

ORANGE COUNTY RESOURCES AND DEVELOPMENT MANAGEMENT DEPARTMENT

SANTA ANA, CALIFORNIA

BRYAN G. SPEEGLE, DIRECTOR

PLANS FOR THE
CONSTRUCTION OF

BARRIER REPLACEMENT & SEISMIC RETROFIT FOR SANTIAGO CANYON ROAD BRIDGE SC-9 (BR No. 55C-0038)

W.O. # ER09337

DECEMBER 2007

No As-Built Changes

AS BUILT

CORRECTION BY: D.D.
CONTRACT NO.:
DATE: JULY 15, 2009

Resident Engineer: Hamid Abedzadeh
Inspector: David Dimaggio/Mario Garcia
Contractor: KLM Construction Inc.
Completion Date: May 20, 2008

FUNDED BY: HBRRP FUNDS AND COUNTY OF ORANGE

POST-PROJECT OWNERSHIP & MAINTENANCE RESPONSIBILITY: COUNTY OF ORANGE

DEVIATIONS FROM STANDARDS

THE FOLLOWING RDMD STANDARDS HAVE BEEN MODIFIED:
STD PLAN 1103, PRIMARY HIGHWAY TYPICAL SECTIONS
- 11 FT. TRAVEL LANE
- 5 FT. SHOULDER

APPROVED:  5/21/07
IGNACIO G. OSORIO, P.E.
DIRECTOR OF PUBLIC WORKS/CHIEF ENGINEER

RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT

APPROVED FOR CONTRACT ADMINISTRATION PURPOSES:

SUBMITTED:

JAVIER SOTO, P.E.
MANAGER, ROAD CAPITAL PROJECTS
5/16/07

RECOMMENDED:

TED RIGONI, P.E.
MANAGER, ROAD DIVISION
5/16/07

APPROVED:

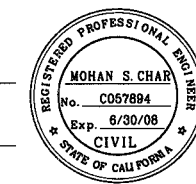
IGNACIO G. OSORIO, P.E.
DIRECTOR OF PUBLIC WORKS/CHIEF ENGINEER
5/21/07

PREPARED BY

LIM & NASCIMENTO ENGINEERING
12-L MAUCHLY
IRVINE, CALIFORNIA 92618

APPROVED: 
REGISTERED CIVIL ENGINEER

8/25/08
DATE



INDEX OF SHEETS

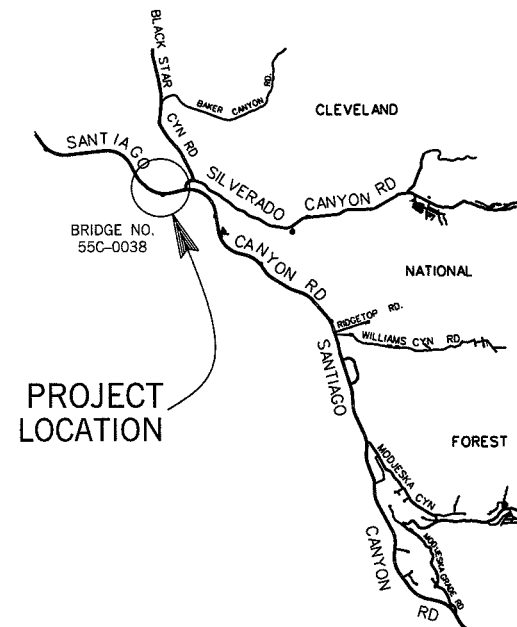
SHEET	DESCRIPTION
1.	TITLE SHEET
2.	METAL BEAM GUARD RAILING PLAN
2S1.	TYPE ST-20S RAIL DETAILS NO. 1
2S2.	TYPE ST-20S RAIL DETAILS NO. 2
2S3.	TYPE ST-20S RAIL DETAILS NO. 3
2S4.	TYPE ST-20S RAIL DETAILS NO. 4
3.	TRAFFIC HANDLING PLAN
4.	GENERAL PLAN
5.	FOUNDATION PLAN
6.	DEMOLITION PLAN
7.	BARRIER RECONSTRUCTION DETAILS
8.	DECK RECONSTRUCTION DETAILS
9.	BENT 2 FOOTING LAYOUT & DETAILS
10.	BENT 2 FOOTING DETAILS
11.	BENT 3 FOOTING LAYOUT & DETAILS
12.	BENT 3 FOOTING DETAILS
13.	STEEL COLUMN CASINGS
14.	LOG OF TEST BORINGS
15.	AS-BUILT LOG OF TEST BORINGS

CALTRANS STANDARD PLANS DATED MAY, 2006

ROADWAY	
A20A, B & D	PAVEMENT MARKERS & TRAFFIC LINES TYPICAL DETAILS
A73B	MARKERS
A73C	DELINEATORS, CHANNELIZERS AND BARRICADES
A77F1, A77F4	METAL BEAM GUARD RAILING TYPICAL LAYOUT
A77J4	METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB)
A77L1	METAL BEAM RAILING TERMINAL SYSTEM (TYPE SRT)
A77L3	METAL BEAM RAILING TERMINAL SYSTEM (TYPE ET)
T2	TEMPORARY CRASH CUSHION SAND FILLED (SHOULDER INSTALLATION)
T3	TEMPORARY RAILING (TYPE K)
BRIDGE	
A10A	ACRONYMS AND ABBREVIATION (A-L)
A10B	ACRONYMS AND ABBREVIATION (M-Z)
A10C & D	SYMBOLS
A77J THRU	METAL BEAM GUARD RAILING CONNECTIONS TO BRIDGE RAILS,
A77J4	RETAINING WALLS & ABUTMENTS
B7-1	BOX GIRDER DETAILS
B7-5	DECK DRAINS
B11-55	CONCRETE BARRIER TYPE 732B
B11-57	CONCRETE BARRIER TYPE 742B (FOOTING)

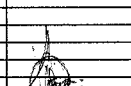
Standard Plan Sheet No.
Detail No.

UTILITY OWNER	PHONE NO.	CONTACT
IRVINE RANCH WATER DISTRICT (I.R.W.D.)	949-453-5551	MALCOLM CORTEZ
SOUTHERN CALIFORNIA EDISON	714-934-0847	JENNIFER WARD
SBC (PACIFIC BELL)	714-237-6950	STEVE HICKS
UNDERGROUND SERVICE ALERT	800-422-4133	



PROJECT
LOCATION

LOCATION MAP
NO SCALE

NO.	DESCRIPTION	SHT.	APPROVED	DATE
1.	CHANGED BARRIER TO STEEL TYPE ST-20S	1-4		06/02/08
2.	& STAINED TYPE 732B	6, 7		06/02/08
REVISIONS				

BRIDGE NO. 55C-0038
DWG. NO.

