ 39' fract. w/ 1/6" gyp filling @ 40' sl/ less fractured @ 40.6' rounded volcanic pbls. below w. dev. gyp seam @ 41.8' on N. wall, 42.5 on S. wall; grades to unox. silt. (.7' grade change) @ 43.1' 1/8" th. surf. w/ gyp + plastic clay, surf. truncates gyp filled joints from above below is med. gry., unox. silt., damp, stiff, mica, clayey, no gyp, no fract., traces of forams @ 45.6' @ 46' sl/ more mica., massive
35			8	40/10"	92.1	29.4	CL	
40			9	40	94.3	27.7	CL	
45			10	70	104.2	22.6	ML	
50								NOTES: 1) T.D. = 50' (former T.D. = 36' hole was deepened) 12-27-79 2) UNOXIDIZED SILTSTONE @ 43 ft. 3) No casing, no frac fluid

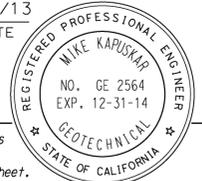
505A(11/77)

DESIGN OVERSIGHT: \_\_\_\_\_ DRAWN BY: J. FANG  
 CHECKED BY: M. KAPUSKAR  
 FIELD INVESTIGATION BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION  
 M. KAPUSKAR PROJECT ENGINEER

BRIDGE NO. \_\_\_\_\_  
 POST MILES \_\_\_\_\_  
**RETAINING WALL 190**  
**LOG OF TEST BORINGS 6 OF 7**

GEOTECHNICAL PROFESSIONAL DATE 4/26/13  
 3-10-14  
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RETAINING WALL 190  
 LOG OF TEST BORINGS 7 OF 7  
 PROJECT NUMBER & PHASE: 12000202771  
 BRIDGE No. Sheet of

NOTES:  
 1. These boring logs are from a soil report entitled "GEOTECHNICAL INVESTIGATION OF PROPOSED INTERSECTION OF AVENIDA PICO AND NORTHBOUND SAN DIEGO FREEWAY ON-RAMP, TENTATIVE TRACT 8818, REEVES RANCH (MARBLEHEAD), SAN CLEMENTE, CALIFORNIA, Project No. 177307-05" dated March 24, 1980, by Leighton and Associates, Inc., Irvine, California.

**GEOTECHNICAL BORING LOG**  
 DATE 12-27-79 DRILL HOLE No. B-4 SHEET 1 OF 2  
 PROJECT Reeves Ranch (I-5 - Avenida Pico Cut Slope) PROJECT No. 177307-05  
 DRILLING Co. B+W TYPE OF RIG Bucket Auger  
 HOLE DIAMETER 24" DRIVE WEIGHT 900 lbs (0-14'), 600 lbs (14-28'), 300 lbs (28-40'), DROP 12 IN.  
 ELEVATION TOP OF HOLE 117' REF. OR DATUM 310 lbs @ 40', 350 lbs @ 45'

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0	N-S							Col.; med. brn., moist-v/ moist, soft, sandy silt, num. caliche blebs + stringers, scatt. FeO strg.
1			14	14	102.2	21.6	CL	QALO: @ 5' abund. caliche matt., more stiff, sl/ less moist slide debris @ 7' oxidized silt. blebs w/ caliche matt.
2			10	10	101.6	15.5	CL	
3			10	10	97.9	16.0	CL	@ 9.5' grades to mashed and disturbed silt., gry.-gry. brn., abund. matt. + caliche stringers @ 12' scatt. charcoal @ 12-13' gyp. blebs @ 14' gyp. xls.
4			30	30	105.2	17.4	CL	
5			30	30	100.9	18.9	CL	@ 15.5' scatt. volcanic pbls. + silt. pbls, gyp. pocket @ 18' rt. hairs + fibers, gyp. increases v/ much @ 19' decayed roots (1/2 root, 1/2 charcoal) @ 22.8' ss. bed, 1" thick
6			40	40	88.4	22.1	CL	
7								@ 25.-26' subrounded shale cobble in silty matrix (in sample) root tubules are v/ num. sm. FeO stained blebs, caliche blebs and sm. stringers, abund. gyp. @ 27-28 grades to lt. brn. + gry. silt., laminated or FeO stained joints Silt: concretionary layer 2" @ 29.2' @ 29.8' silt. becomes stiff + v/ moist - wet, silt. is v/ fragmented
8								

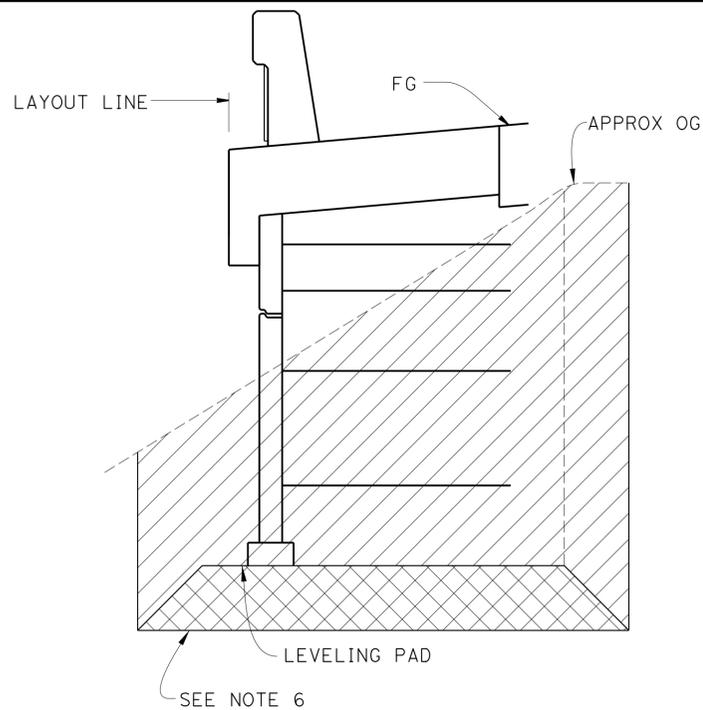
SOSA(11/77)

**GEOTECHNICAL BORING LOG**  
 DATE 12-27-79 DRILL HOLE No. B-4 SHEET 2 OF 2  
 PROJECT Reeves Ranch (I-5 - Avenida Pico Cut Slope) PROJECT No. 177307-05  
 DRILLING Co. B+W TYPE OF RIG Bucket Auger  
 HOLE DIAMETER 24" DRIVE WEIGHT 400 lbs @ 50' DROP 12 IN.  
 ELEVATION TOP OF HOLE 117' REF. OR DATUM

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE No.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
7			35	35	99.9	20.8	CL	@ 31' silt. still fragmented, (sandy silt.), v/ jumbled
8			30	30	98.2	24.3	CL	
9			35	35	98.7	24.5	CL/ML	@ 42' mica becomes more abundant  above RS. material is clayey silt - silty clay, gry.-brn., mashed + jumbled, abund. FeO strg. + oxidation, sl/ compressible @ 46.7 on N. wall, mica parting att. N76E31S @ 45-46' root tubules in sample @ 47' sm. rounded volcanic pbls. in mica. silt. matrix @ 46-48' RS.; 1/2" th., brn. silty clay, mod. plastic, mica, no free water, sm. poorly dev. stria., moist, w. dev. surface, polished below RS. silt. is dk. gry., matt. brn. w/ FeO oxidation, mica, sl/ frac. @ 48.2' unoxidized silt., dk. gry., mica, massive
10			30	30	97.9	26.2	CL	
11			30	30	107.0	20.6	ML	Notes: 1) TD = 50' 2) No FREE H <sub>2</sub> O No CAVING 3) UNOXIDIZED SILTSTONE @ 48A.

SOSA(11/77)





## GENERAL NOTES LOAD & RESISTANCE FACTOR DESIGN

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION WITH CALIFORNIA AMENDMENTS

LIVE LOAD: SURCHARGE = 240 lb/ft<sup>2</sup>

SOIL PARAMETERS:

INTERNAL DESIGN  $\phi = 34^\circ$ ,  $\gamma = 120$  lb/ft<sup>3</sup>

EXTERNAL DESIGN  $\phi$  (RETAINED BACKFILL) =  $30^\circ$ ,  $\gamma = 120$  lb/ft<sup>3</sup>

$\phi$  (FOUNDATION) =  $30^\circ$

$K_n = 0.2$

PRECAST CONCRETE PANELS:

$f'_c = 4,000$  psi (CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS)

$f_y = 60,000$  psi (YIELD STRENGTH OF REINFORCEMENT)

SOIL REINFORCEMENT:

WELDED WIRE MATS:  $f_y = 65,000$  psi (YIELD STRENGTH)

COUPLER:  $f_y = 36,000$  psi (YIELD STRENGTH)

CORROSION RATE = 1.1 mils/year

REINFORCED CONCRETE:

$f'_c = 3,600$  psi, EXCEPT AS NOTED

(CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS)

$f_y = 60,000$  psi (YIELD STRENGTH OF REINFORCEMENT)

MSE = MECHANICALLY STABILIZED EMBANKMENT

## INDEX TO PLANS

SHEET NO.	TITLE
1	GENERAL PLAN
2	INDEX TO PLANS
3	STRUCTURE PLAN No. 1
4	STRUCTURE PLAN No. 2
5	STRUCTURE PLAN No. 3
6	STRUCTURE PLAN No. 4
7	STRUCTURE PLAN No. 5
8	CONCRETE BARRIER SLAB DETAILS
9	DETAILS No. 1
10	DETAILS No. 2
11	DETAILS No. 3
12	DETAILS No. 4
13	ARCHITECTURAL DETAILS No. 1
14	ARCHITECTURAL DETAILS No. 2
15	PILASTER DETAILS
16	LOG OF TEST BORINGS No. 1
17	LOG OF TEST BORINGS No. 2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	620	635

REGISTERED CIVIL ENGINEER DATE 4/26/13

PLANS APPROVAL DATE 3-10-14

MOHSEN MOHSENI  
No. C45999  
Exp. 12/31/14  
CIVIL  
STATE OF CALIFORNIA

PARSONS 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612

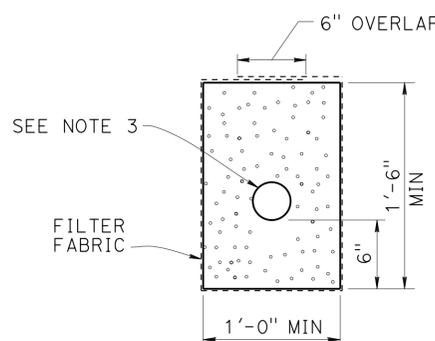
OCTA 550 SOUTH MAIN STREET ORANGE, CA 92863

### NOTES:

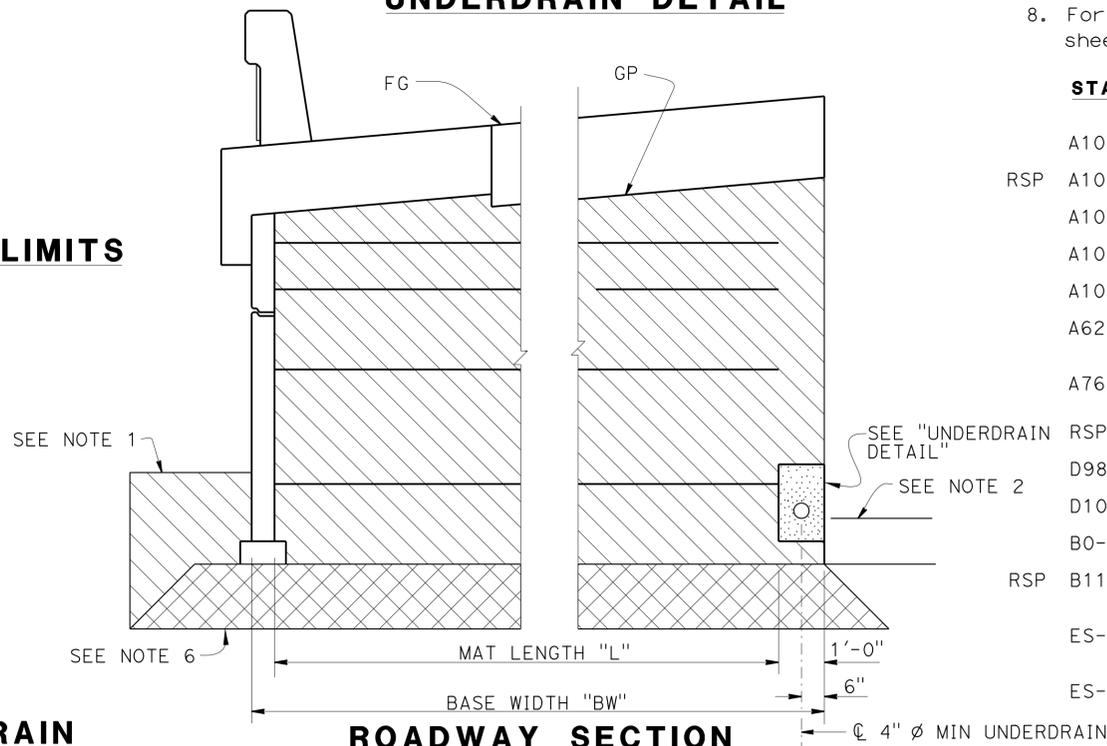
- Limits to FG except to GP when in roadway section.
- Locate underdrain behind bottom level of welded wire mats wherever possible, or at elevation needed to drain, as shown elsewhere on plans.
- Place perforated pipe underdrain of diameter shown elsewhere on plans or minimum 4"  $\phi$  smoothed wall PVC or minimum 8"  $\phi$  corrugated HDPE.
- Maximum spacing of outlet pipe is 200 feet.
- At sags in profile of underdrain, install outlet pipe for each direction of flow.
- For Structural Excavation, Retaining Wall and Structural Backfill, Retaining Wall, see "General Plan" sheet.
- For limits of preloading, see "Road Plans".
- For Pilaster Design Notes, see "Pilaster Details" sheet.

### STANDARD PLANS DATED 2010

A10A	ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
RSP A10B	ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
A10F	LEGEND-SOIL (SHEET 1 OF 2)
A10G	LEGEND-SOIL (SHEET 2 OF 2)
A10H	LEGEND-ROCK
A62B	LIMITS OF PAYMENT FOR EXCAVATION BACKFILL BRIDGE SURCHARGE AND WALL
A76A	CONCRETE BARRIER TYPE 60
RSP D73	DRAINAGE INLETS
D98C	GRATED LINE DRAIN DETAILS
D102	UNDERDRAINS
B0-13	BRIDGE DETAILS
RSP B11-56	CONCRETE BARRIER TYPE 736
ES-6A	ELECTRICAL SYSTEMS (LIGHTING STANDARD, TYPES 15 AND 21)
ES-6B	ELECTRICAL SYSTEMS (ELECTROLIER ANCHORAGE AND GROUNDING FOR TYPES 15 AND 21, BARRIER RAIL MOUNTED)



## UNDERDRAIN DETAIL



## ROADWAY SECTION

NO SCALE

## LIMITS OF EXCAVATION

NO SCALE

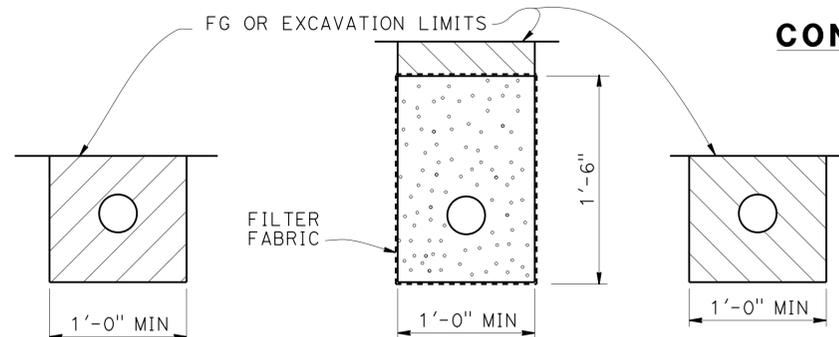
### LEGEND:

- Limits of structure excavation
- Limits of structure backfill
- Limits of permeable material
- Structural Excavation, Retaining Wall and Structural Backfill, Retaining Wall
- Limits of structural concrete, Retaining Wall



## CONCRETE TYPE LIMITS

NO SCALE



## OUTLET PIPE CLEANOUT PIPE

## EXCAVATION

## BACKFILL

## UNPERFORATED OUTLET OR CLEAN OUT PIPE FOR UNDERDRAIN

NO SCALE

DESIGN BY Luqi Yang  
1-14-14  
SIGN OFF DATE

DESIGN	BY M. Mohseni	CHECKED M. Ruvalcaba
DETAILS	BY J. Gilmore	CHECKED M. Mohseni
QUANTITIES	BY A. Ly	CHECKED J. Fix

PREPARED FOR THE  
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

M. Mohseni  
PROJECT ENGINEER

BRIDGE NO.	55E0142
POST MILES	3.4

## RETAINING WALL No. 193 INDEX TO PLANS

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-OF96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/28/12	2	17

FILE => 55e-0142-a-1tp.dgn

DATE PLOTTED => 07-AUG-2014 USERNAME => s128843

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	621	635

REGISTERED CIVIL ENGINEER  
 MOHSEN MOHSENI  
 No. C45999  
 Exp. 12/31/14  
 CIVIL  
 STATE OF CALIFORNIA

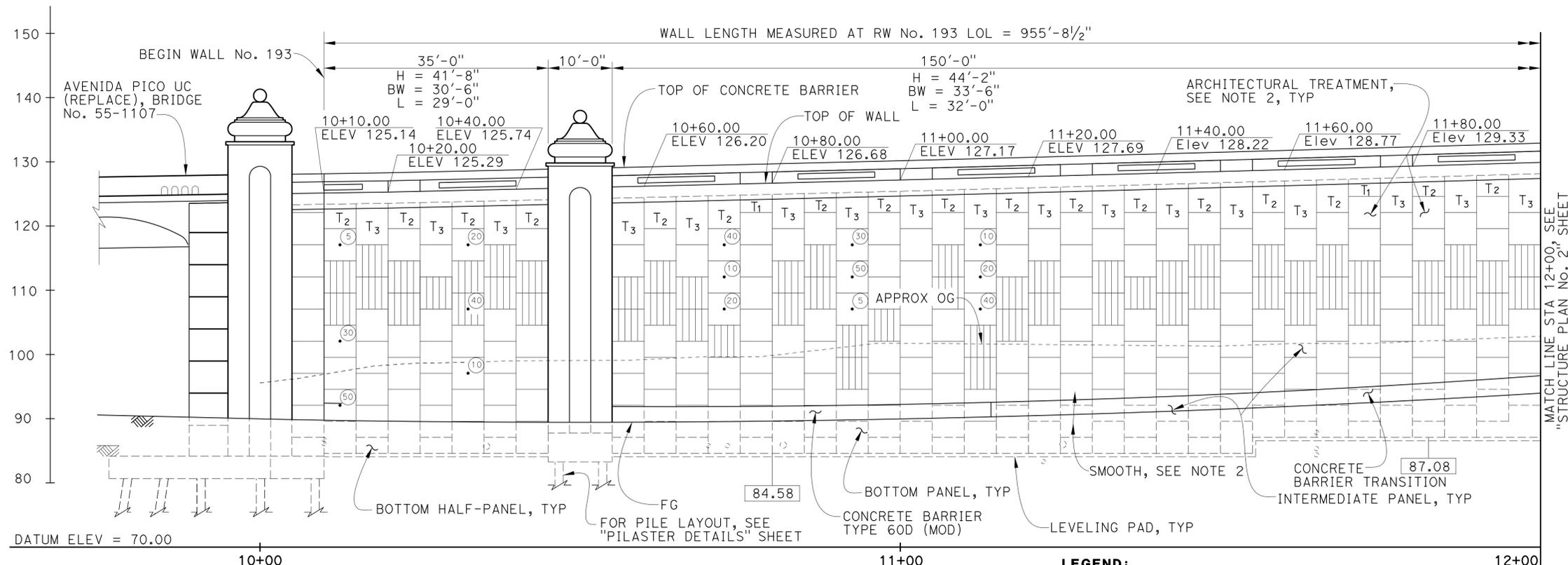
4/26/13  
 DATE

3-10-14  
 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.