SHEET 1 OF 15

GENERAL NOTES
LOAD FACTOR DESIGN

DESIGN: CALTRANS BRIDGE DESIGN SPECIFICATIONS
April 2000 (LFD) - (1996 AASHTO with Interims
and Revisions by CALTRANS)

SEISMIC DESIGN: Version 1.3, May 2006
CALTRANS Seismic Design Criteria (SDC)

LIVE LOADING: HS20-44 and alternative permit design load

SEISMIC LOADING: ATC-32 ARS Curve
Soil Profile = Type C
Fault Moment Magnitude = 7.25 ± 0.25
Peak Rock Acceleration = 0.4g
The following adjustment shall be made
for SDC Response Spectra to account for
near fault effect:
- Spectral acceleration modification
is not required for $T \leq 0.5$ seconds.
- Spectral acceleration for $0.5 \leq T \leq 1.5$
shall be determined by linear interpolation.
- Increase the Spectral accelerations for
 $T \geq 1.0$ seconds by 20%.

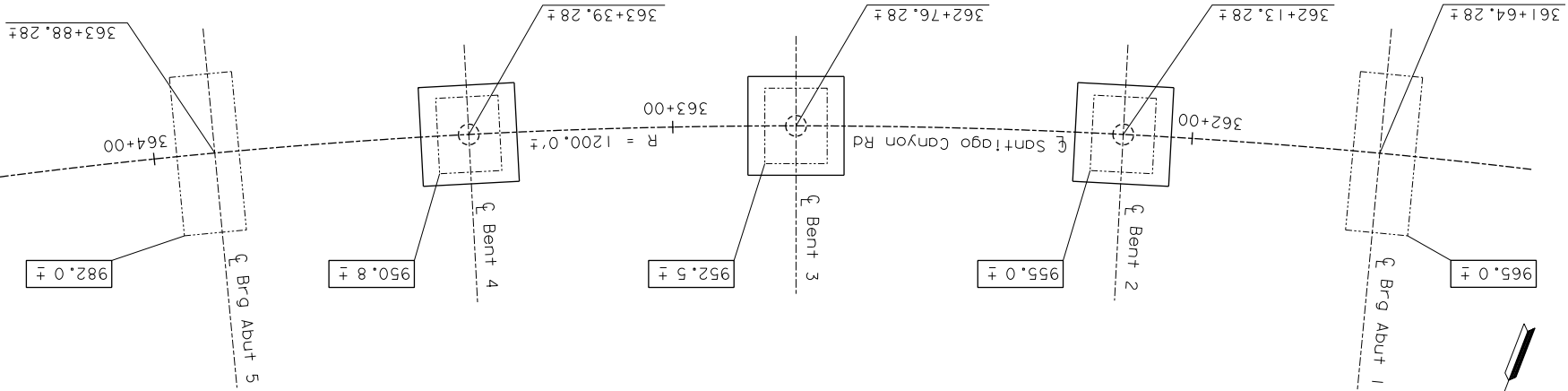
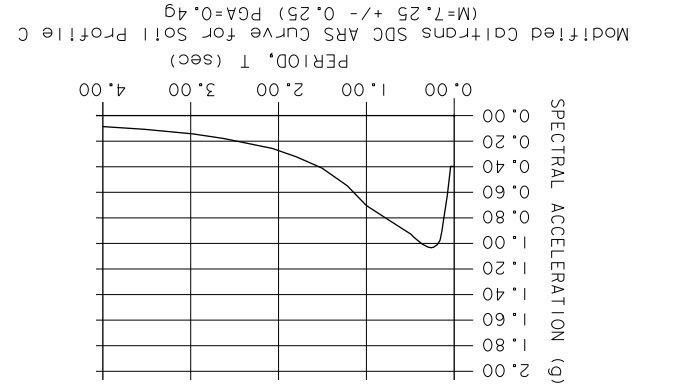
REINFORCED CONCRETE: (Assumed for Retrofit Evaluation)
 $f_y = 44,000$ psi
 $f'_c = 5000$ psi

REINFORCING STEEL: ASTM A706 $f_y = 60,000$ psi
ASTM A706 $f_y = 60,000$ psi

STRUCTURAL STEEL: ASTM A307 $f_y = 36,000$ psi

EXISTING FOUNDATION: Spread Footing
Ultimate Soil Bearing Capacity $q_{ult} = 17$ KSF
Design Applied Pressure, $q_{applied} = 17$ KSF

NEW CONCRETE (Bridge):
 $f_y = 60,000$ psi, A706
 $f'_c = 4,000$ psi (UNO)
Class 2 (Barrier only)
 $n = 8$

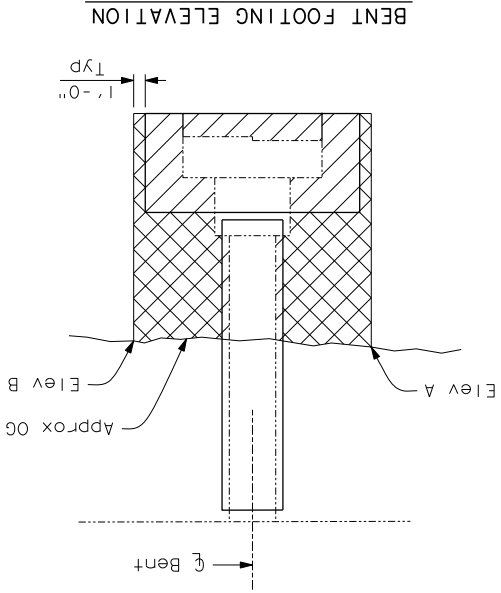
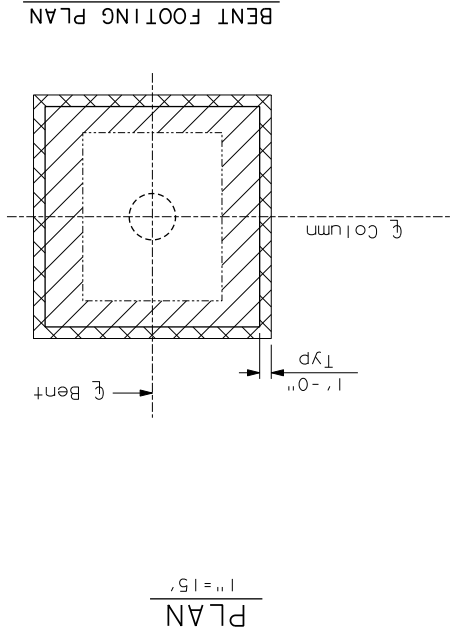


APPROXIMATE OG ELEVATIONS AT BENT		
LOCATION	ELEV A (ft)	ELEV B (ft)
BENT 2	964 ±	961 ±
BENT 3	961 ±	964 ±
BENT 4	964 ±	964 ±

* Provided for information only.
The contractor shall field verify
OG elevations.

LEGEND

- Indicates bottom of existing footing elevation
- Indicates existing footing
- Pay limits for Structural Excavation
- Pay limits for Structural Backfill



Note:
For Approximate OG Elevations A & B,
see "Approximate OG Elevations at Bent" Table.

LIMITS OF PAYMENT FOR STRUCTURAL EXCAVATION & BACKFILL

No Scale

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

No As-Built Changes
AS BUILT
CORRECTION BY: D.D.
CONTRACT NO.:
DATE: JULY 15, 2009

DESIGNED: J.L. SANDRA	CHECKED: M. CHARR	DRAWING NO.	DATE: 12/18/06	SCALE: 1/2"=1'-0"	VARIABLES: 12/18/06
ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT	SANTIAGO CANYON ROAD BRIDGE SC-9	BRIDGE No. 55C-0038	FOUNDATION PLAN	SHEET 5	OF 15

[illegible]

1. Roughen exist concrete surface. Apply epoxy resin adhesive just prior to placement of new concrete.
2. All bars shall be epoxy coated prefabricated reinforcement with purple coating.
3. For "Detail I", see "Bent 3 Footing Layout & Details" sheet.
4. Existing concrete removal limit shall be to the vertical faces of existing footing and to the existing FCC underpinning bottom elevation.
5. Match bottom of new footing with bottom of existing FCC underpinning.

Existing concrete removal

AS BUILT

CORRECTION BY: _____ D.D. _____

CONTRACT NO.: _____

DATE: _____ JULY 15, 2009

DATE: JULY 15, 2009

CONTRACT NO.:

CORRECTION BY: D.D.

$$0-1 = 2/1$$

1. All bars shall be epoxy coated with purple coating.
2. Terminals bars 2" clear from face of existing column.

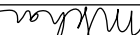
CORRECTION BY: _____ D.D. _____
CONTRACT NO.: _____
DATE: _____ JULY 15, 2009

DATE 12/18/06

M. Khan

REGISTERED PROFESSIONAL ARCHITECT
JOHAN S. CHAI
NO. C51894
EXP. 6/30/08
CIVIL
STATE OF CALIFORNIA

PREPARED UNDER SUPERVISION OF

05	OF	II	SHEET	DESIGNED BY: SANDHRA	DRAWN BY: ANDRASEK	DATE: 12/18/06	VARIABLES	DATE: 12/18/06			
ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT				SANTIAGO CANYON ROAD BRIDGE SC-9 BRIDGE NO. 55C-0038 BENT 3 FOOTING LAYOUT & DETAILS				PREPARED UNDER SUPERVISION OF			
								REVISIONS			
								REV.		DATE	DESCRIPTION