**PARSONS**  
 2201 DUPONT DRIVE  
 SUITE 200  
 IRVINE, CA 92612

**OCTA**  
 550 SOUTH MAIN STREET  
 ORANGE, CA 92863



ELEMENT	STA	DESCRIPTION	INVERT ELEV
1	10+10.00	Cleanout/Riser	86.43
2	10+10.00	90° Elbow	85.78
3	10+70.00	45° Elbow	85.48
4	10+73.00	45° Elbow	85.47
5	11+65.00	Tee	85.01
6	11+65.00	90° Elbow	84.03
7	11+65.00	90° Elbow	83.68
8	11+22.33	System 45b *	83.00
9	11+65.00	90° Elbow	87.53

\* For System 45b, see "Road Plans"

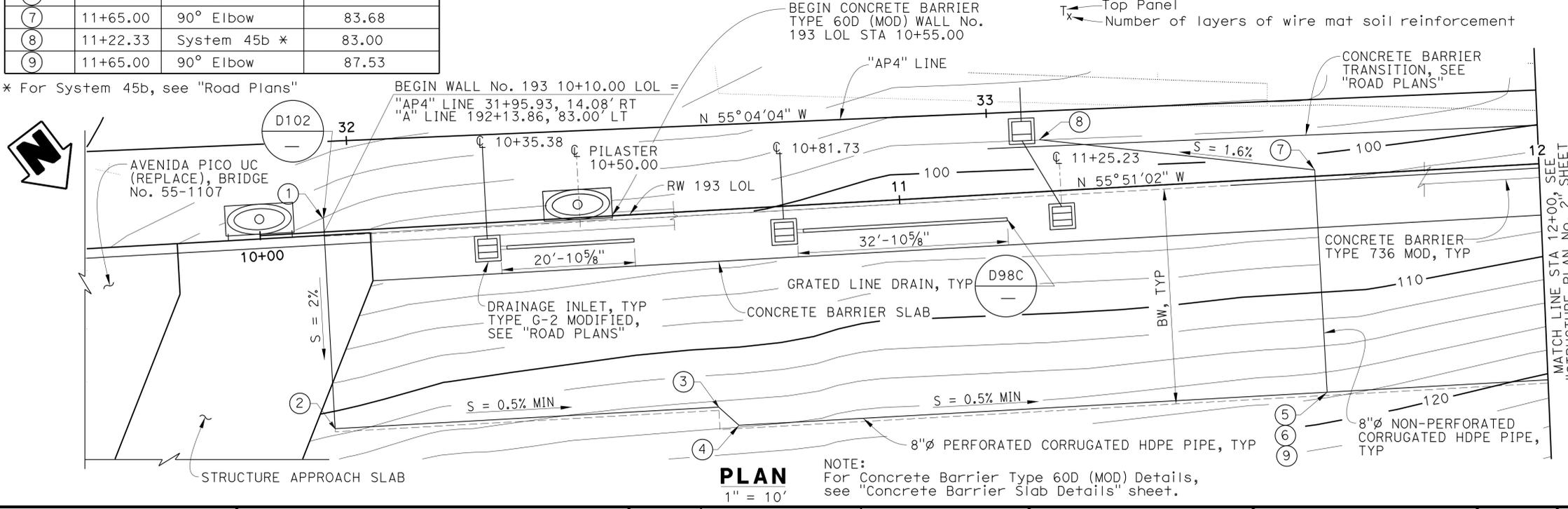
**MIRROR ELEVATION**  
 1" = 10'

- LEGEND:**
- H Denotes Design Height
  - BW Denotes Minimum Base Width
  - L Denotes Minimum Wire Mat Length
  - XX.XX Top Leveling Pad Elevation
  - Interval in Years
  - Precast Panel
  - Inspection Wire
  - Top Panel
  - Number of layers of wire mat soil reinforcement

- NOTES:**
- Example Configuration: 3 OF 4-W20 X W15 @ 24  
 3 OF = 3 Layers of reinforcement mats with  
 4-W20 X = Longitudinal wires W20 sized by  
 W15 @ 24 = W15 sized transverse wires at 24-inch spacing
  - Top panels are designated as "T1", "T2" and "T3" depending upon the number of required layers of wire mat soil reinforcement.
  - For wire mat layers with 4 or 6 number of longitudinal wires, see "Details No. 2" sheet.
  - Wire mat layers shown are those required for the maximum specified wall height.

**WIRE MAT SOIL REINFORCEMENT TABLE**

- NOTES:**
- No expansion joint is allowed the full length of concrete barrier and concrete barrier slab.
  - For Architectural Treatment, See "Architectural Details No. 1" sheet.



**PLAN**  
 1" = 10'

NOTE:  
 For Concrete Barrier Type 60D (MOD) Details, see "Concrete Barrier Slab Details" sheet.

Luqi Yang  
 DESIGN OR SIGN OFF DATE  
 7-10-13

DESIGN	BY M. Mohseni	CHECKED M. Ruvalcaba
DETAILS	BY P. Johnson	CHECKED M. Mohseni
QUANTITIES	BY A. Ly	CHECKED J. Fix

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

M. Mohseni  
 PROJECT ENGINEER

BRIDGE NO.	55E0142
POST MILES	3.4

**RETAINING WALL No. 193  
 STRUCTURE PLAN No. 1**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-0F96A4

REVISION DATES	SHEET	OF
5/28/12 11/13/12 03/04/13 4/26/13	3	17

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	622	635

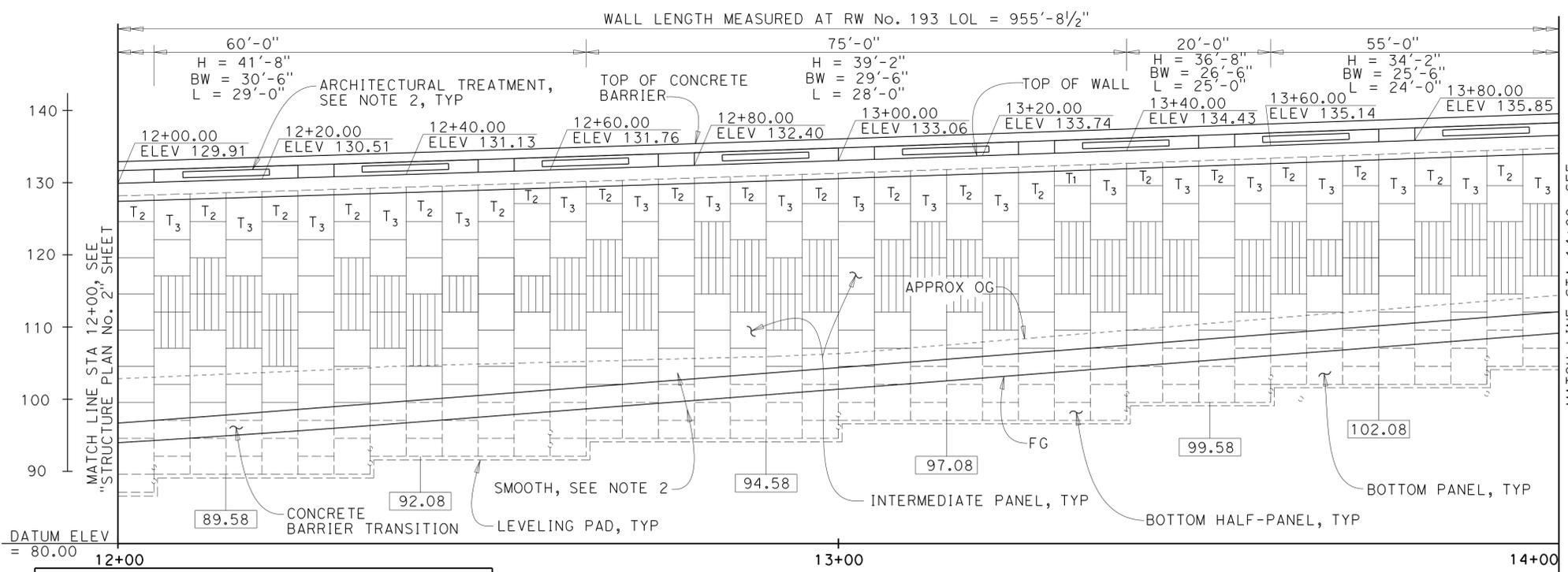
REGISTERED CIVIL ENGINEER DATE 4/26/13

PLANS APPROVAL DATE 3-10-14

MOHSEN MOHSENI  
No. C45999  
Exp. 12/31/14  
CIVIL  
STATE OF CALIFORNIA

PARSONS  
2201 DUPONT DRIVE  
SUITE 200  
IRVINE, CA 92612

OCTA  
550 SOUTH MAIN STREET  
ORANGE, CA 92863



DRAINAGE DATA TABLE

ELEMENT	STA	DESCRIPTION	INVERT ELEV
10	12+05.00	90° Elbow	88.33
11	12+05.00	90° Elbow	90.23
12	12+35.00	90° Elbow	90.83
13	12+35.00	90° Elbow	92.83
14	12+60.00	90° Elbow	93.33
15	12+60.00	90° Elbow	95.03
16	13+00.00	90° Elbow	95.83
17	13+00.00	90° Elbow	97.53
18	13+40.00	90° Elbow	98.33
19	13+40.00	90° Elbow	100.43
20	13+60.00	90° Elbow	100.83
21	13+60.00	90° Elbow	102.73
22	13+90.00	45° Elbow	103.33
24	13+64.17	System 32f	99.70
25	13+90.00	90° Elbow	100.43
26	13+90.00	90° Elbow	105.33

**MIRROR ELEVATION**  
1" = 10'

CURVE DATA ①

R = 7733.00'
Δ = 5°15'31"
T = 355.11'
L = 709.72'

CURVE DATA ③

R = 13725.00'
Δ = 2°33'11"
T = 305.83'
L = 611.56'

**LEGEND:**

- H Denotes Design Height
- BW Denotes Minimum Base Width
- L Denotes Minimum Wire Mat Length
- XX.XX Top Leveling Pad Elevation
- T<sub>x</sub> Top Panel
- x Number of layers of wire mat soil reinforcement
- Standard Plan Sheet No.
- Detail No.

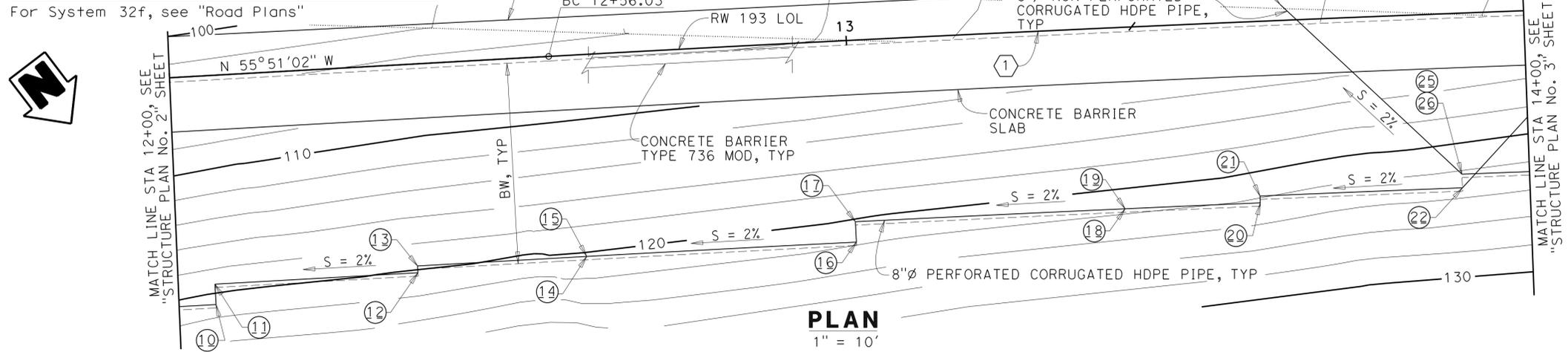
H = 41'-8"	H = 39'-2"
TOP LAYER 4-W15 X W15 @ 18	TOP LAYER 4-W15 X W15 @ 18
4 OF 4-W15 X W15 @ 18	4 OF 4-W15 X W15 @ 18
5 OF 4-W20 X W15 @ 24	5 OF 4-W20 X W15 @ 24
5 OF 6-W25 X W15 @ 30	4 OF 6-W25 X W15 @ 30
1 OF 6-W25 X W15 @ 30	1 OF 6-W25 X W15 @ 30

H = 36'-8"	H = 34'-2"
TOP LAYER 4-W15 X W15 @ 18	TOP LAYER 4-W15 X W15 @ 18
4 OF 4-W15 X W15 @ 18	4 OF 4-W15 X W15 @ 18
4 OF 4-W20 X W15 @ 24	4 OF 4-W20 X W15 @ 24
4 OF 6-W25 X W15 @ 30	3 OF 6-W25 X W15 @ 30
1 OF 6-W25 X W15 @ 30	1 OF 6-W25 X W15 @ 30

- NOTES:**
- Example Configuration: 3 OF 4-W20 X W15 @ 24  
3 OF = 3 Layers of reinforcement mats with 4-W20 X = Longitudinal wires W20 sized by W15 @ 24 = W15 sized transverse wires at 24-inch spacing
  - Top panels are designated as "T1", "T2" and "T3" depending upon the number of required layers of wire mat soil reinforcement.
  - For wire mat layers with 4 or 6 number of longitudinal wires, see "Details No. 2" sheet.
  - Wire mat layers shown are those required for the maximum specified wall height.

**WIRE MAT SOIL REINFORCEMENT TABLE**

- NOTES:**
- No expansion joint is allowed the full length of concrete barrier and concrete barrier slab.
  - For Architectural Treatment, see "Architectural Details No. 1" sheet.



Luqi Yang  
DESIGNER  
7-10-13  
SIGN OFF DATE

DESIGN	BY M. Mohseni	CHECKED M. Ruvalcaba
DETAILS	BY P. Johnson	CHECKED M. Mohseni
QUANTITIES	BY A. Ly	CHECKED J. Fix

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

M. Mohseni  
PROJECT ENGINEER

BRIDGE NO.	55E0142
POST MILES	3.4

**RETAINING WALL No. 193  
STRUCTURE PLAN No. 2**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-OF96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

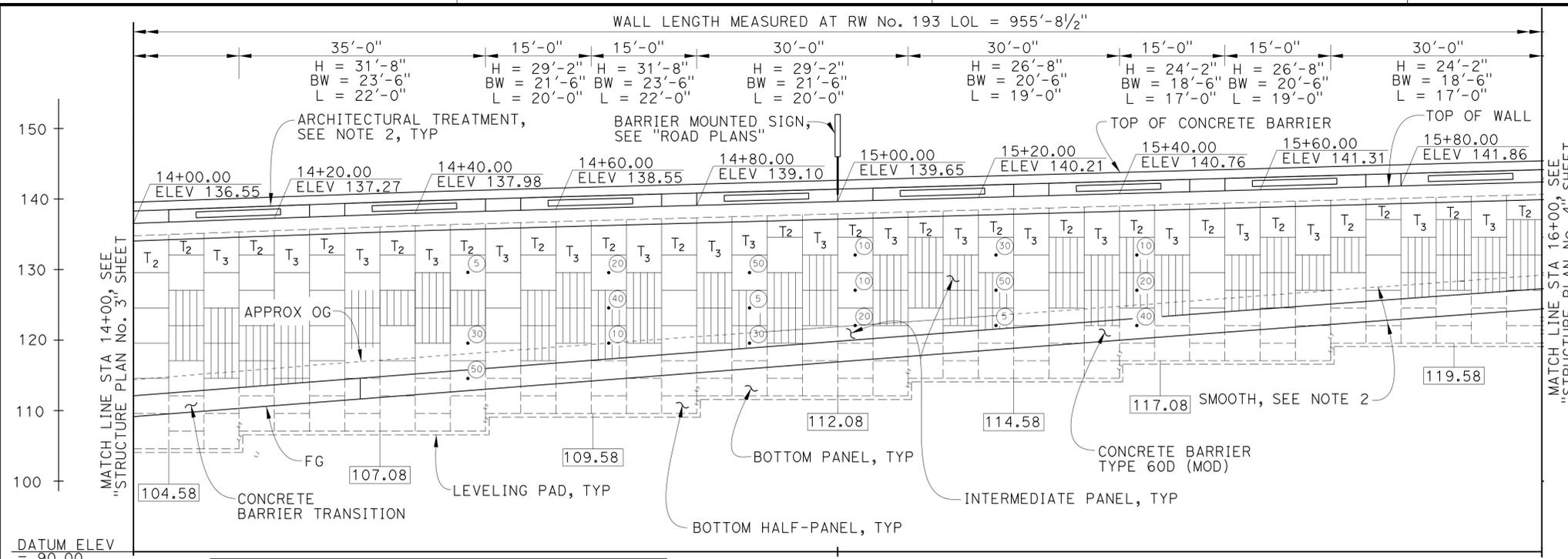
REVISION DATES	SHEET	OF
5/28/12 11/22/12 03/02/13 4/26/13	4	17

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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	623	635

REGISTERED CIVIL ENGINEER DATE 4/26/13  
 PLANS APPROVAL DATE 3-10-14  
 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.