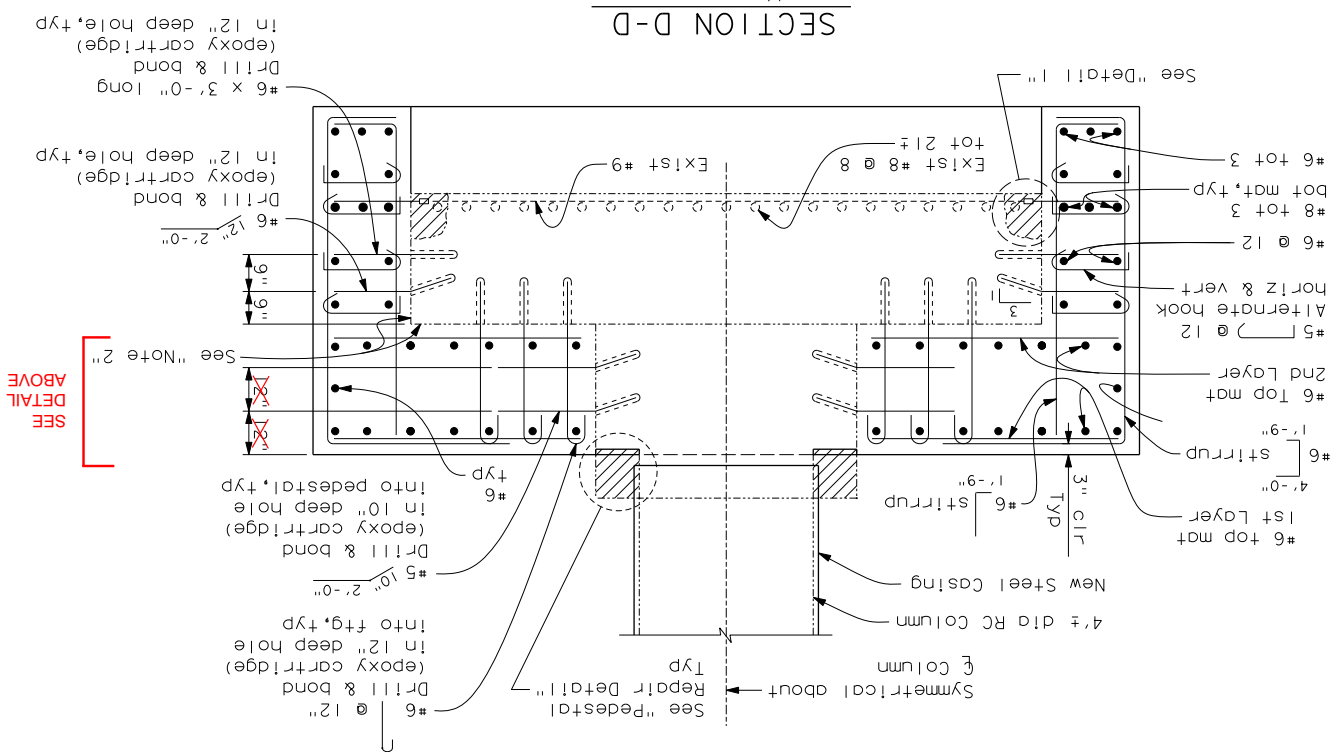
AS BUILT

CORRECTION BY: _____ D.D. _____

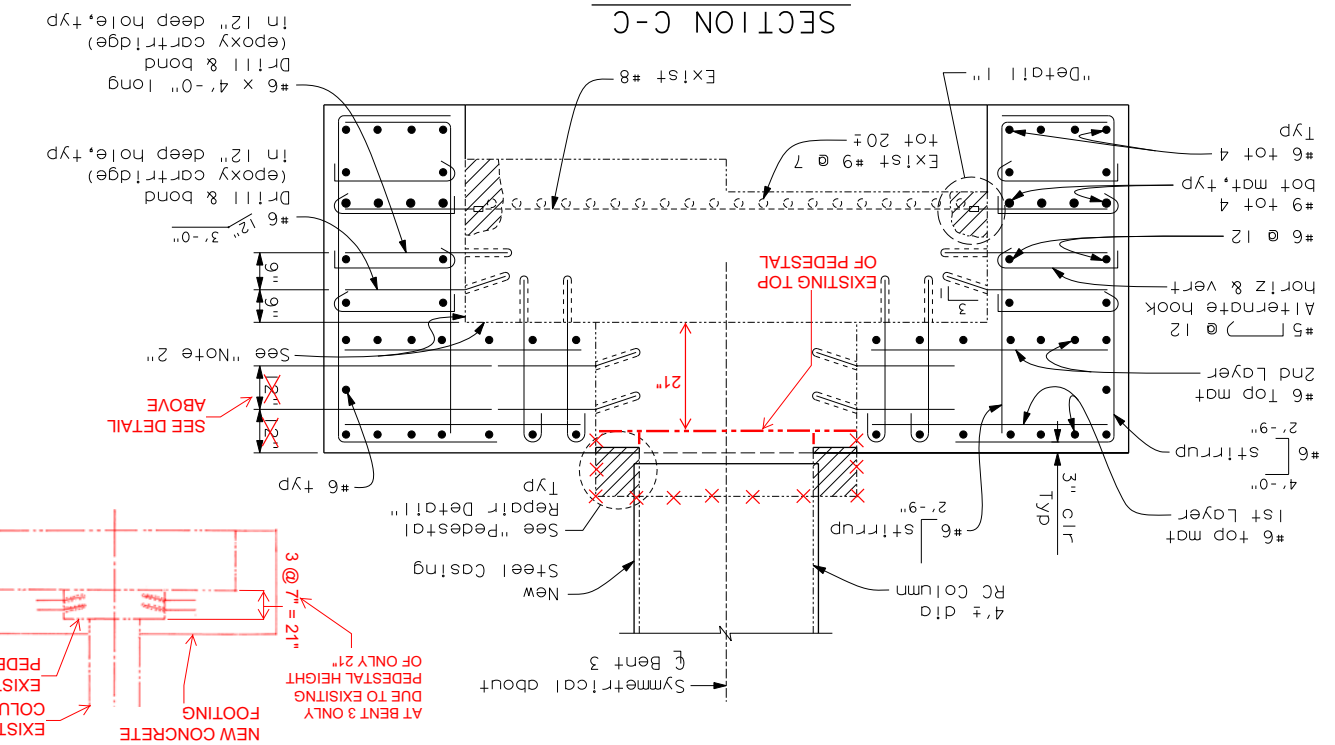
CONTRACT NO.: _____

DATE: _____ JULY 15, 2009

SECTION D-D



SECTION C-C



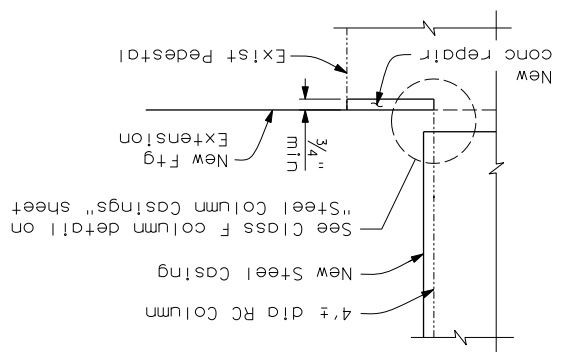
NOTES:

1. Existing pedestals at Bent 3 & 4 only.
2. Roughen exist concrete surface. Apply epoxy resin adhesive just prior to placement of new concrete.
3. All bars shall be epoxy coated prebfricated reinforcement with purple coating.

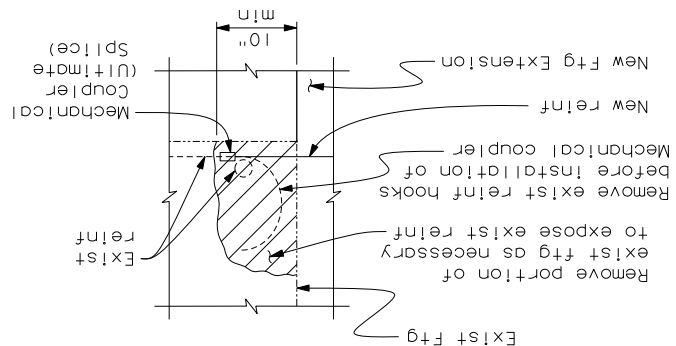
LEGEND

	Existing concrete removal
---	---------------------------

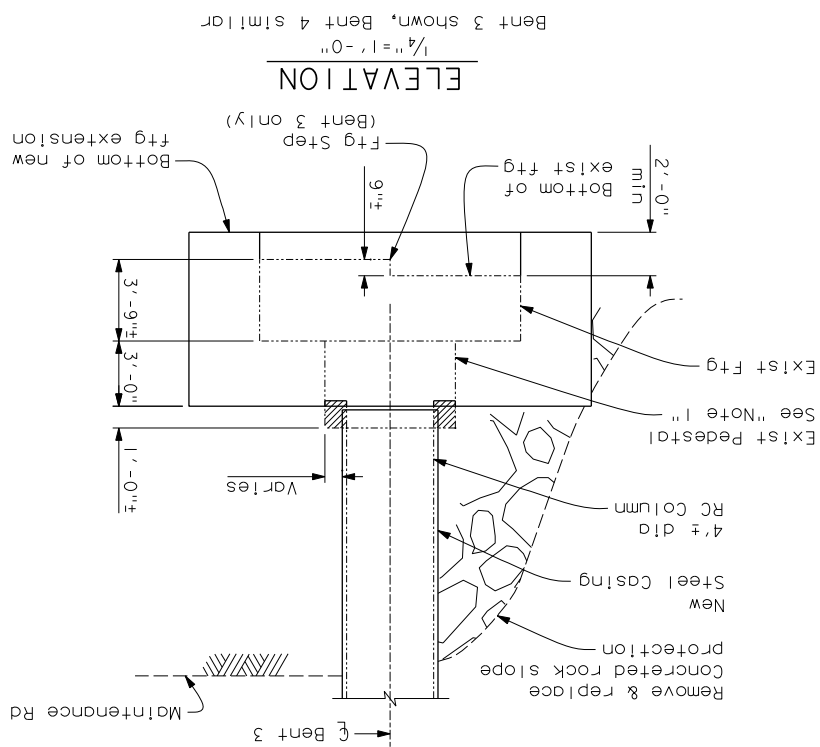
PEDESTAL REPAIR DETAIL

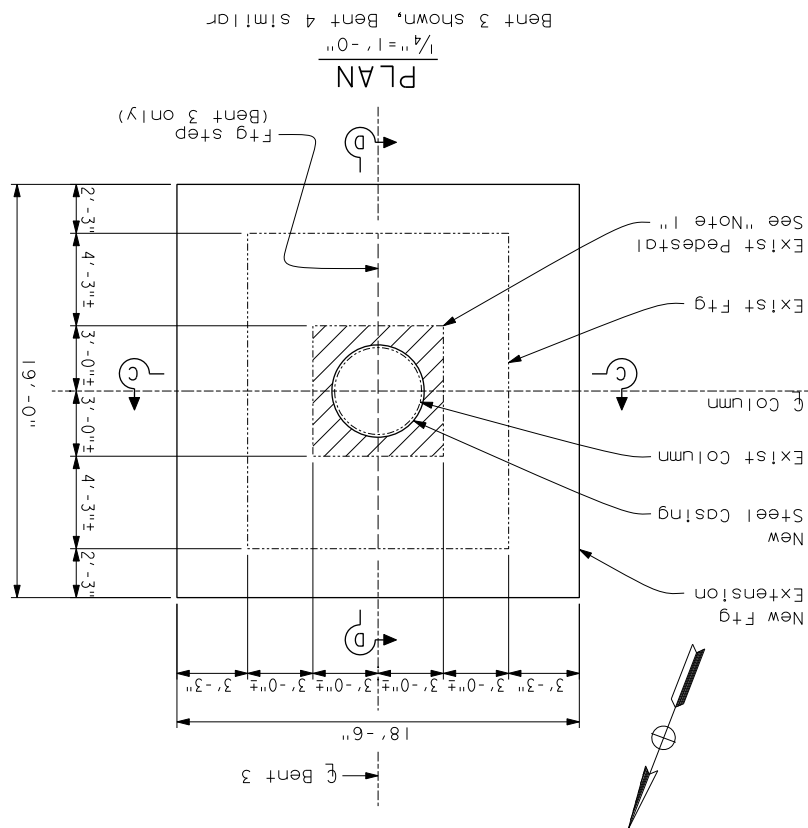


DETAIL I



ELEVATION



PLAN

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

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

Bent 3 shown, Bent 4 similar
 $\frac{1}{2}" = 1'-0"$

FOOTING REINFORCEMENT PLAN

STIRRUP & DOWEL LAYOUT

Not All Stirrups shown

AS BUILT

CORRECTION BY: D.D.
CONTRACT NO.:
DATE: JULY 15, 2009

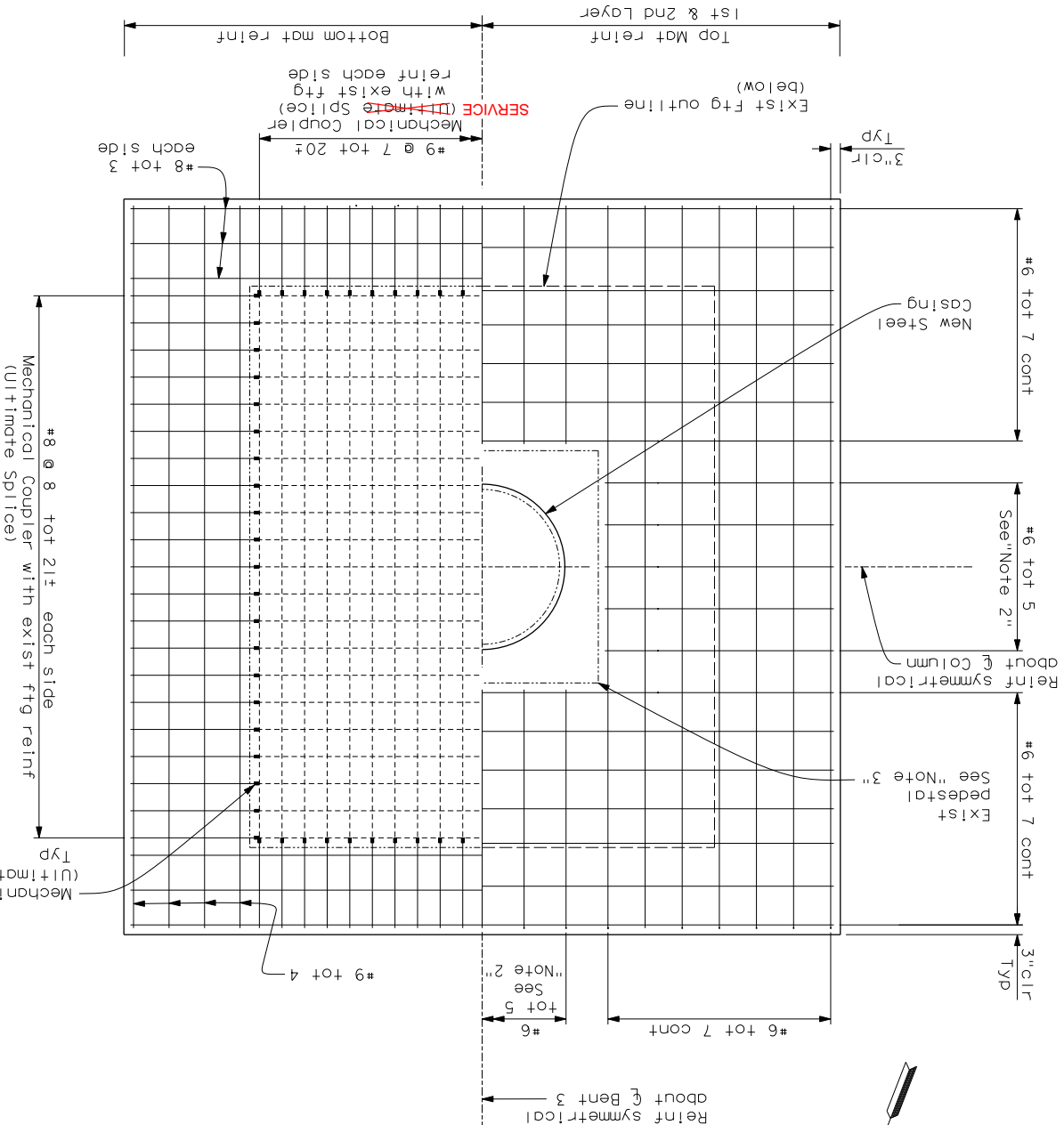
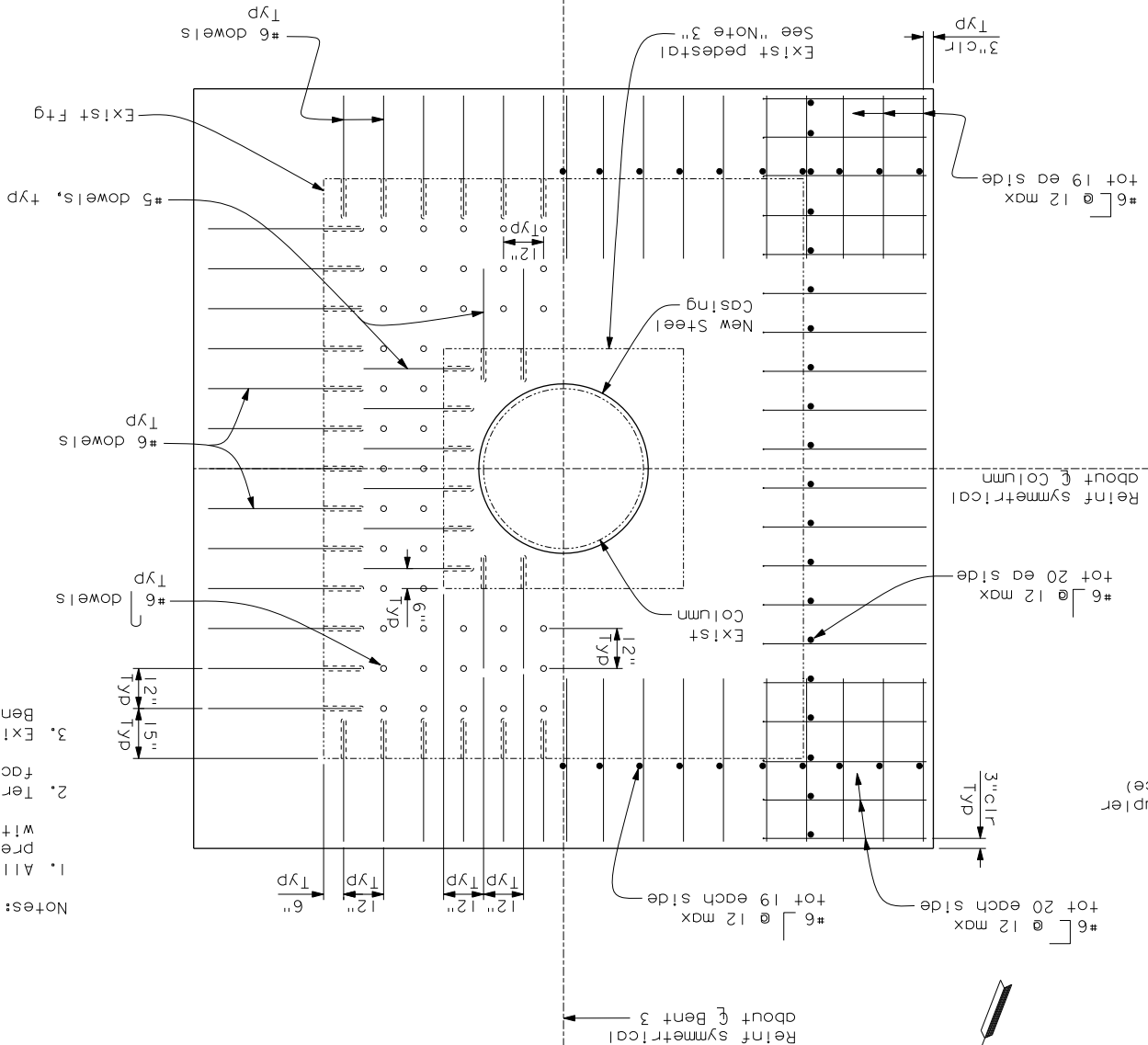
DESIGNED: J.L. SANDRRA		DRAWN: M. ANDRASEK		SCALE: 1/2" = 1'-0"		DATE: 12/18/06	
SHEET 12		CHECKED: M. CHARR		VARIABLES		DATE: 12/18/06	
SHEET 12		DRAWING NO.		DATE: 12/18/06		DATE: 12/18/06	
SHEET 12		DRAWING NO.		DATE: 12/18/06		DATE: 12/18/06	