**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



ELEMENT	STA	DESCRIPTION	INVERT ELEV
(23)	14+17.47	Cleanout/Riser	103.45
(27)	14+15.00	90° Elbow	105.83
(28)	14+15.00	90° Elbow	107.63
(29)	14+50.00	90° Elbow	108.33
(30)	14+50.00	90° Elbow	110.23
(31)	14+80.00	90° Elbow	110.83
(32)	14+80.00	90° Elbow	112.73
(33)	15+10.00	90° Elbow	113.33
(34)	15+10.00	90° Elbow	115.23
(35)	15+40.00	90° Elbow	115.83
(36)	15+40.00	90° Elbow	117.73
(37)	15+70.00	90° Elbow	118.33
(38)	15+70.00	90° Elbow	120.23

**MIRROR ELEVATION**  
1" = 10'

**CURVE DATA (1)**  
R = 7733.00'  
Δ = 5°15'31"  
T = 355.11'  
L = 709.72'

**CURVE DATA (3)**  
R = 13725.00'  
Δ = 2°33'11"  
T = 305.83'  
L = 611.56'

**LEGEND:**  
 H Denotes Design Height  
 BW Denotes Minimum Base Width  
 L Denotes Minimum Wire Mat Length  
 XX.XX Top Leveling Pad Elevation  
 (10) Interval in Years  
 (10) Precast Panel  
 (10) Inspection Wire  
 T<sub>x</sub> Top Panel  
 x Number of layers of wire mat soil reinforcement

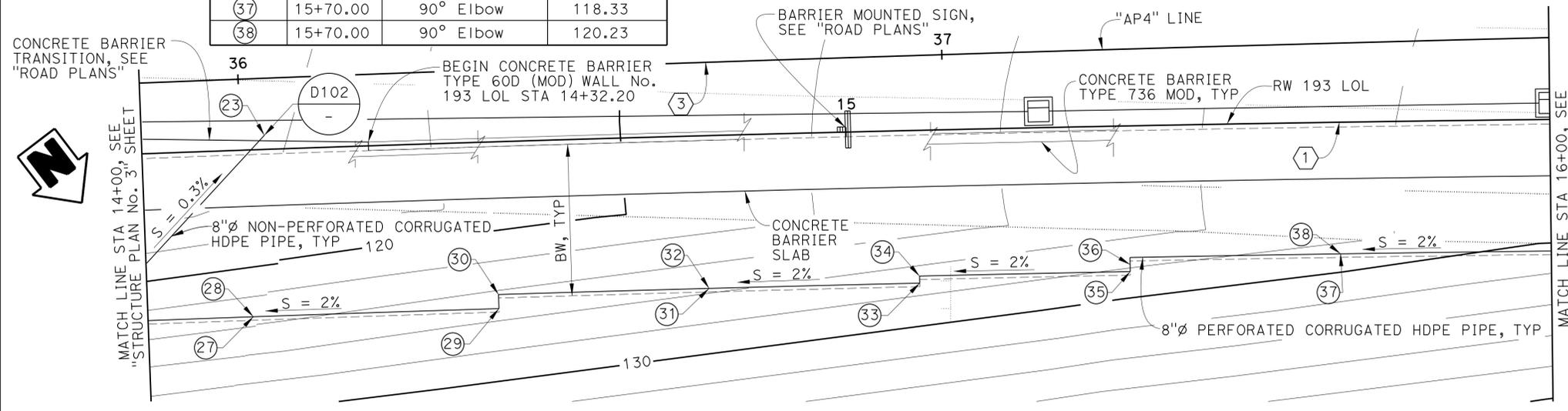
H = 31'-8"	H = 29'-2"
TOP LAYER 4-W15 X W15 @ 6	TOP LAYER 4-W15 X W15 @ 6
4 OF 4-W15 X W15 @ 18	4 OF 4-W15 X W15 @ 18
4 OF 4-W20 X W15 @ 24	3 OF 4-W20 X W15 @ 24
2 OF 6-W25 X W15 @ 30	2 OF 6-W25 X W15 @ 24
1 OF 6-W25 X W15 @ 30	1 OF 6-W25 X W15 @ 24

H = 26'-8"	H = 24'-2"
TOP LAYER 4-W15 X W15 @ 6	TOP LAYER 4-W15 X W15 @ 6
4 OF 4-W15 X W15 @ 18	4 OF 4-W15 X W15 @ 18
3 OF 4-W20 X W15 @ 24	3 OF 4-W20 X W15 @ 24
1 OF 6-W25 X W15 @ 24	1 OF 4-W20 X W15 @ 24
1 OF 6-W25 X W15 @ 24	

- NOTES:**
- Example Configuration: 3 OF 4-W20 X W15 @ 24  
 3 OF = 3 Layers of reinforcement mats with  
 4-W20 X = Longitudinal wires W20 sized by  
 W15 @ 24 = W15 sized transverse wires at 24-inch spacing
  - Top panels are designated as "T1", "T2" and "T3" depending upon the number of required layers of wire mat soil reinforcement.
  - For wire mat layers with 4 or 6 number of longitudinal wires, see "Details No. 2" sheet.
  - Wire mat layers shown are those required for the maximum specified wall height.

**WIRE MAT LAYER REINFORCEMENT TABLE**

- NOTES:**
- No expansion joint is allowed the full length of concrete barrier and concrete barrier slab.
  - For Architectural Treatment, see "Architectural Details No. 1" sheet.
  - For Sign Anchor Details, see "Road Plans".



**PLAN**  
1" = 10'

Luqi Yang  
 DESIGN OVERSIGHT  
 7-10-13  
 SIGN OFF DATE

DESIGN	BY M. Mohseni	CHECKED M. Ruvalcaba
DETAILS	BY P. Johnson	CHECKED M. Mohseni
QUANTITIES	BY A. Ly	CHECKED J. Fix

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

M. Mohseni PROJECT ENGINEER	BRIDGE NO. 55E0142
	POST MILES 3.4

**RETAINING WALL No. 193**  
**STRUCTURE PLAN No. 3**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	624	635

*Mohsen* 4/26/13  
 REGISTERED CIVIL ENGINEER DATE

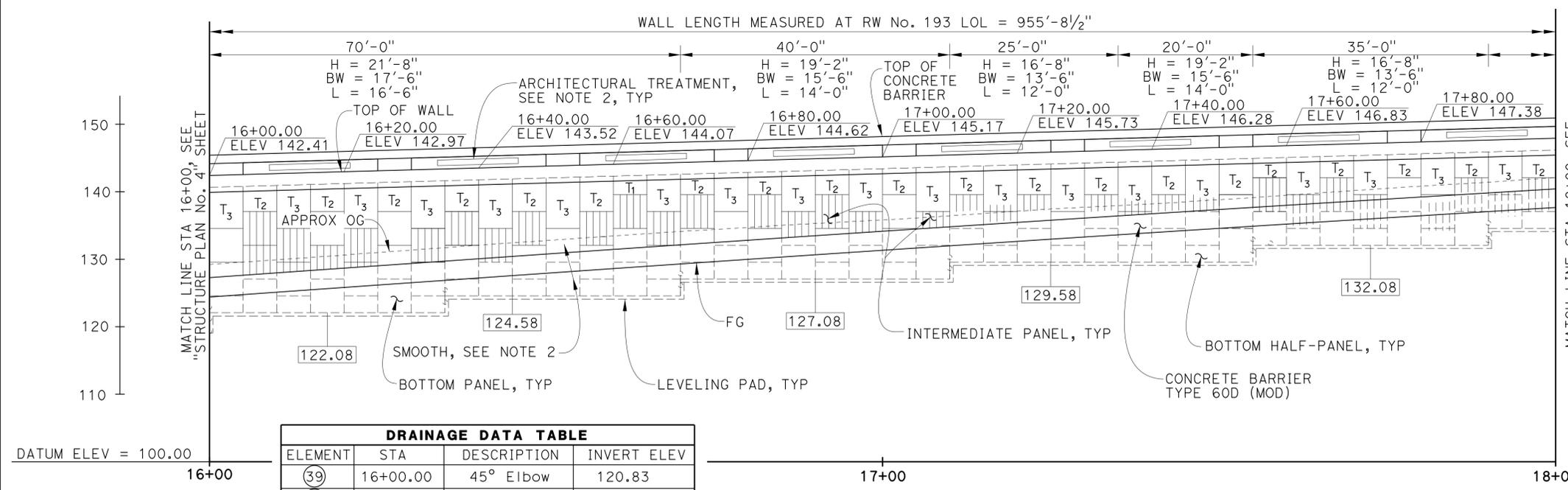
3-10-14  
 PLANS APPROVAL DATE

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.

REGISTERED PROFESSIONAL ENGINEER  
 MOHSEN MOHSENI  
 No. C45999  
 Exp. 12/31/14  
 CIVIL  
 STATE OF CALIFORNIA

**PARSONS**  
 2201 DUPONT DRIVE  
 SUITE 200  
 IRVINE, CA 92612

**OCTA**  
 550 SOUTH MAIN STREET  
 ORANGE, CA 92863



DRAINAGE DATA TABLE			
ELEMENT	STA	DESCRIPTION	INVERT ELEV
39	16+00.00	45° Elbow	120.83
40	16+20.58	Cleanout/Riser	120.92
41	16+00.00	System 32k*	119.00
42	16+00.00	90° Elbow	119.37
43	16+00.00	90° Elbow	122.63
44	16+35.00	90° Elbow	123.33
45	16+35.00	90° Elbow	125.13
46	16+70.00	90° Elbow	125.83
47	16+70.00	90° Elbow	127.53
48	17+10.00	90° Elbow	128.33
49	17+10.00	90° Elbow	129.93
50	17+55.00	90° Elbow	130.83
51	17+55.00	90° Elbow	132.63
52	17+90.00	45° Elbow	133.33
54	17+57.61	System 32l *	132.04
55	17+90.00	90° Elbow	132.46
56	17+90.00	90° Elbow	135.03

\* For System 32l and 32k, see "Road Plans"

**MIRROR ELEVATION**  
 1" = 10'

CURVE DATA 1	CURVE DATA 3
R = 7733.00'	R = 13725.00'
Δ = 5°15'31"	Δ = 2°33'11"
T = 355.11'	T = 305.83'
L = 709.72'	L = 611.56'

- LEGEND:**
- H Denotes Design Height
  - BW Denotes Minimum Base Width
  - L Denotes Minimum Wire Mat Length
  - XX.XX Top Leveling Pad Elevation
  - Interval in Years
  - Precast Panel
  - Inspection Wire
  - Top Panel
  - Number of layers of wire mat soil reinforcement

H = 21'-8"	H = 19'-2"
TOP LAYER 4-W15 X W15 @ 6	TOP LAYER 4-W15 X W15 @ 6
4 OF 4-W15 X W15 @ 18	4 OF 4-W15 X W15 @ 6
2 OF 4-W20 X W15 @ 24	1 OF 4-W20 X W15 @ 9
1 OF 4-W20 X W15 @ 24	1 OF 4-W20 X W15 @ 9

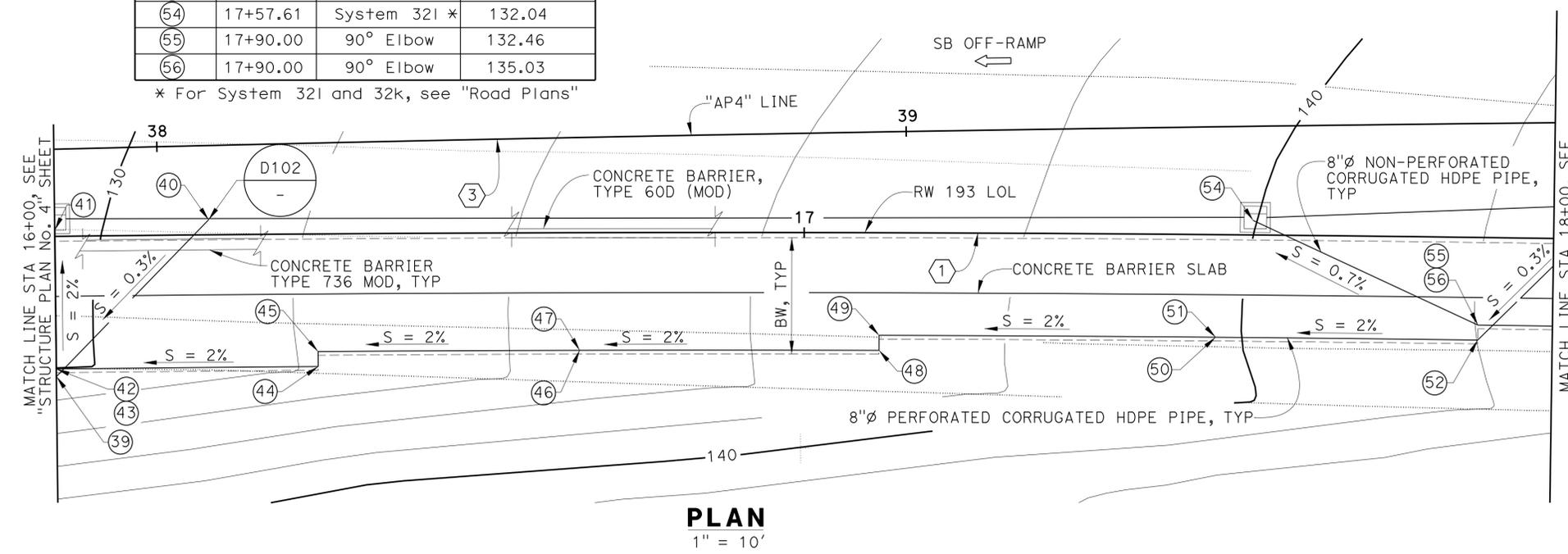
  

H = 16'-8"
TOP LAYER 4-W15 X W15 @ 6
3 OF 4-W15 X W15 @ 6
1 OF 4-W20 X W15 @ 9
1 OF 4-W20 X W15 @ 9

- NOTES:**
- Example Configuration: 3 OF 4-W20 X W15 @ 24  
 3 OF = 3 Layers of reinforcement mats with  
 4-W20 X = Longitudinal wires W20 sized by  
 W15 @ 24 = W15 sized transverse wires at 24-inch spacing
  - Top panels are designated as "T1", "T2" and "T3" depending upon the number of required layers of wire mat soil reinforcement.
  - For wire mat layers with 4 or 6 number of longitudinal wires, see "Details No. 2" sheet.
  - Wire mat layers shown are those required for the maximum specified wall height.

**WIRE MAT LAYER REINFORCEMENT TABLE**

- NOTES:**
- No expansion joint is allowed the full length of concrete barrier and concrete barrier slab.
  - For Architectural Treatment, see "Architectural Details No. 1" sheet.



*Luqi Yang*  
 DESIGN OR SIGNATURE  
 Luqi Yang  
 7-10-13  
 SIGN OFF DATE

DESIGN	BY M. Mohseni	CHECKED M. Ruvalcaba
DETAILS	BY P. Johnson	CHECKED M. Mohseni
QUANTITIES	BY A. Ly	CHECKED J. Fix

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

M. Mohseni  
 PROJECT ENGINEER

BRIDGE NO.	55E0142
POST MILES	3.4

**RETAINING WALL No. 193  
 STRUCTURE PLAN No. 4**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-OF96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET	OF
	5/28/12 11/13/12 03/04/13 4/26/13	6	17

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:12

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	625	635

REGISTERED CIVIL ENGINEER DATE 4/26/13

PLANS APPROVAL DATE 3-10-14

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.

**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612

**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863

H = 14'-2"	H = 11'-8"
TOP LAYER 4-W15 X W15 @ 6	TOP LAYER 4-W15 X W15 @ 6
3 OF 4-W15 X W15 @ 6	2 OF 4-W15 X W15 @ 6
1 OF 4-W20 X W15 @ 9	1 OF 4-W20 X W15 @ 9

**NOTES:**

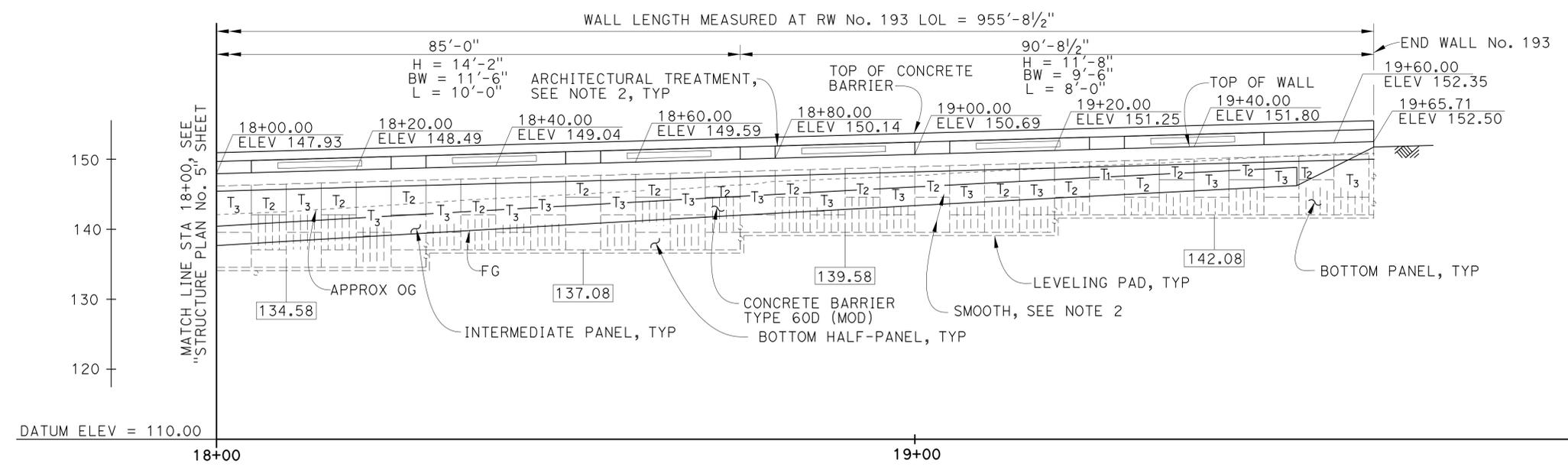
- Example Configuration: 3 OF 4-W20 X W15 @ 24  
 3 OF = 3 Layers of reinforcement mats with 4-W20 X = Longitudinal wires W20 sized by W15 @ 24 = W15 sized transverse wires at 24-inch spacing
- Top panels are designated as "T1", "T2" and "T3" depending upon the number of required layers of wire mat soil reinforcement.
- For wire mat layers with 4 or 6 number of longitudinal wires, see "Details No. 2" sheet.
- Wire mat layers shown are those required for the maximum specified wall height.

**WIRE MAT LAYER REINFORCEMENT TABLE**

**NOTES:**

- No expansion joint is allowed the full length of concrete barrier and concrete barrier slab.
- For Architectural Treatment, see "Architectural Details No. 1" sheet.