SANTIAGO CANYON ROAD
BRIDGE SC-9
BRIDGE No. 55C-0038
BENT 3 FOOTING DETAILS

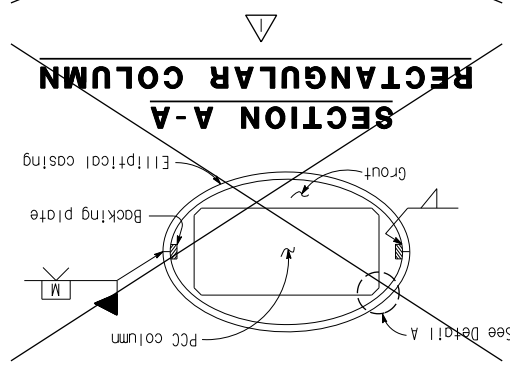
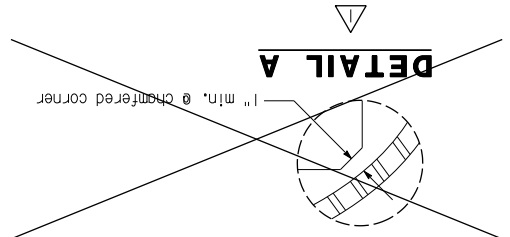
ORANGE COUNTY
RESOURCES & DEVELOPMENT DEPARTMENT

1. All bars shall be epoxy coated
prefabricated reinforcement
with purple coating.
2. Terminate bars 2" clear from
face of existing pedestal.
3. Existing pedestals at
Bent 3 & 4 only.

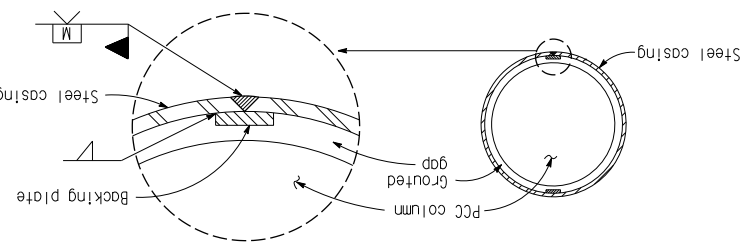
Notes:



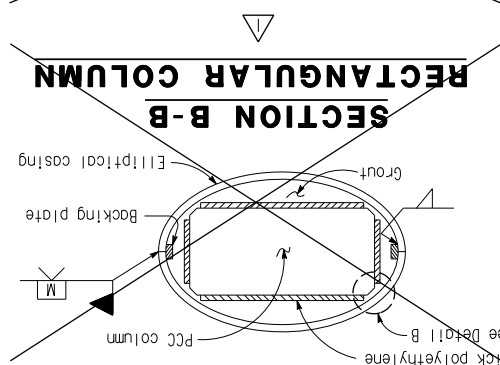
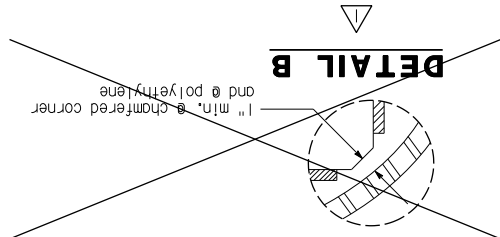
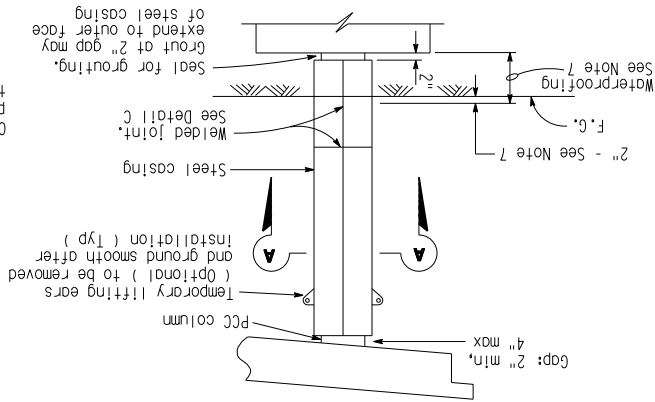
FILE NO. X8 12-77		DESIGN BY BRIAN MARONEY	CHECKED R.J. ZELINSKI	APPROVAL RECOMMENDED BY <i>[Signature]</i>	DESIGN SUPERVISOR <i>[Signature]</i>	DATE REVISIED		DS OSD 2414 (CADD 7/97)	
DETAILS		BY R. YEE	CHECKED PAT HIPLEY						
SUBMITTED BY R.J. ZELINSKI									
STANDARD DRAWING									
DETAILS DELETED									
STATE OF CALIFORNIA									
DEPARTMENT OF TRANSPORTATION									
DIVISION OF STRUCTURES									
BRIDGE NO. B5C-0038									
POST MILE									
STEEL COLUMN CASINGS									
SANTIAGO CANYON ROAD BRIDGE SC-9									
ORIGINAL SCALE IN INCHES									
FOR REDUCED PLANS									
0 1 2 3									
CU									
EARLIER REVISION DATES									
REVISION DATES (PRELIMINARY STAGE ONLY)									
5/5/03 10/27/03 1/27/03 8/17/06 11/27/06 12/18/06									
SHEET 13 OF 15									
13-XS1277.DGN									



Minimum inside diameter of steel casing = 1 1/2" and 2 1/2" for Class P/F

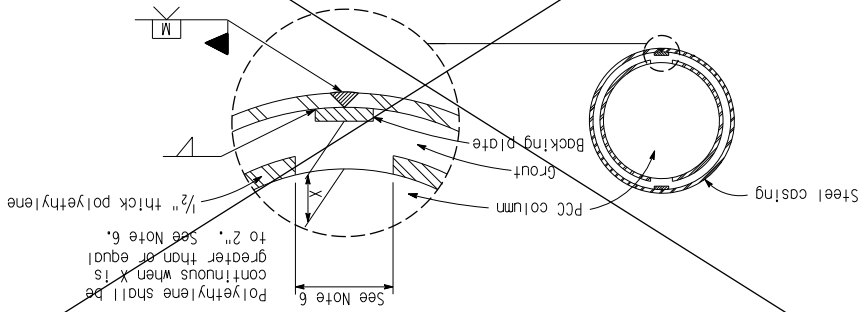


CLASS F COLUMN

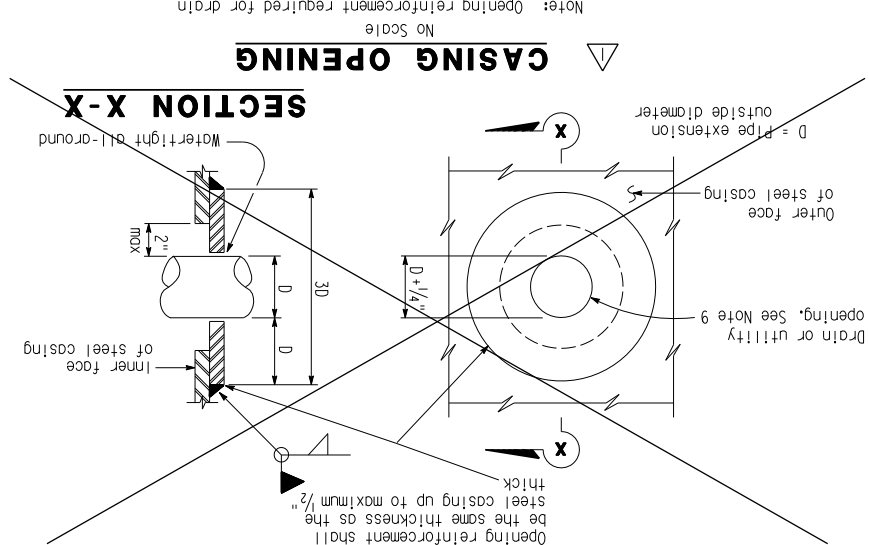
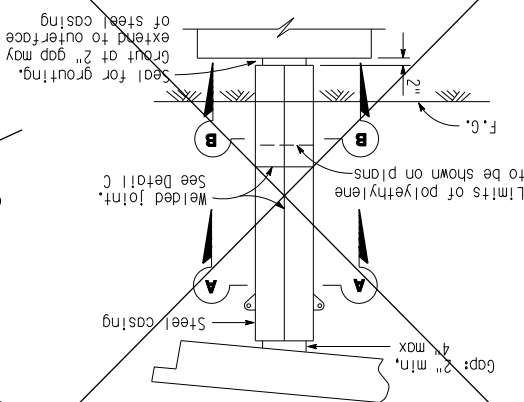


SECTION B-B: ROUND COLUMN

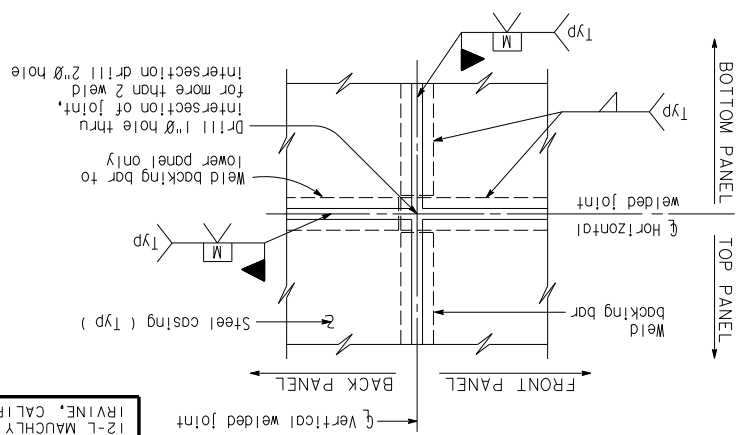
Minimum inside diameter of steel casing = 2 1/2" and Class P/F.