CURVE DATA ①	CURVE DATA ②
R = 7732.50'	R = 2200.00'
Δ = 5°15'31"	Δ = 9°31'35"
T = 355.09'	T = 183.32'
L = 709.68'	L = 365.79'
CURVE DATA ③	
R = 13725.00'	
Δ = 2°33'11"	
T = 305.83'	
L = 611.56'	

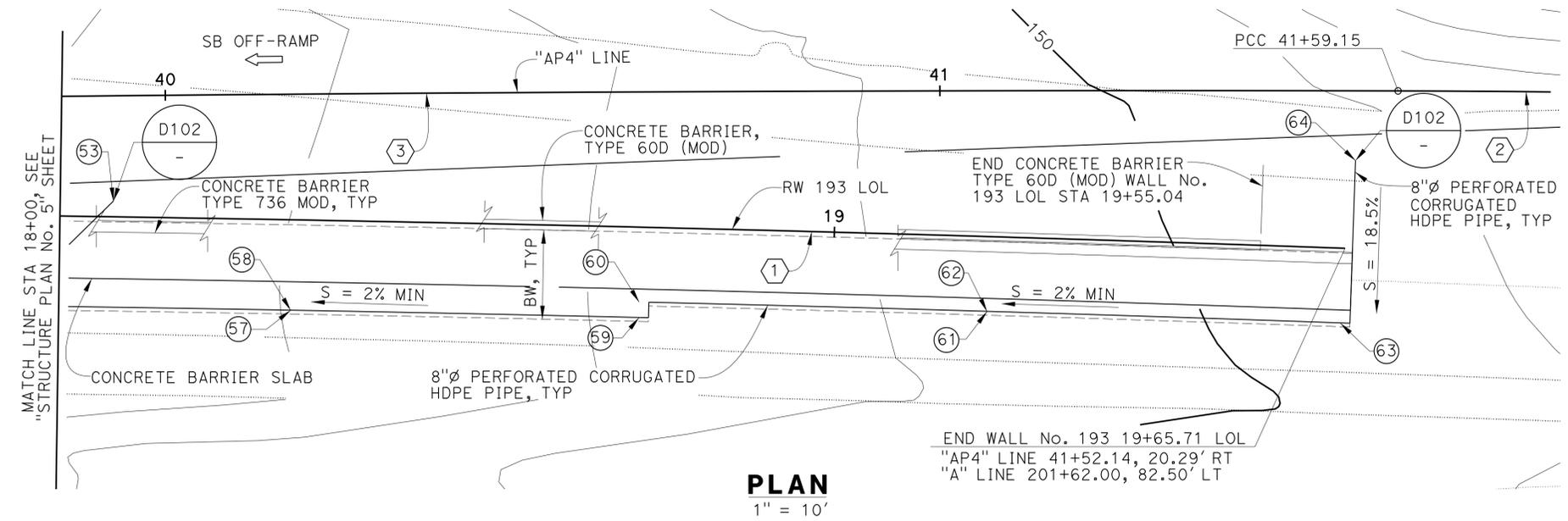


**MIRROR ELEVATION**  
1" = 10'

ELEMENT	STA	DESCRIPTION	INVERT ELEV
53	18+05.64	Cleanout/Riser	133.40
57	18+30.00	90° Elbow	135.83
58	18+30.00	90° Elbow	137.43
59	18+75.00	90° Elbow	138.33
60	18+75.00	90° Elbow	139.93
61	19+20.00	90° Elbow	140.83
62	19+20.00	90° Elbow	142.42
63	19+65.71	90° Elbow	143.33
64	19+65.71	Cleanout/Riser	147.20

**LEGEND:**

- H Denotes Design Height
- BW Denotes Minimum Base Width
- L Denotes Minimum Wire Mat Length
- XX.XX Top Leveling Pad Elevation
- ① Interval in Years
- ▭ Precast Panel
- ⊕ Inspection Wire
- T Top Panel
- x Number of layers of wire mat soil reinforcement



**PLAN**  
1" = 10'

Luqi Yang  
 DESIGN OVERSIGHT  
 7-10-13  
 SIGN OFF DATE

DESIGN	BY M. Mohseni	CHECKED M. Ruvalcaba
DETAILS	BY P. Johnson	CHECKED M. Mohseni
QUANTITIES	BY A. Ly	CHECKED J. Fix

**PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION**  
 M. Mohseni  
 PROJECT ENGINEER

BRIDGE NO.	55E0142
POST MILES	3.4

**RETAINING WALL No. 193  
STRUCTURE PLAN No. 5**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-OF96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

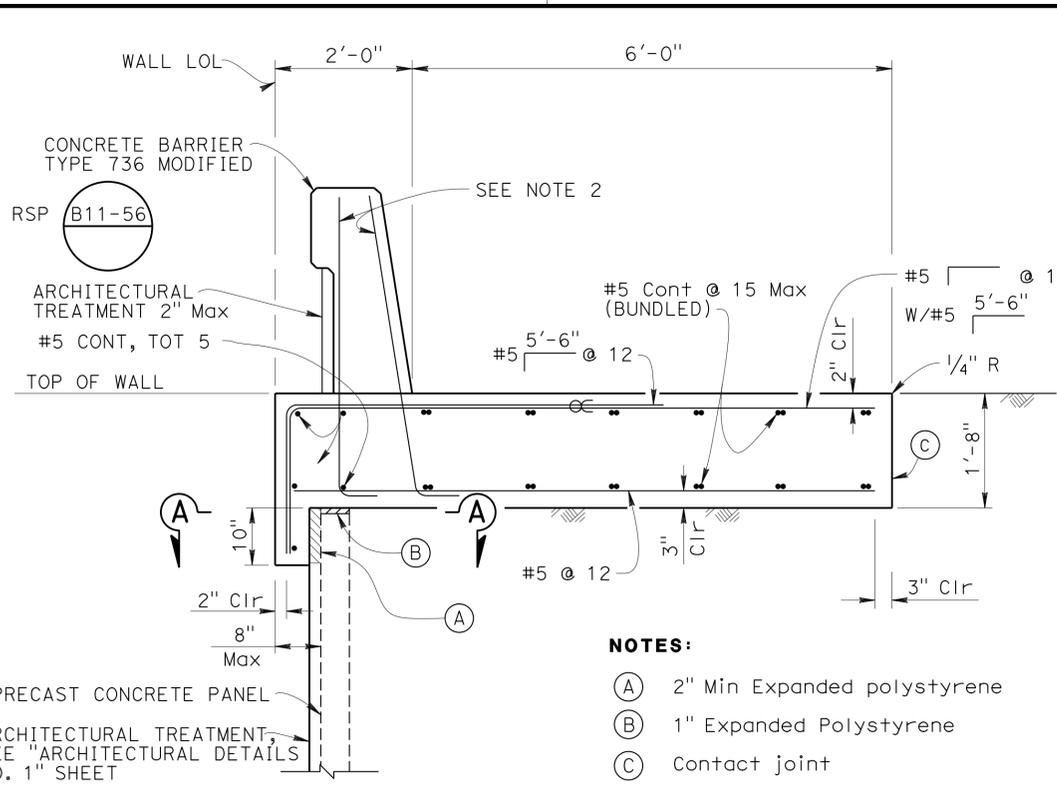
REVISION DATES	SHEET	OF
5/28/12 11/13/12 03/07/13 4/26/13	7	17

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:12

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	626	635

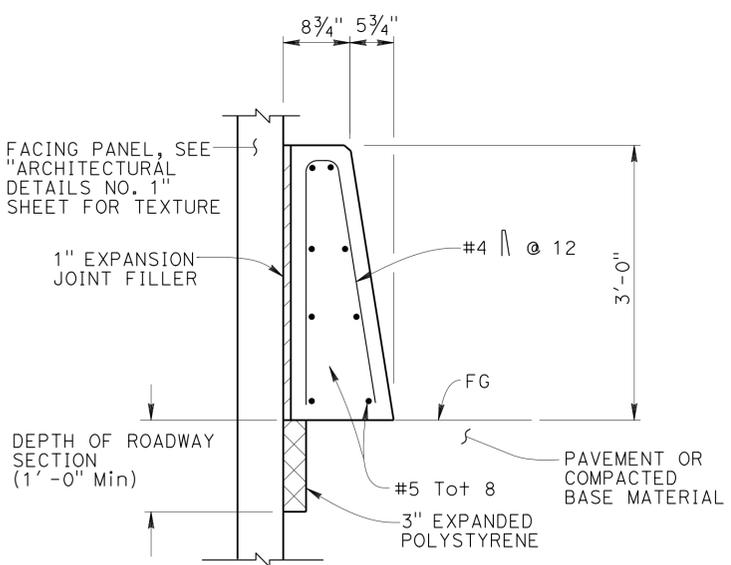

 4/26/13  
 REGISTERED CIVIL ENGINEER DATE  
 3-10-14  
 PLANS APPROVAL DATE  
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



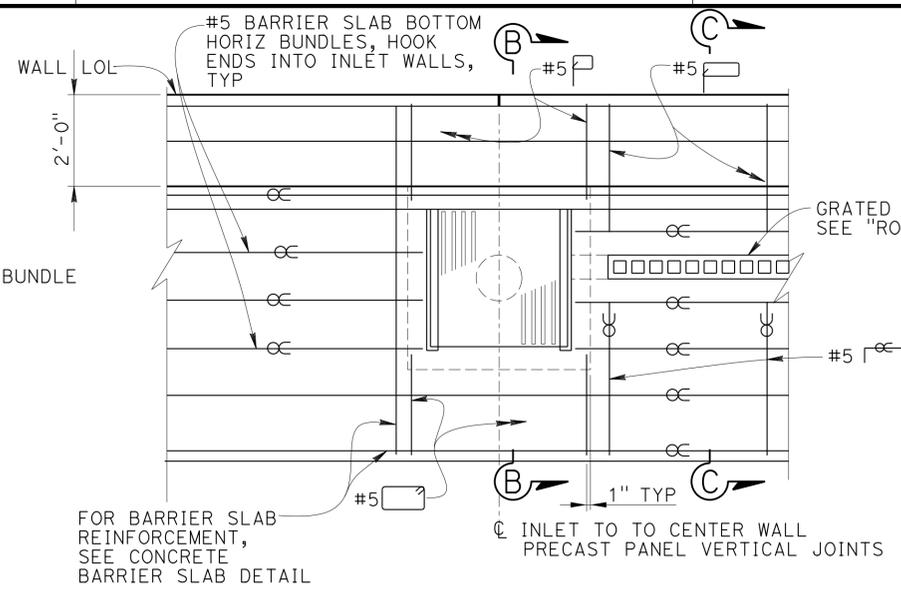
**CONCRETE BARRIER SLAB**

$\frac{3}{4}'' = 1'-0''$



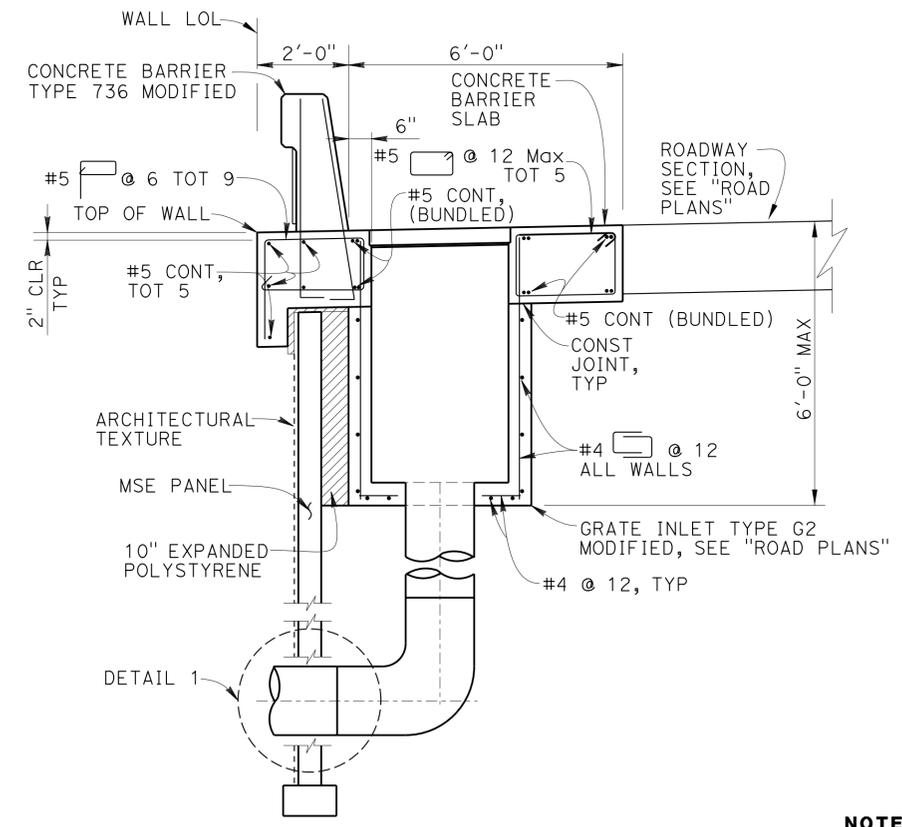
**CONCRETE BARRIER TYPE 60D (MOD) AT FACE OF MSE**

$1'' = 1'-0''$



**PLAN - G2 INLET MODIFIED**

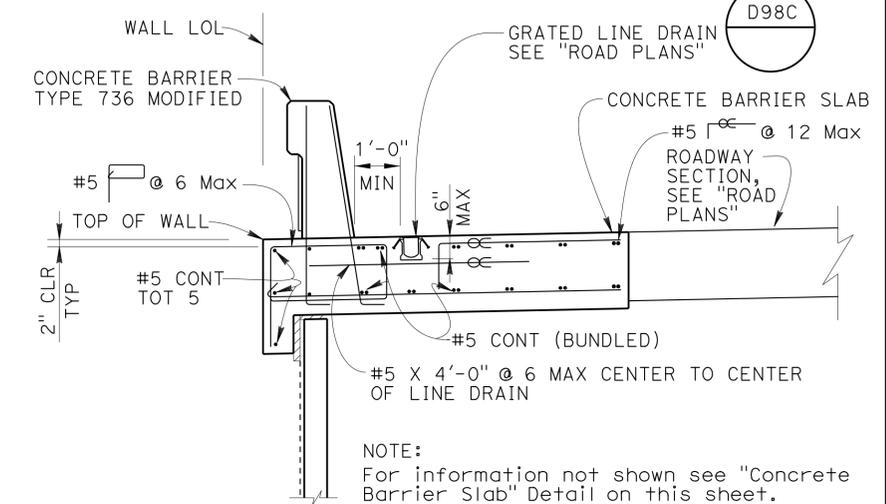
$\frac{1}{2}'' = 1'-0''$



**SECTION B-B**

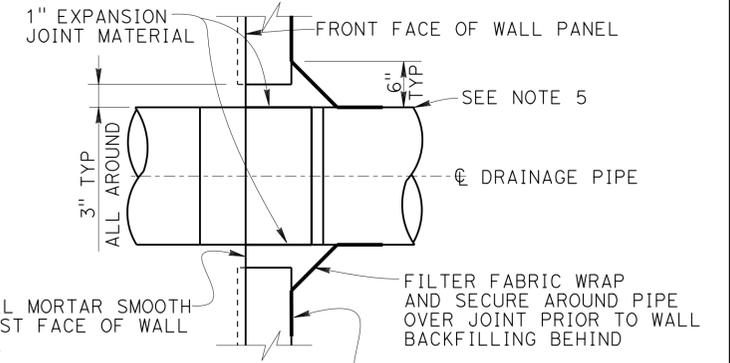
$\frac{1}{2}'' = 1'-0''$

- NOTES:**
- For additional inlet details see RSP D73
  - For information not shown see "Concrete Barrier Slab" Detail on this sheet.
  - For MSE Panels and wire mats adjacent to the drainage inlet, see "Details No. 2" sheet.



**SECTION C-C**

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



**DETAIL 1**

$1'' = 1'-0''$

- NOTES:**
- Clearance to reinforcing steel in concrete barrier to be 1".
  - Not all barrier reinforcement shown.
  - No expansion joints in concrete barrier or barrier slab within wall limits.
  - ⊗ Indicates bundled bars.
  - For Drainage Details not shown, including pipe size and type, see "Road Plans"

DESIGN BY: Luqi Yang  
 1-14-14  
 SIGN OFF DATE

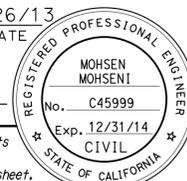
DESIGN	BY: M. Mohseni	CHECKED: M. Ruvalcaba
DETAILS	BY: P. Johnson	CHECKED: M. Mohseni
QUANTITIES	BY: A. Ly	CHECKED: J. Fix

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

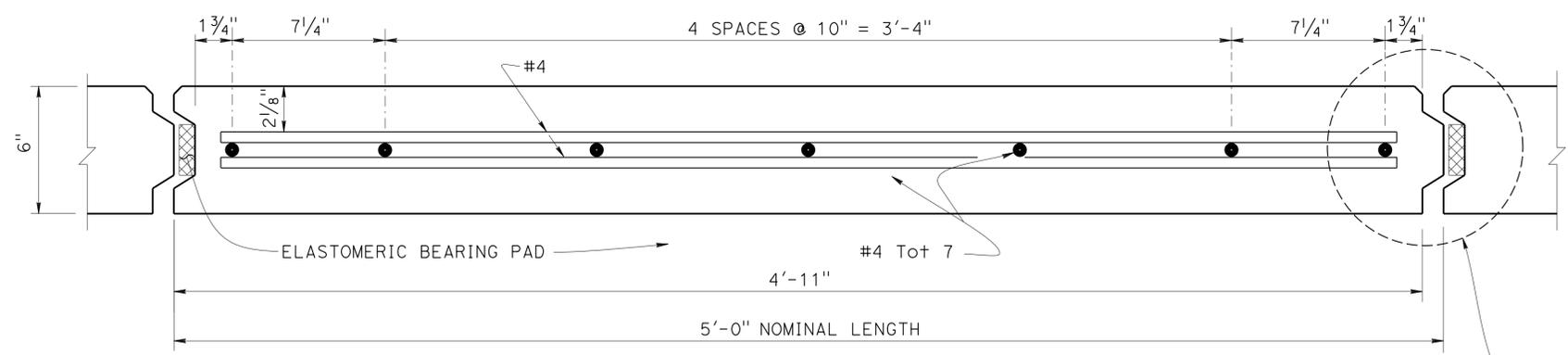
PROJECT ENGINEER: M. Mohseni  
 BRIDGE NO.: 55E0142  
 POST MILES: 3.4

**RETAINING WALL No. 193**  
**CONCRETE BARRIER SLAB DETAILS**

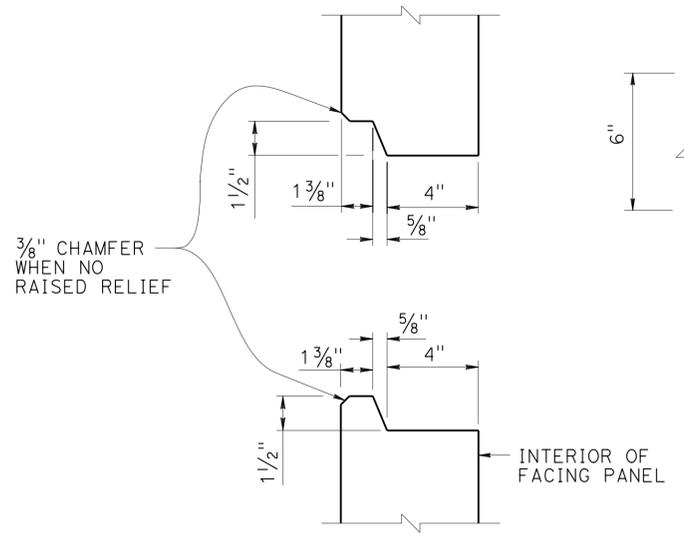
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	627	635


 4/26/13  
 REGISTERED CIVIL ENGINEER DATE  
 3-10-14  
 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.

**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863

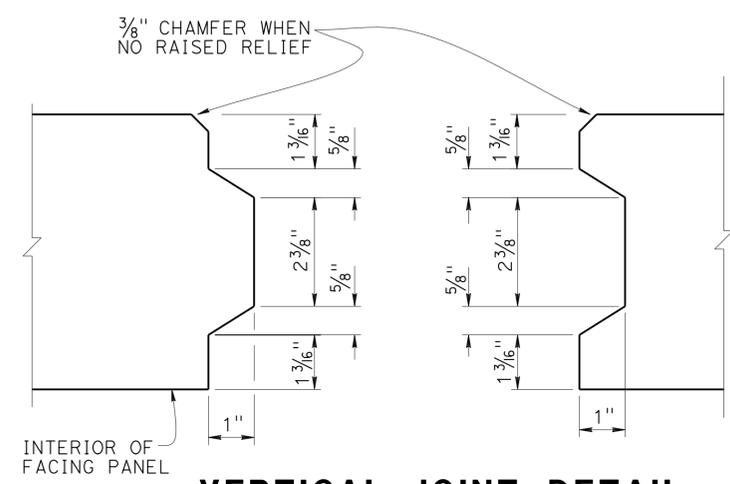


**PLAN - FACING PANEL**  
3" = 1'-0"

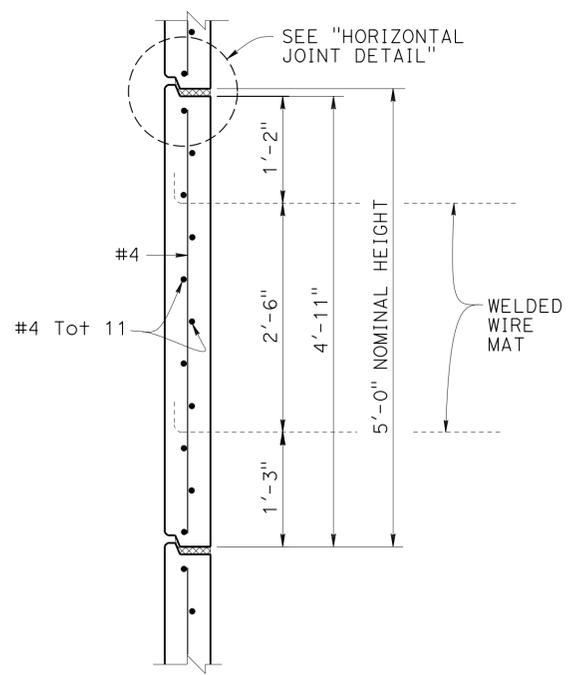


**HORIZONTAL JOINT DETAIL**  
3" = 1'-0"

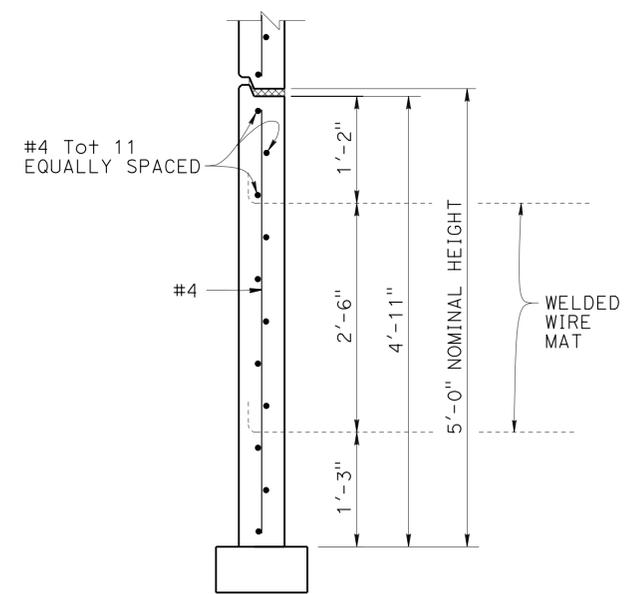
- NOTES:**
1. Architectural treatment not shown
  2. Place reinforced elastomeric bearing pads in all of the panel joints between the panels. Place one in each vertical joint where the horizontal joints intersect. Place two per panel in each horizontal joint:  
 $\frac{3}{4}$ " x  $2\frac{3}{8}$ " x 6" for vertical joints  
 $\frac{3}{4}$ " x 4" x 6" for horizontal joints.
  3. Bond a strip of filter fabric, 1'-0" wide, over the full length of all panel joints.
  4. Top layer of welded wire mats attached parallel to top of panel when top of wall is angled or curved as shown elsewhere in "STRUCTURE PLANS".
  5. Eliminate mid level mat when closer than 6" to top mat, continue variable dimension between remaining mats.



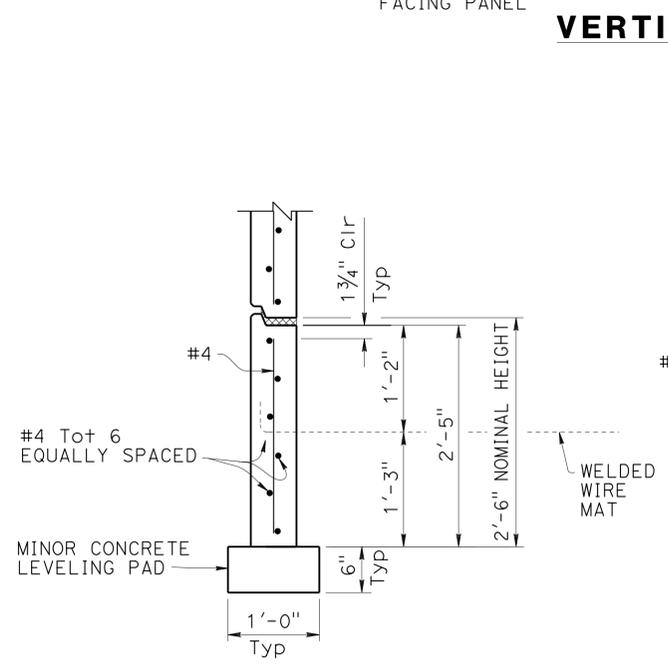
**VERTICAL JOINT DETAIL**  
6" = 1'-0"



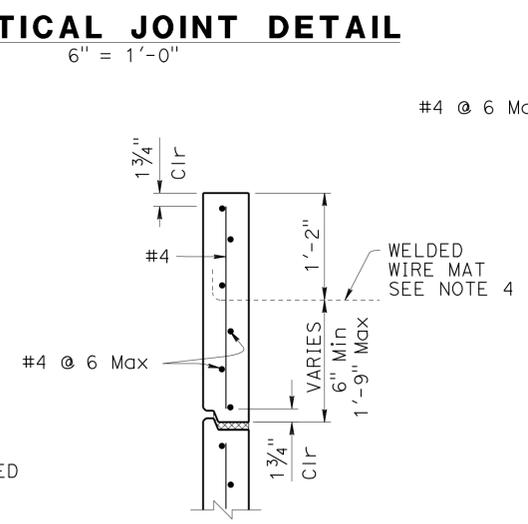
**INTERMEDIATE PANEL**  
1" = 1'-0"



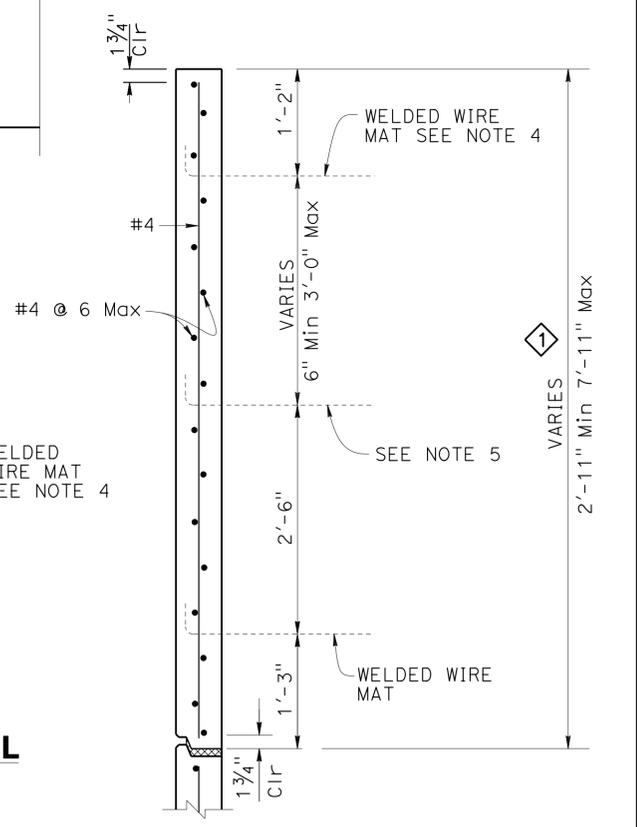
**BOTTOM PANEL**  
1" = 1'-0"



**BOTTOM HALF PANEL**  
1" = 1'-0"



**TOP HALF PANEL**  
1" = 1'-0"



**TOP PANEL WITH MULTIPLE MATS**  
1" = 1'-0"

**SPECIAL DETAILS**

**RETAINING WALL No. 193**

REVISED STANDARD DRAWING  
 FILE NO. **xs13-020-1**  
 APPROVAL DATE January 2012

Revised Dimension  
 STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55E0142  
 POST MILE 3.4  
 DIVISION OF ENGINEERING SERVICES  
 PROJECT NUMBER & PHASE: 12000202771  
 CONTRACT NO. 12-OF96A4

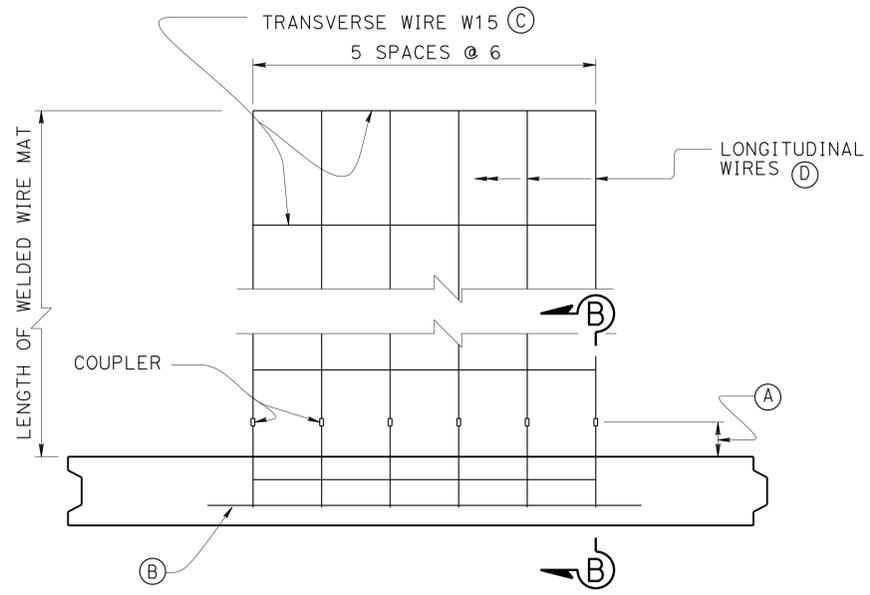
**MECHANICALLY STABILIZED EMBANKMENT**  
**DETAILS NO. 1**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	628	635

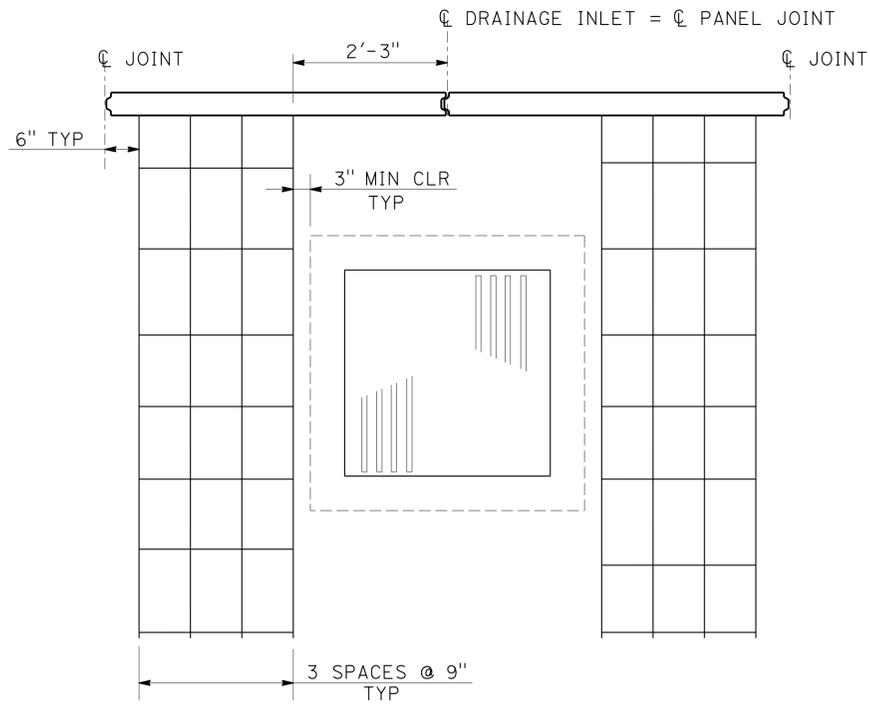

 4/26/13  
 REGISTERED CIVIL ENGINEER DATE  
 3-10-14  
 PLANS APPROVAL DATE  
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

**PARSONS** 2201 DUPONT DRIVE  
 SUITE 200  
 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET  
 ORANGE, CA 92863

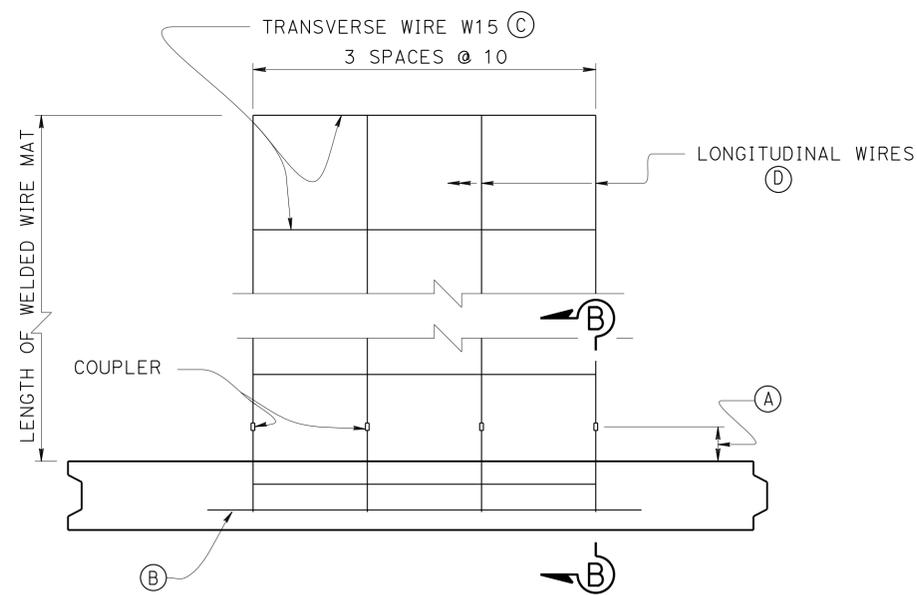
- NOTES:**
- (A) Distance as required to permit coupler to be swaged
  - (B) Place #4 x 3'-2", centered on connector mat, but not welded to it
  - (C) All transverse wires size W15 at various spacing as shown elsewhere in plans
  - (D) Size of longitudinal wires shown elsewhere in plans



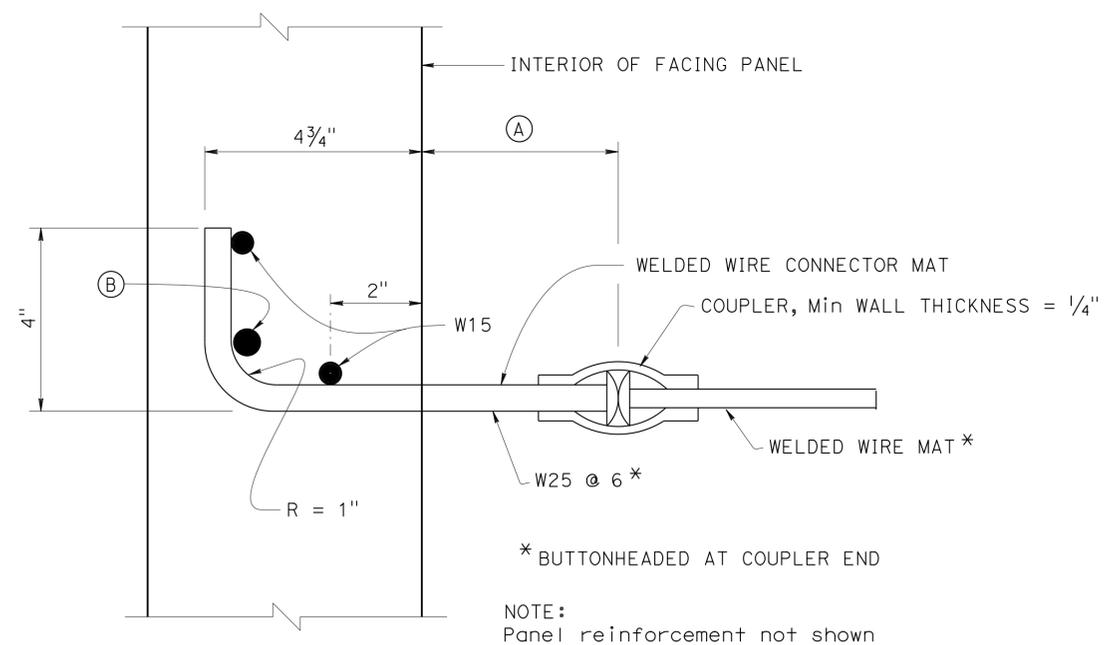
**PLAN OF PANEL WITH SIX WIRE MAT**  
1/2" = 1'-0"



NOTE: Wall Manufacturer to provide details where soil reinforcement is interrupted by drainage inlet.  
**PLAN OF PANEL ADJACENT TO DRAINAGE INLET**  
NO SCALE



**PLAN OF PANEL WITH FOUR WIRE MAT**  
1/2" = 1'-0"



**SECTION B-B**  
6" = 1'-0"

Luqi Yang  
 DESIGNER  
 7-10-13  
 SIGN OFF DATE

DESIGN	BY M. Mohseni	CHECKED M. Ruvalcaba
DETAILS	BY P. Johnson	CHECKED M. Mohseni
QUANTITIES	BY A. Ly	CHECKED J. Fix

**PREPARED FOR THE STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION  
 PROJECT ENGINEER M. Mohseni

BRIDGE NO.	55E0142
POST MILES	3.4

**RETAINING WALL No. 193**  
**DETAILS NO. 2**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0	1	2	3
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UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-OF96A4

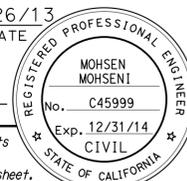
DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES	SHEET	OF
5/28/12 11/13/12 03/04/13 4/26/13	10	17

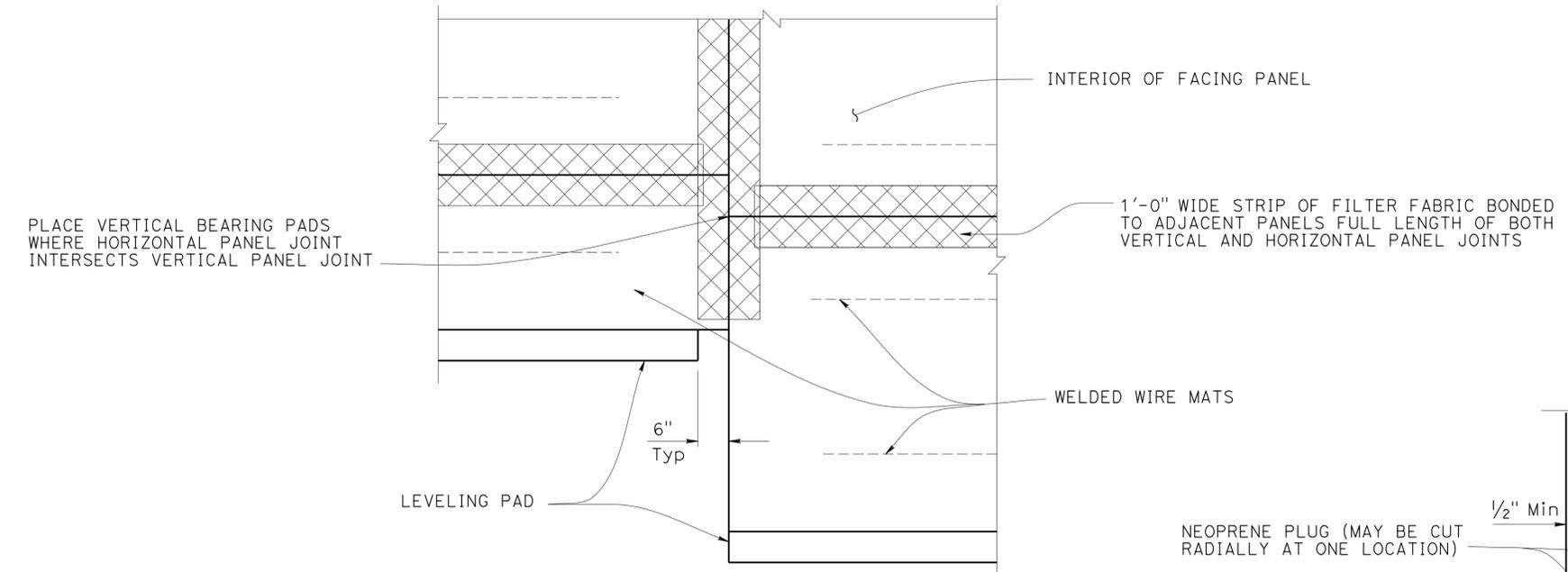
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USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:12

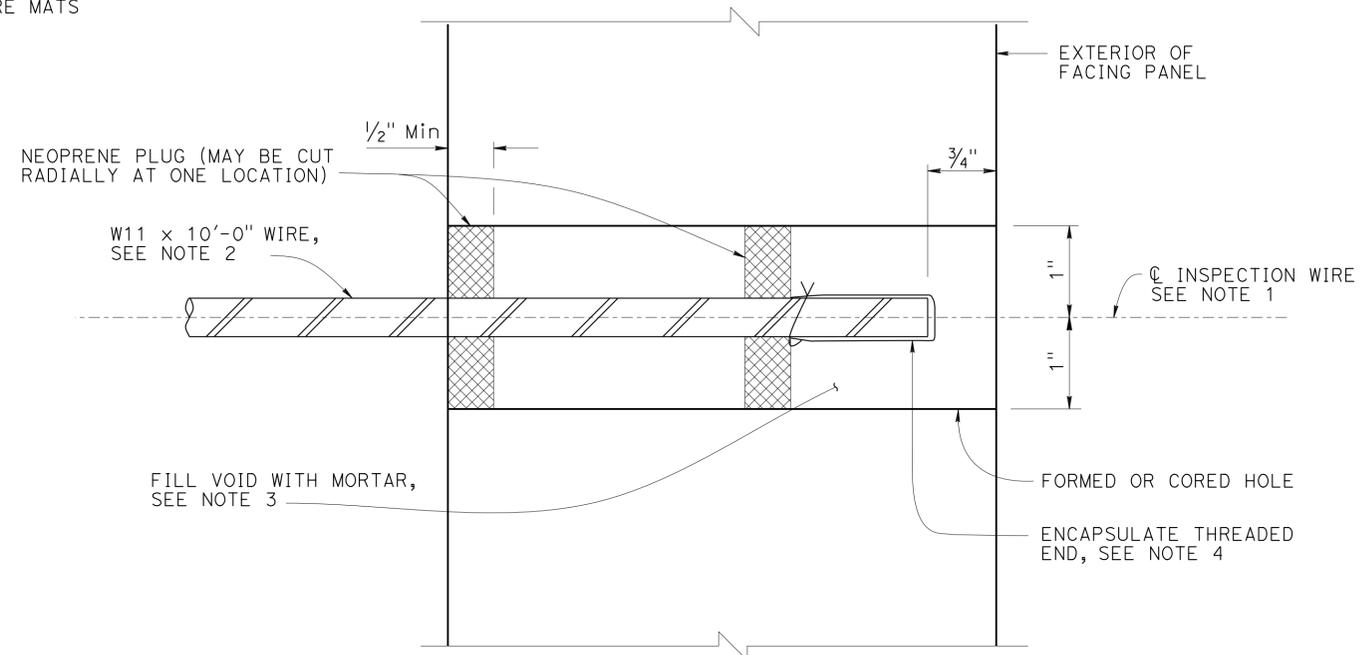
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Oran	5	3.0/3.7	629	635


  
 REGISTERED CIVIL ENGINEER DATE 4/26/13  
 PLANS APPROVAL DATE 3-10-14  
 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.

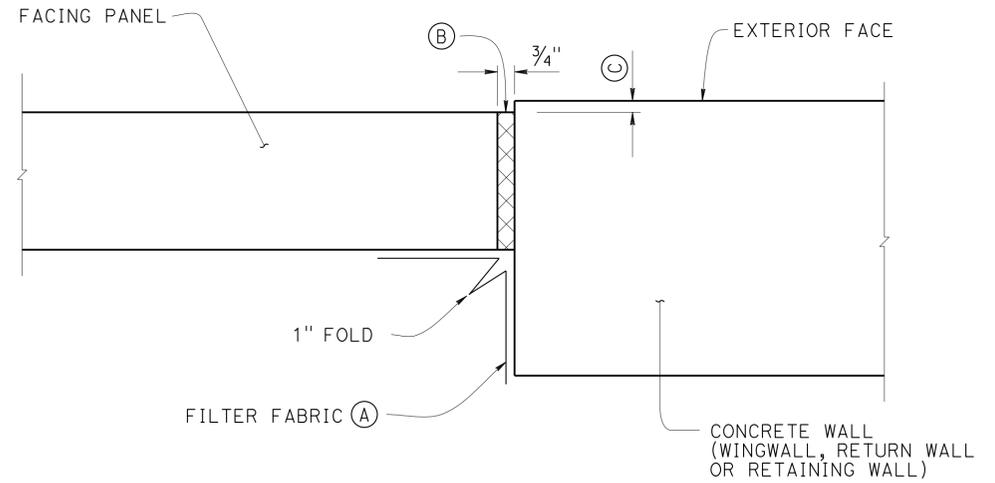
**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



**PART ELEVATION**  
3/4" = 1'-0"



**SECTION THRU INSPECTION WIRE**  
NO SCALE



**MSE FACING PANEL-TO-CONCRETE WALL JOINT DETAIL**  
3" = 1'-0"

**NOTES:**

- (A) Bond a strip of filter fabric, 1'-6" wide, to back of MSE panels and the adjacent concrete wall for entire length of vertical joint
- (B) Bond expansion joint material to the concrete wall
- (C) Offset between face of MSE facing panel and face of the concrete wall as dictated by location of layout lines shown elsewhere in "STRUCTURE PLANS"

**NOTES:**

- 1. Center inspection wire in facing panel.
  - 2. Fabricated inspection wire from W11 wire representative of the welded wire mats, with 3/8" Ø 16 UNC threads for at least 1 1/2" of one end.
  - 3. Place inspection wire horizontal and perpendicular to the wall panel prior to backfilling.
  - 4. Encapsulate threaded end with corrosion inhibiting mastic, vinyl covering, and secure with plastic tie.
- UNC = Unified Coarse Threads

STANDARD DRAWING  
 FILE NO. **xs13-020-3**  
 APPROVAL DATE January 2012

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES  
 BRIDGE NO. 55E0142  
 POST MILE 3.4

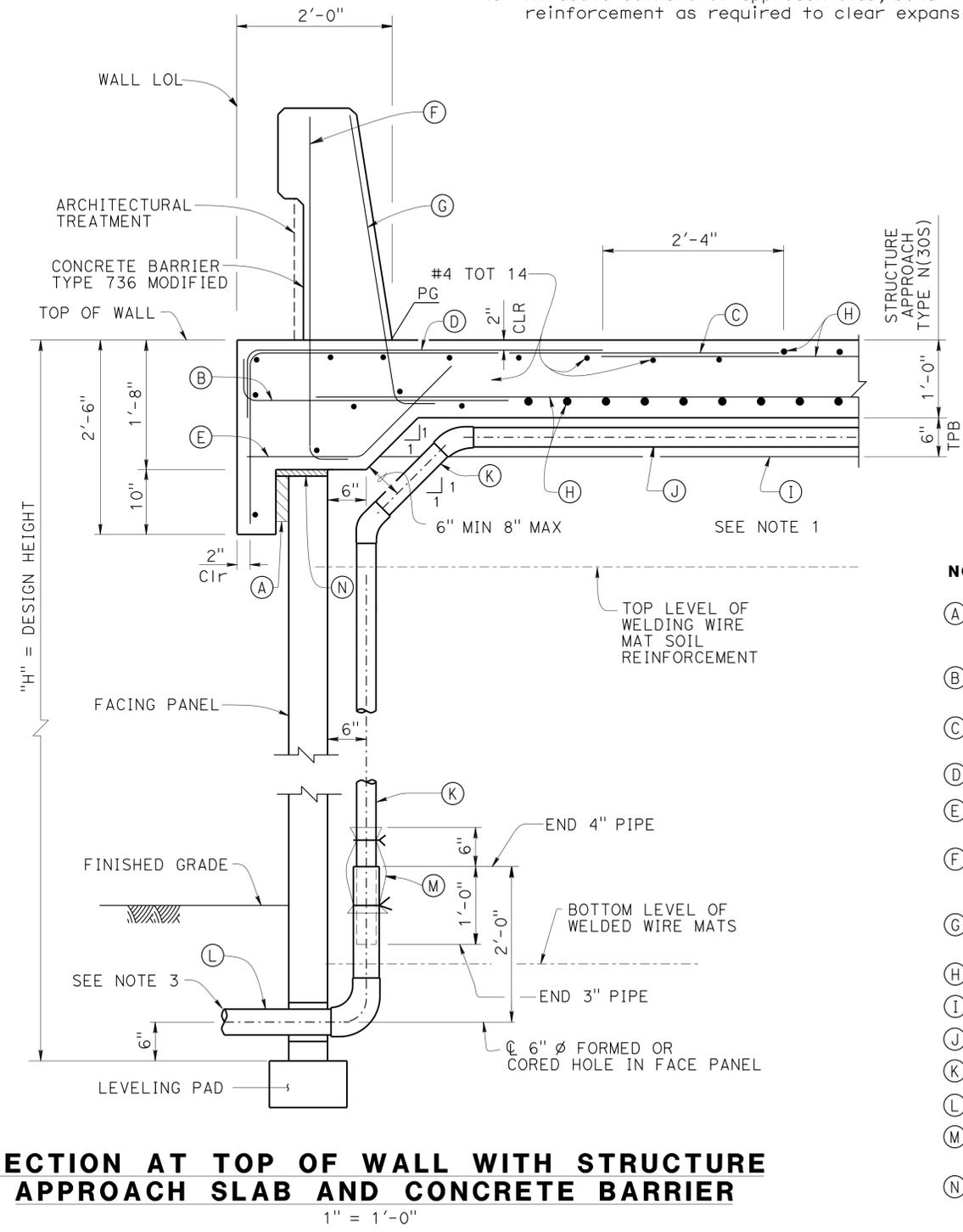
**RETAINING WALL No. 193**  
**MECHANICALLY STABILIZED EMBANKMENT**  
**DETAILS NO. 3**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	630	635


 4/26/13  
 REGISTERED CIVIL ENGINEER DATE  
 3-10-14  
 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.

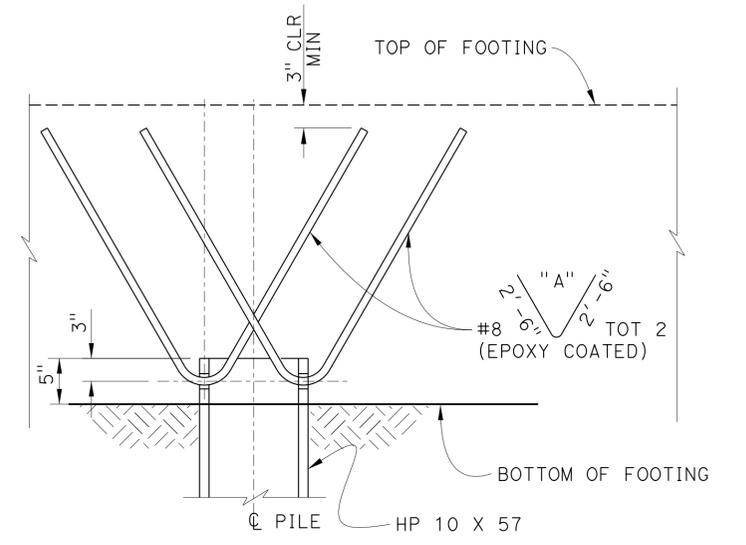
**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863

- NOTES:**
- Low end of subgrade drain shown, at high end install cap at end of 3" slotted pipe.. Subgrade drain located at end of structure approach slab, see "Structure Plans".
  - Not all barrier reinforcement shown.
  - For Outlet Details, see "Road Plans".
  - At acute corners of approach slab, bend reinforcement as required to clear expansion joint.



**SECTION AT TOP OF WALL WITH STRUCTURE APPROACH SLAB AND CONCRETE BARRIER**  
1" = 1'-0"

- NOTES:**
- (A) 2" expanded polystyrene recessed 2" into barrier slab at front of MSE facing panel.
  - (B) #5  $\frac{6\frac{1}{4}}{3'-4''}$  @ 12
  - (C) #5  $\frac{6'-10\frac{5}{8}}{12}$  @ 12
  - (D) #5  $\frac{4'-7''}{12}$  @ 12 Bundled with (C) bars
  - (E) #5 @ 12
  - (F) #5  $\frac{6\frac{1}{4}}{16}$  @ 16 (To be in place prior approach slab concrete)
  - (G) #5  $\frac{6\frac{1}{4}}{8}$  @ 8 (To be in place prior to approach slab concrete)
  - (H) Approach slab reinforcement
  - (I) Filter fabric
  - (J) 3" Plastic pipe (slotted)
  - (K) 3" Plastic pipe and fitting (unslotted)
  - (L) 4" Schedule 80 PVC outlet pipe and fittings (unslotted)
  - (M) 1'-0" wide X 2'-0" filter fabric wrapped around pipe and secured with nylon ties
  - (N) 1" Expanded polystyrene



**ELEVATION**  
**PLAN**  
**STEEL PILE ANCHOR**  
 $\frac{1}{2}'' = 1'-0''$

STRUCTURAL STEEL (PILING)  
 Fy = 50 ksi  
 ASTM = A572  
 GRADE 50

LOCATION	"A"
Exterior Piles With $\phi$ Pile To Edge Of Footing Distance Of 1'-6" Min	30°
Interior Piles	60°

  
 DESIGN SUPERVISOR  
 7-10-13  
 SIGN OFF DATE

DESIGN	BY M. Mohseni	CHECKED M. Ruvalcaba
DETAILS	BY P. Johnson	CHECKED M. Mohseni
QUANTITIES	BY A. Ly	CHECKED J. Fix

**PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION**  
 M. Mohseni  
 PROJECT ENGINEER

BRIDGE NO.	55E0142
POST MILES	3.4

**RETAINING WALL No. 193**  
**DETAILS NO. 4**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Orca	5	3.0/3.7	631	635

*Mohsen* 4/26/13  
 REGISTERED CIVIL ENGINEER DATE

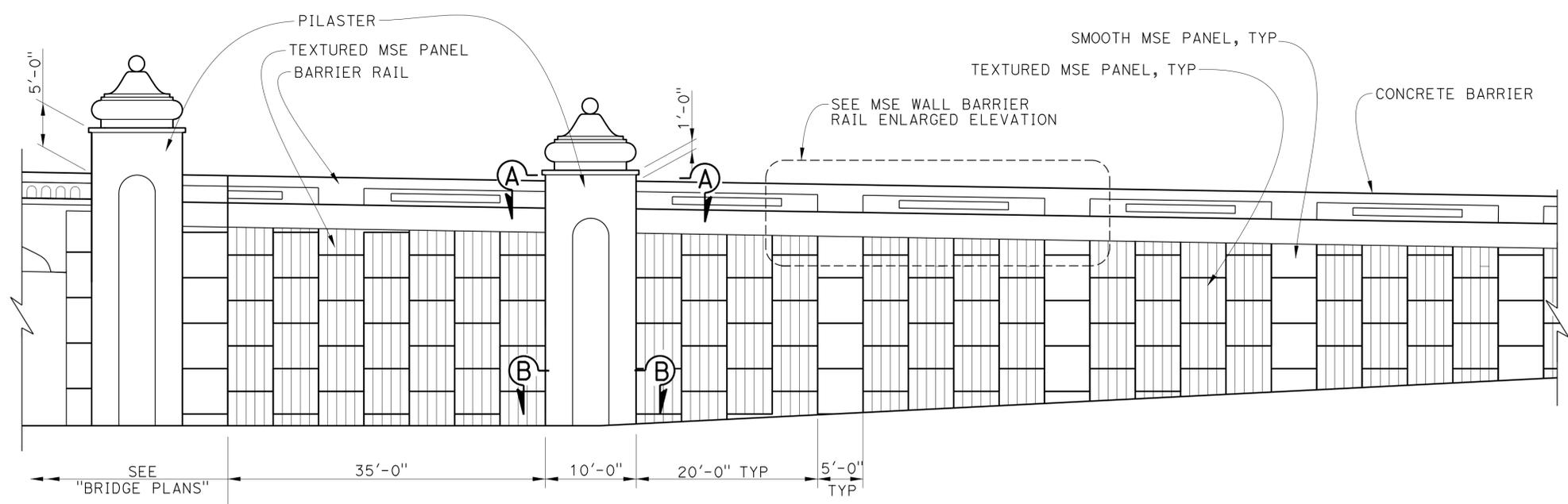
3-10-14  
 PLANS APPROVAL DATE

*Mohsen Mohseni*  
 REGISTERED PROFESSIONAL ENGINEER  
 No. C45999  
 Exp. 12/31/14  
 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.*

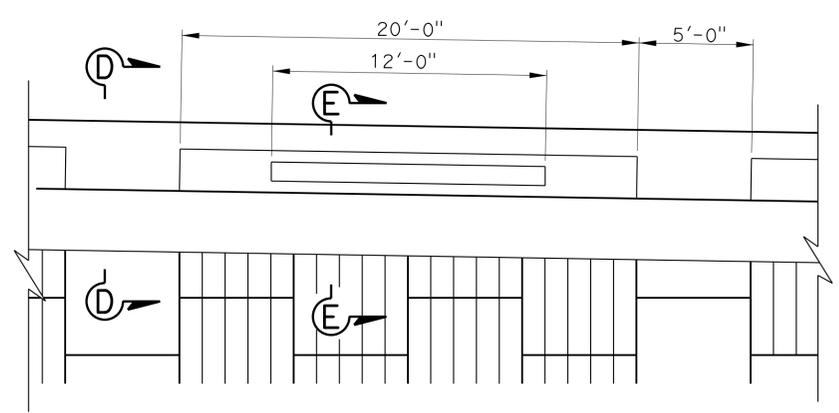
**PARSONS** 2201 DUPONT DRIVE  
 SUITE 200  
 IRVINE, CA 92612

**OCTA** 550 SOUTH MAIN STREET  
 ORANGE, CA 92863

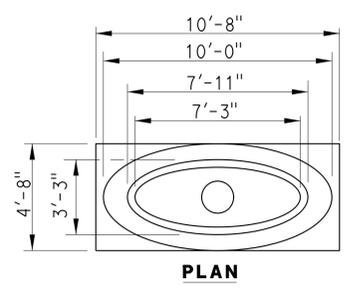
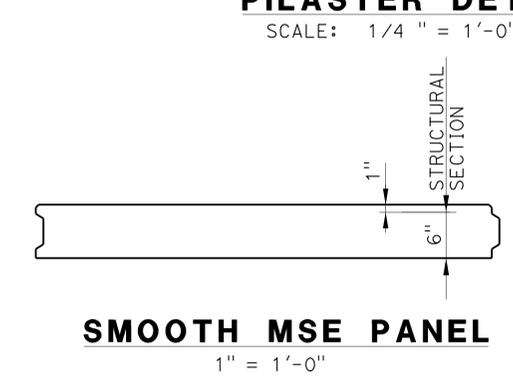
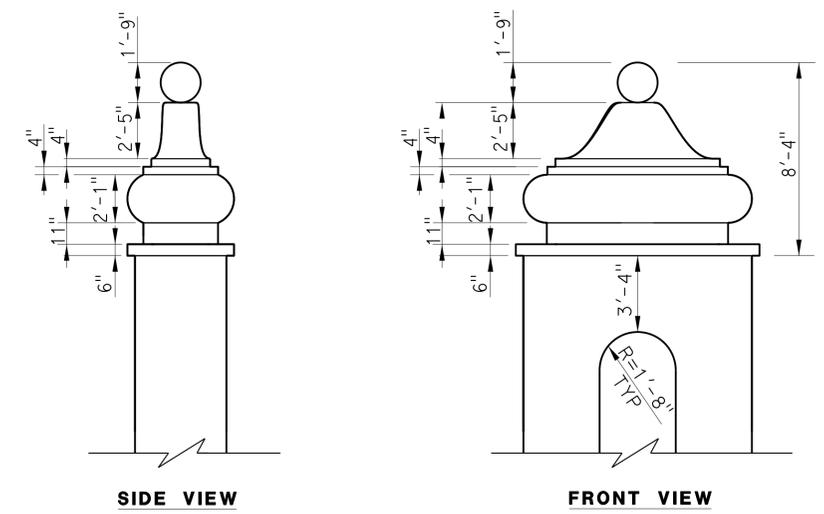
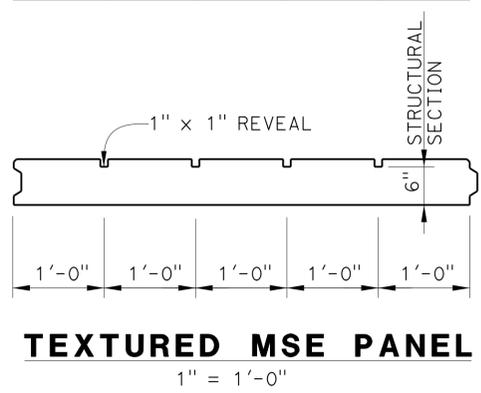
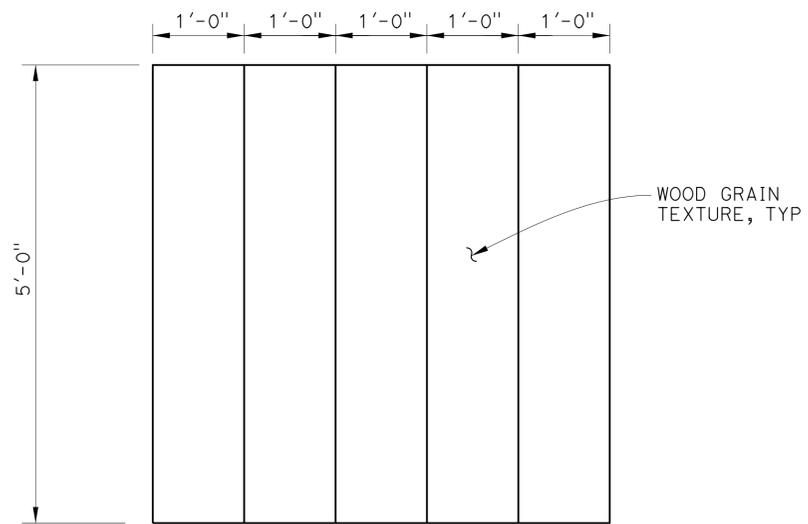


- NOTES:**
1. For Section "A-A" and Section "B-B", see "ARCHITECTURAL DETAILS No. 2" sheet.
  2. Concrete shall be colored for all the wall precast panels, pilasters and all concrete barriers within the limits of the retaining wall.

**PARTIAL WALL ELEVATION**  
 SCALE: 1/8" = 1'-0"



NOTE: FOR PLAN VIEW A-A AND SECTION B-B "ARCHITECTURAL DETAILS NO. 2" SHEET  
**MSE WALL BARRIER RAIL ENLARGED ELEVATION**  
 SCALE: 1/4" = 1'-0"



*Luqi Yang*  
 DESIGNER  
 Luqi Yang  
 7-10-13  
 SIGN OFF DATE

DESIGN	R. Genick	CHECKED	D. Jackson
DETAILS	BY P. Johnson	CHECKED	M. Mohseni
QUANTITIES	BY A. Ly	CHECKED	

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

M. Mohseni  
 PROJECT ENGINEER

BRIDGE NO.	55E0142
POST MILES	3.4

**RETAINING WALL No. 193  
 ARCHITECTURAL DETAILS NO. 1**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0	1	2	3
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UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-OF96A4

DISREGARD PRINTS BEARING EARLIER REVISION DATES

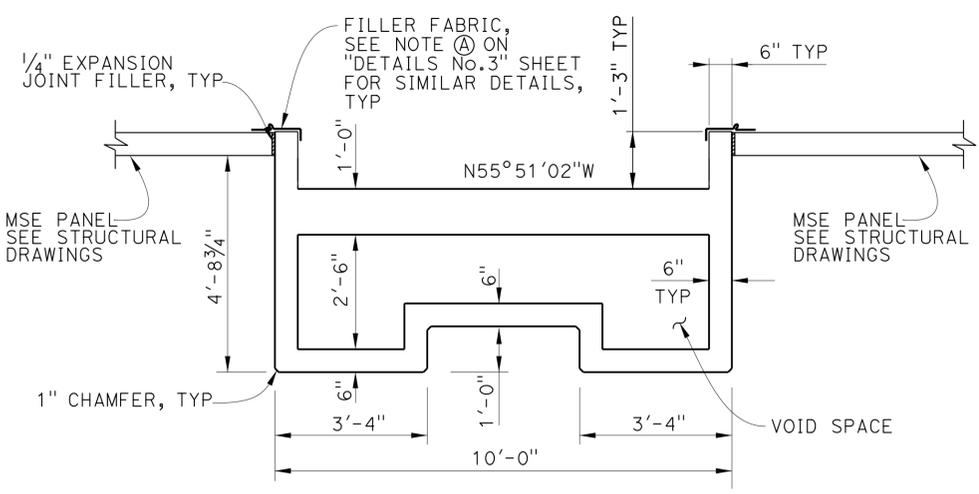
REVISION DATES	SHEET	OF
5/28/12 11/15/12 03/04/13 4/26/13	13	17

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:12

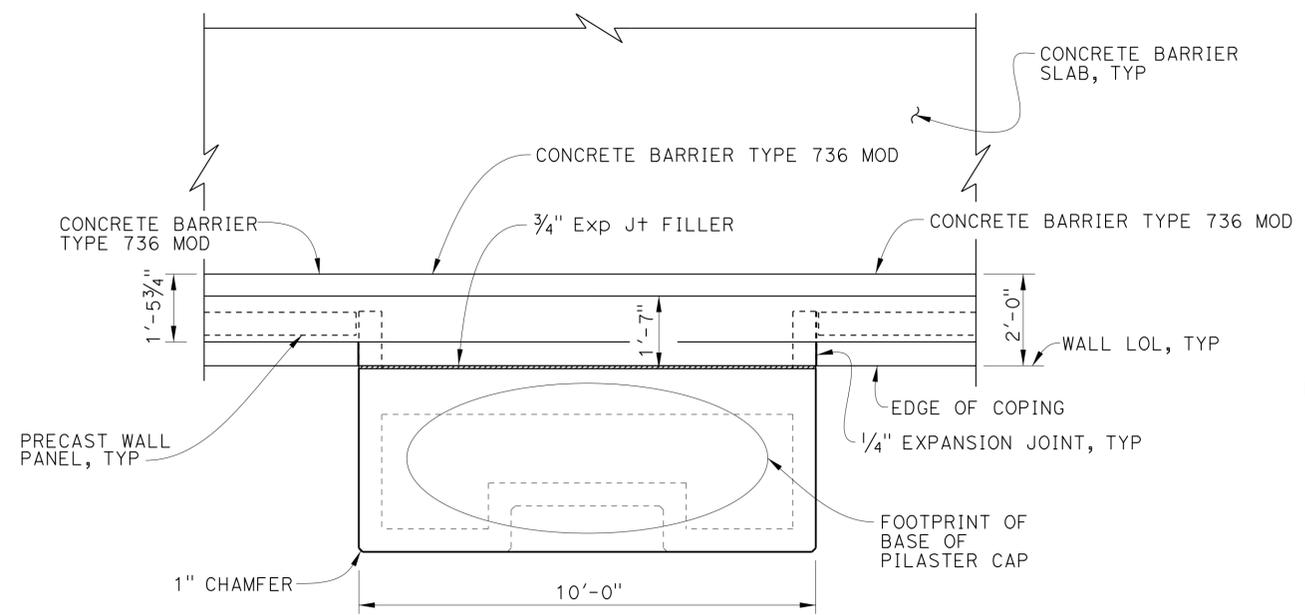
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Ora	5	3.0/3.7	632	635


  
 4/26/13 DATE  
 REGISTERED CIVIL ENGINEER  
 3-10-14 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.

**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863

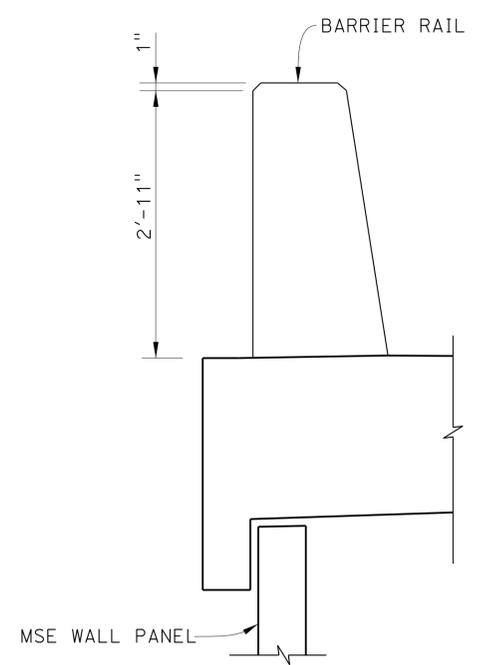


**SECTION B-B**  
1/2" = 1'-0"

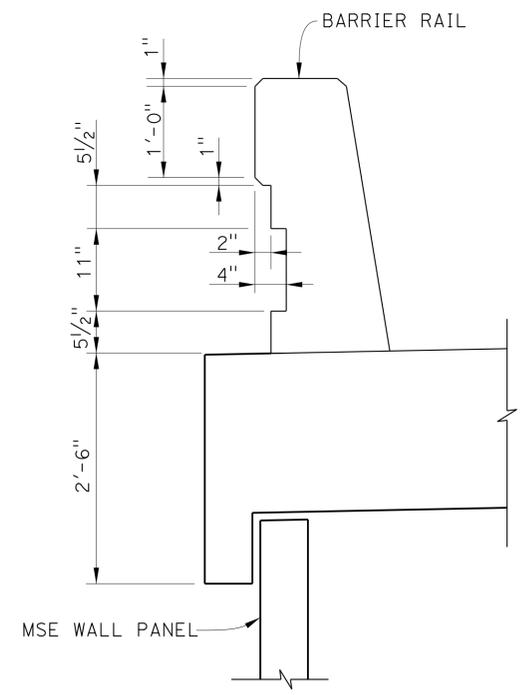


NOTE:  
FOR INFORMATION NOT SHOWN, SEE SECTION "B-B".

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



**SECTION D-D**  
SCALE: 1" = 1'-0"



**SECTION E-E**  
SCALE: 1" = 1'-0"

**NOTE:**  
For Pilaster Details, see "Pilaster Details" sheet.

Luqi Yang  
 DESIGN SUPERVISOR  
 7-10-13  
 SIGN OFF DATE

DESIGN	BY: R. Genick	CHECKED: D. Jackson
DETAILS	BY: P. Johnson	CHECKED: M. Mohseni
QUANTITIES	BY: A. Ly	CHECKED:

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

M. Mohseni  
 PROJECT ENGINEER

BRIDGE NO.	55E0142
POST MILES	3.4

**RETAINING WALL No. 193**  
**ARCHITECTURAL DETAILS NO. 2**

DESIGN DETAIL SHEET (ENGLISH) (REV.7/16/10)



UNIT: PROJECT NUMBER & PHASE: 12000202771

CONTRACT NO.: 12-0F96A4

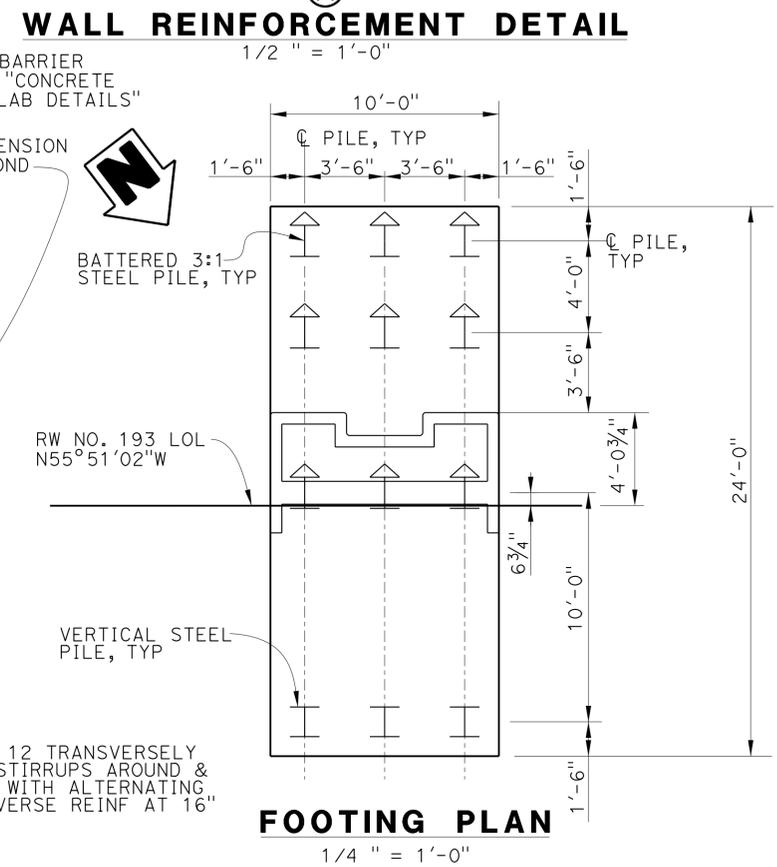
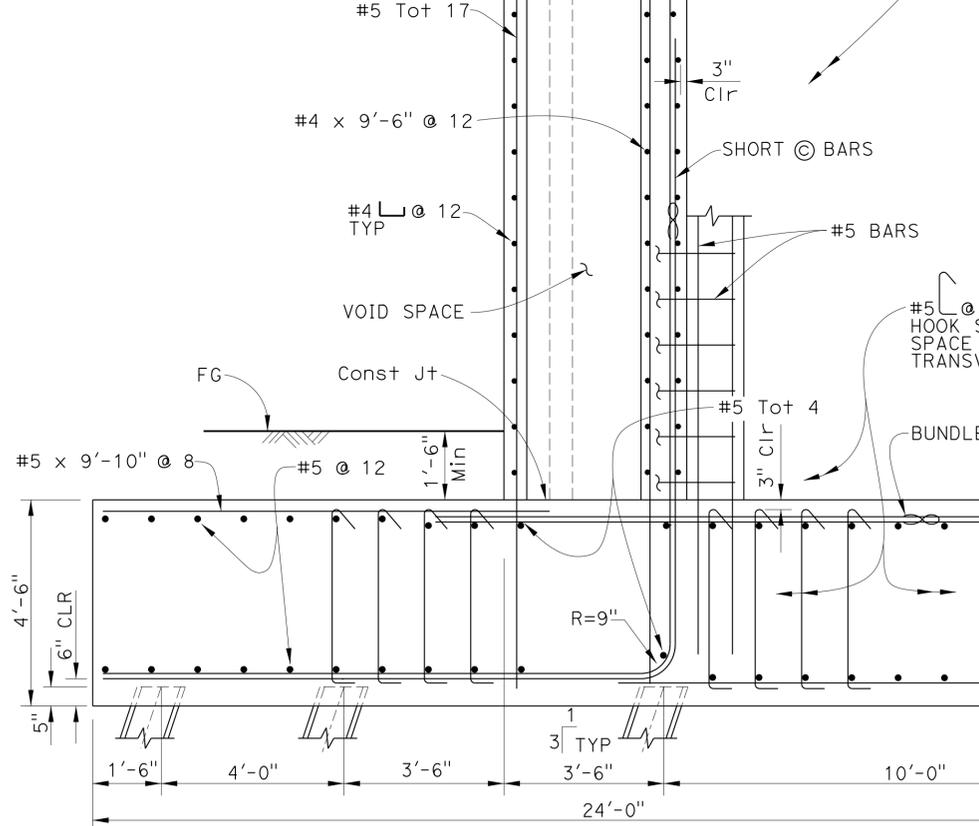
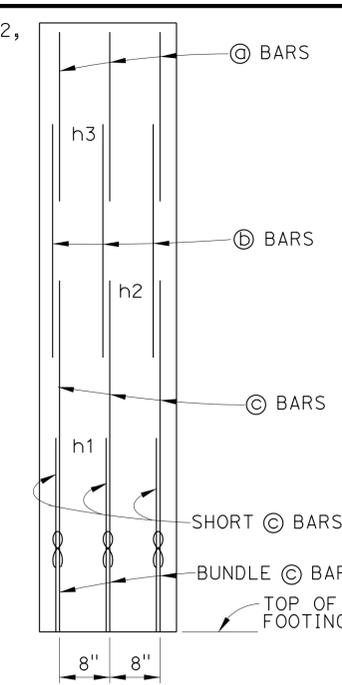
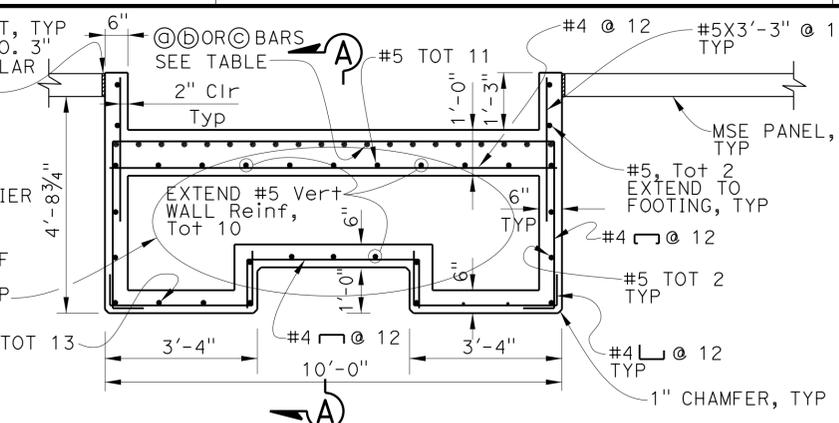
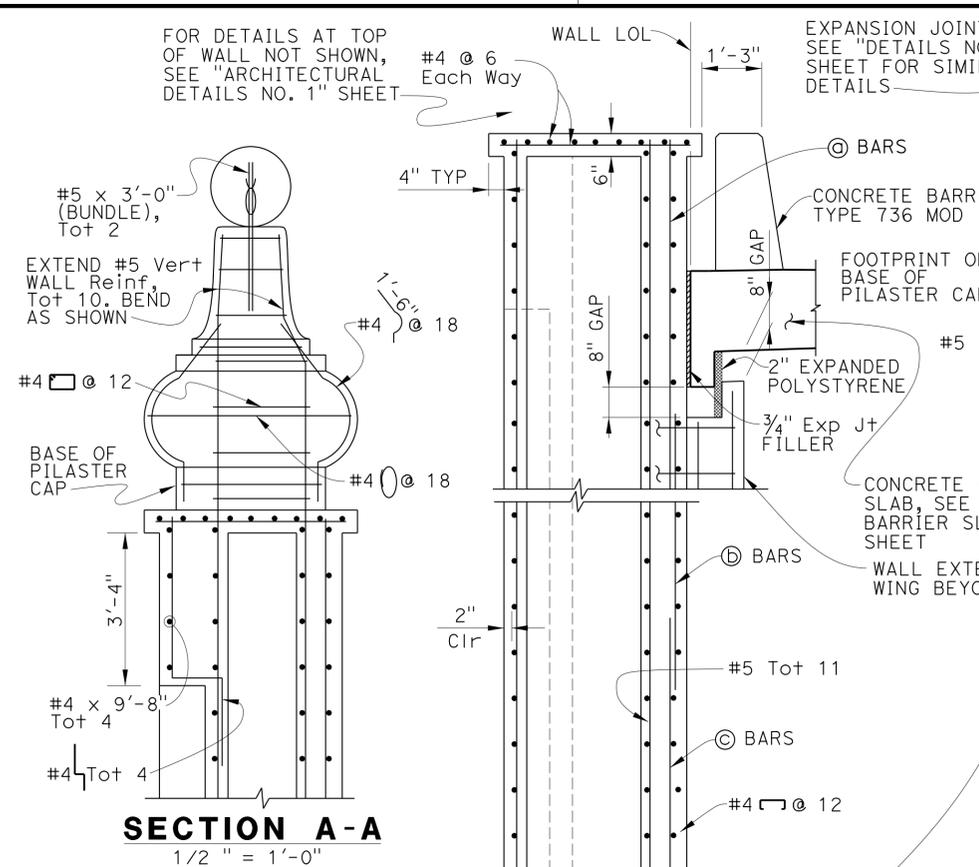
REVISION DATES	SHEET	OF
5/28/12, 11/13/12, 03/04/13, 4/26/13	14	17

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:12

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Ora	5	3.0/3.7	633	635

4/26/13  
 REGISTERED CIVIL ENGINEER DATE  
 3-10-14  
 PLANS APPROVAL DATE  
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**PARSONS** 2201 DUPONT DRIVE SUITE 200 IRVINE, CA 92612  
**OCTA** 550 SOUTH MAIN STREET ORANGE, CA 92863



⊙ BARS	#6
⊕ BARS	#8
⊖ BARS	#11
h1	11'-6"
h2	20'-2"
h3	24'-0"

**DESIGN NOTES:**

DESIGN: AASHTO LRFD Bridge Design Specifications, 4th Edition with Caltrans Amendments

LS: Vehicle surcharge 72 psf uniform lateral

DC: Stem Architectural Treatment of thickness up to 6" of concrete (75 psf) considered

CT: 54 kip transverse force applied at  $H_e = 32'$ , distributed over 10 feet at the top of wall and 1 : 1 distribution down and outward. Distribution below footing taken no less than 40'.

SEISMIC:  $K_H = 0.19g$ ,  $K_V = 0.0$

SOIL:  $\phi = 34^\circ$ ,  $\gamma = 120$  PCF

REINFORCED CONCRETE:  $f'_c = 3,600$  psi  
 $f_y = 60,000$  psi

LOAD COMBINATIONS AND LIMIT STATES:

Service I  $Q = 1.00DC + 1.00EV + 1.00EH + 1.00LS$

Strength I  $Q = aDC + BEV + nEH + 1.75LS$

Extreme I  $Q = 1.00DC + 1.00EV + 1.00EH + 1.00EQD + 1.00EQE$

Extreme II  $Q = 1.00DC + 1.00EV + 1.00EH + 1.00CT$

Where:

Q: Force Effects

a: 1.25 or 0.90, Whichever Controls Design

B: 1.35 or 1.00, Whichever Controls Design

n: 1.50 or 0.90, Whichever Controls Design

DC: Dead Load of Structure Components

EH: Horizontal Earth Fill Pressure

EV: Vertical Earth Pressure from Earth Fill Weight

LS: Live Load Surcharge

EQE: Seismic Earth Pressure

EQD: Soil and Structural and Nonstructural Components Inertia

CT: Vehicular Collision Force

**SYMBOLS:**

h1 = Top of footing to top of short ⊙ bar

h2 = Top of footing to top of ⊕ bar

h3 = Top of footing to top of ⊖ bar

∞ - Bundle of two bars

**PILASTER PILE DATA TABLE**

Location	Pile Type	Nominal Resistance (kips)		Design Tip Elevations (ft)	Specified Tip Elevations (ft)	Nominal Driving Resistance (kips)
		Compression	Tension			
10+50.00	HP10x57	160	10	+55(a); +78(b) +68(c); +60(d)	+55	160

- Design Tip Elevations For Pilaster is Controlled By The Following Demands: (a) Compression, (b) Tension, (c) Settlement, (d) Lateral Load.
- The Specified Tip Elevations Shall Not Be Raised Above The Design Tip Elevations For Tension, Settlement And Lateral Load.

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

**NOTE:**  
For Steel Piles Anchor Details, see "Details No. 4" sheet.

Luqi Yang  
DESIGNER  
7-10-13  
SIGN OFF DATE

DESIGN BY E. Mobo  
DETAILS BY P. Johnson  
QUANTITIES BY A. Ly

CHECKED M. Ruvalcaba  
CHECKED M. Mohseni  
CHECKED J. Fix

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

M. Mohseni  
PROJECT ENGINEER

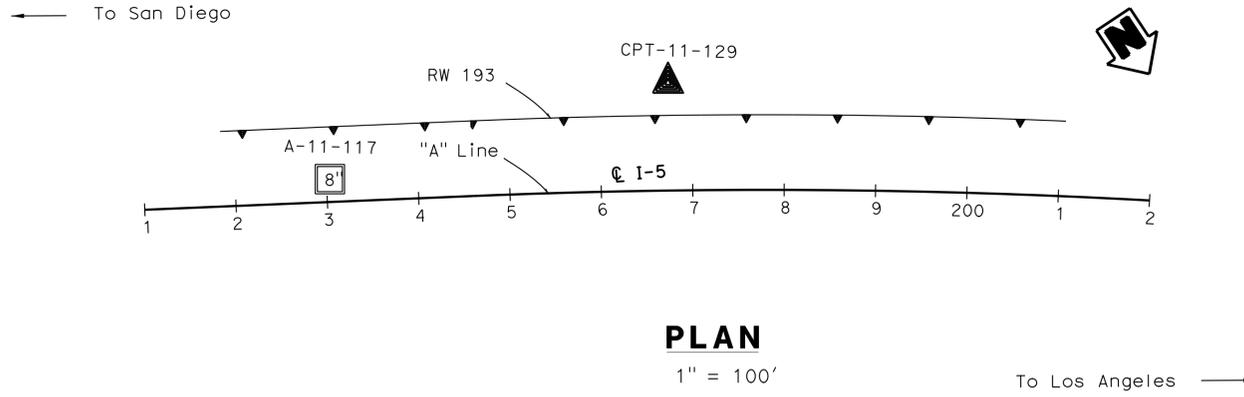
BRIDGE NO. 55E0142  
POST MILES 3.4

**RETAINING WALL No. 193**  
**PILASTER DETAILS**

BENCH MARK:  
 DESIGNATION: 3Y-38-91 ELEV 252.197' NAVD88

DESCRIBED BY OCS 2003 - FOUND 3 3/4" OCS ALUMINUM BENCH MARK DISK STAMPED "3Y-38-91", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 17 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF INTERSECTION OF AVENIDA PICO AND AVENIDA LA PATA, 50 FT. SOUTHERLY OF THE CENTERLINE OF AVENIDA LA PATA AND 90 FT. EASTERLY OF THE AVENIDA PICO. MONUMENT IS SET LEVEL WITH THE TOP OF THE CURB.

- NOTES:
- (1) This LOTB sheet was prepared in accordance with the Caltrans Soil and Rock Logging, Classification and Presentation Manual (June 2010).
  - (2) 2.4" samples were taken using a California Modified Sampler.
  - (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs falling a distance of 30" was used to advance the drive sampler.
  - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	634	635

*Mike Kapuskar* 4/26/13  
 GEOTECHNICAL PROFESSIONAL DATE

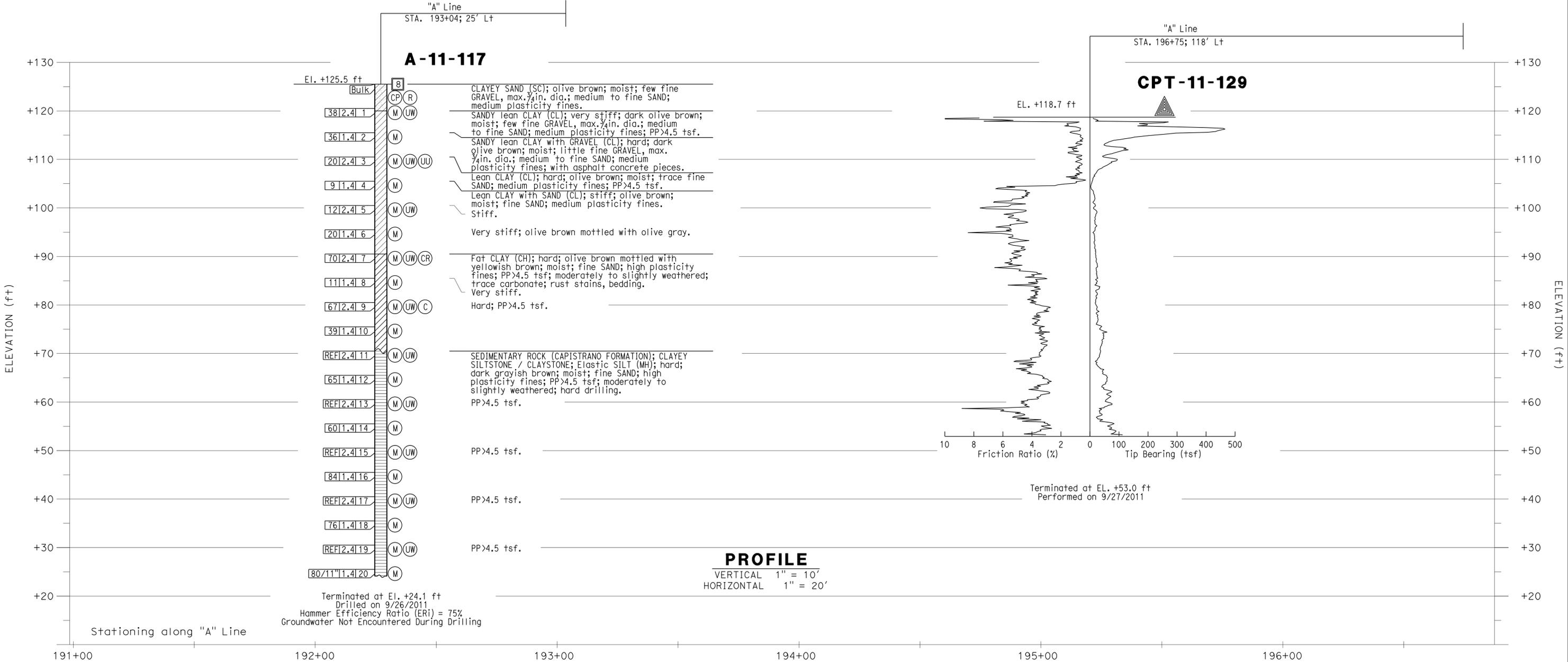
3-10-14  
 PLANS APPROVAL DATE

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ORANGE COUNTY TRANSPORTATION AUTHORITY  
 550 S. MAIN STREET  
 ORANGE, CA 92863-1584

EARTH MECHANICS, INC.  
 17800 NEWHOPE STREET, SUITE B  
 FOUNTAIN VALLEY, CA 92708



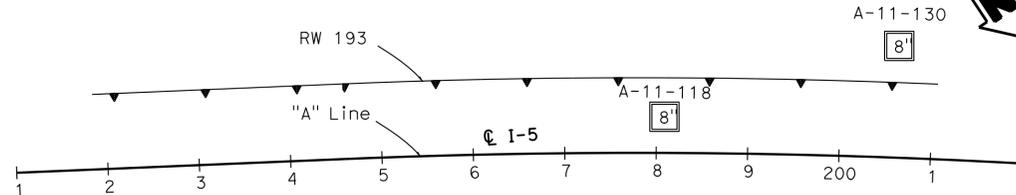
<i>Luqi Yang</i> DESIGN OR SIGNATURE 7-10-13 SIGN OFF DATE	DRAWN BY	J. FANG	R. JIE; K. KAEKUL; C. PONGSAKORNPATARA FIELD INVESTIGATION BY: DATE: 9/2011	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO.	-	<b>RETAINING WALL 193</b>  <b>LOG OF TEST BORINGS 1 OF 2</b>
	CHECKED BY	M. KAPUSKAR			POST MILES	-	

BENCH MARK:  
 DESIGNATION: 3Y-38-91 ELEV 252.197' NAVD88

DESCRIBED BY OCS 2003 - FOUND 3 3/4" OCS ALUMINUM BENCH MARK DISK STAMPED "3Y-38-91", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 17 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF INTERSECTION OF AVENIDA PICO AND AVENIDA LA PATA, 50 FT. SOUTHERLY OF THE CENTERLINE OF AVENIDA LA PATA AND 90 FT. EASTERLY OF THE AVENIDA PICO. MONUMENT IS SET LEVEL WITH THE TOP OF THE CURB.

- NOTES:
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  - (2) 2.4" samples were taken using a California Modified Sampler.
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  - (4) Conversion factor from 2.4" Modified California Ring Sampler blowcounts to Standard Penetration Test (SPT) blowcounts is 0.5.

← To San Diego



**PLAN**

1" = 100'

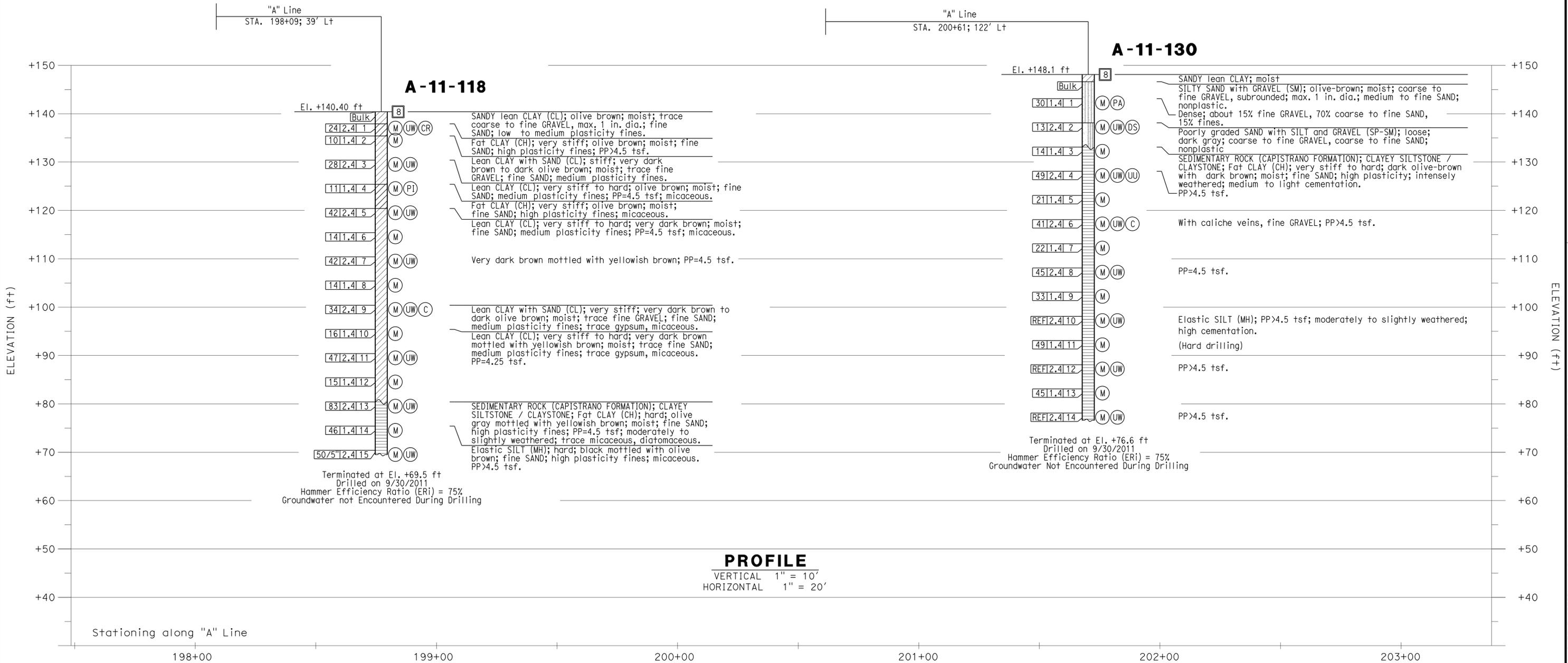
→ To Los Angeles

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
12	Oran	5	3.0/3.7	635	635

[Signature] 4/26/13  
 GEOTECHNICAL PROFESSIONAL DATE  
 3-10-14  
 PLANS APPROVAL DATE  
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REGISTERED PROFESSIONAL ENGINEER  
 MIKE KAPUSKAR  
 NO. GE 2564  
 EXP. 12-31-14  
 STATE OF CALIFORNIA

ORANGE COUNTY TRANSPORTATION AUTHORITY  
 550 S. MAIN STREET  
 ORANGE, CA 92863-1584  
 EARTH MECHANICS, INC.  
 17800 NEWHOPE STREET, SUITE B  
 FOUNTAIN VALLEY, CA 92708



**PROFILE**  
 VERTICAL 1" = 10'  
 HORIZONTAL 1" = 20'

DESIGN ORIGINATOR Luqi Yang 7-10-13 SIGN OFF DATE	DRAWN BY J. FANG	R. JIE; K. KAEKUL; C. PONGSAKORNPATARA FIELD INVESTIGATION BY:	PREPARED FOR THE <b>STATE OF CALIFORNIA</b> DEPARTMENT OF TRANSPORTATION	BRIDGE NO. -	<b>RETAINING WALL 193</b> <b>LOG OF TEST BORINGS 2 OF 2</b>
	CHECKED BY M. KAPUSKAR	DATE: 9/2011		PROJECT ENGINEER M. KAPUSKAR	
GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	UNIT: PROJECT NUMBER & PHASE: 12000202771	CONTRACT NO.: 12-OF 96B1
				REVISION DATES 10/07/12 4/26/13	SHEET OF 17 17

USERNAME => s128843 DATE PLOTTED => 07-AUG-2014 TIME PLOTTED => 13:13