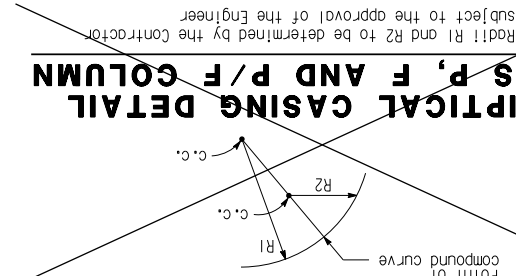
CLASS P/F COLUMN



DETAIL C (TWO WELDED INTERSECTION JOINT)



ELLIPTICAL CASING DETAIL CLASS P, F AND P/F COLUMN



- For varying thickness steel casing inside surface to remain flush. Minimum clearance from PCC column to casing shall be maintained.
- Appropriate injection nozzles to be provided on casing, but removed and ground flush following completion of grouting operation.
- All voids between steel casing and polyethylene (Class F and Class P/F), and steel casing and PCC column (Class F) to be filled with grout.
- Location and number of vertical and horizontal welds to be determined by the Contractor, and subject to the approval of the Engineer. The location of casing welds are for illustration. No skip welds allowed.
- Circular steel casing to be 1/4" thick minimum for casings with a 4'-4" diameter or less; all other steel casings to be 3/8" thick unless noted differently on contract plans. Backing plates to be the same thickness as casing up to maximum 1/2" thick
- Contractor shall remove 12" polyethylene strip behind backing plate if backing plate is closer than 1/2" from polyethylene.
- Waterproof limits for steel casings. Typical for Classes "P", "F" and "P/F".
- Minimum length of Classes "P" and "F" casing shall be 1.50 times the largest dimension of prismatic section of column, or 2" above finished grade whichever is greater. Lengths other than the specified minimum shall be shown on detail sheets.
- For pipe extensions, opening shall be no more than 1/4" greater than the pipe extension diameter. For other openings, the opening diameter to be determined by the Engineer.

AS BUILT
CORRECTION BY: D.D.
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No As-Built Changes

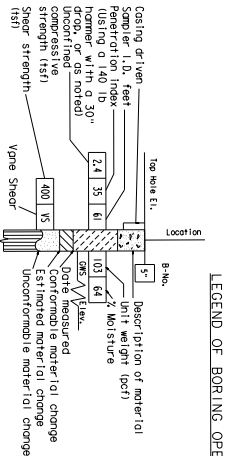
DIST		COUNTY		ROUTE		POST MILES		SHEET TOTAL	
12		ORA							
REGISTERED CIVIL ENGINEER									
12/18/06									
MOHAN S. CHAIR									
No. C57894									
EXP. 6/30/08									
STATE OF CALIFORNIA									
CIVIL									
PLANS APPROVAL DATE									
The County of Orange or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.									
COUNTY OF ORANGE									
300 NORTH FLOWER STREET									
SANTA ANA, CA 92703-5000									
LIM & NASCIMENTO ENGINEERING									
12-12 MAUCHLY									
IRVINE, CALIFORNIA 92618									

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

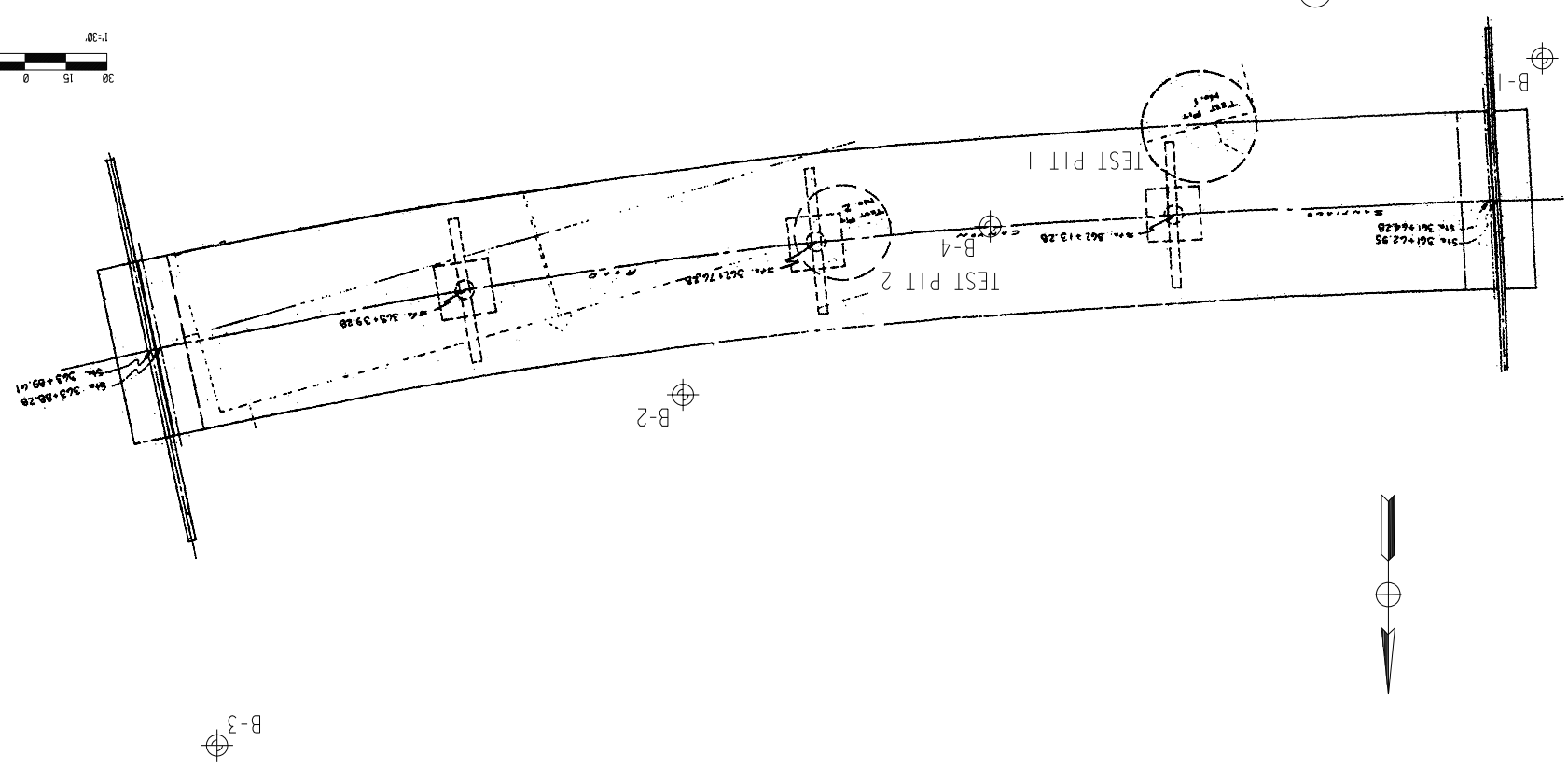
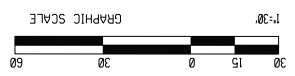
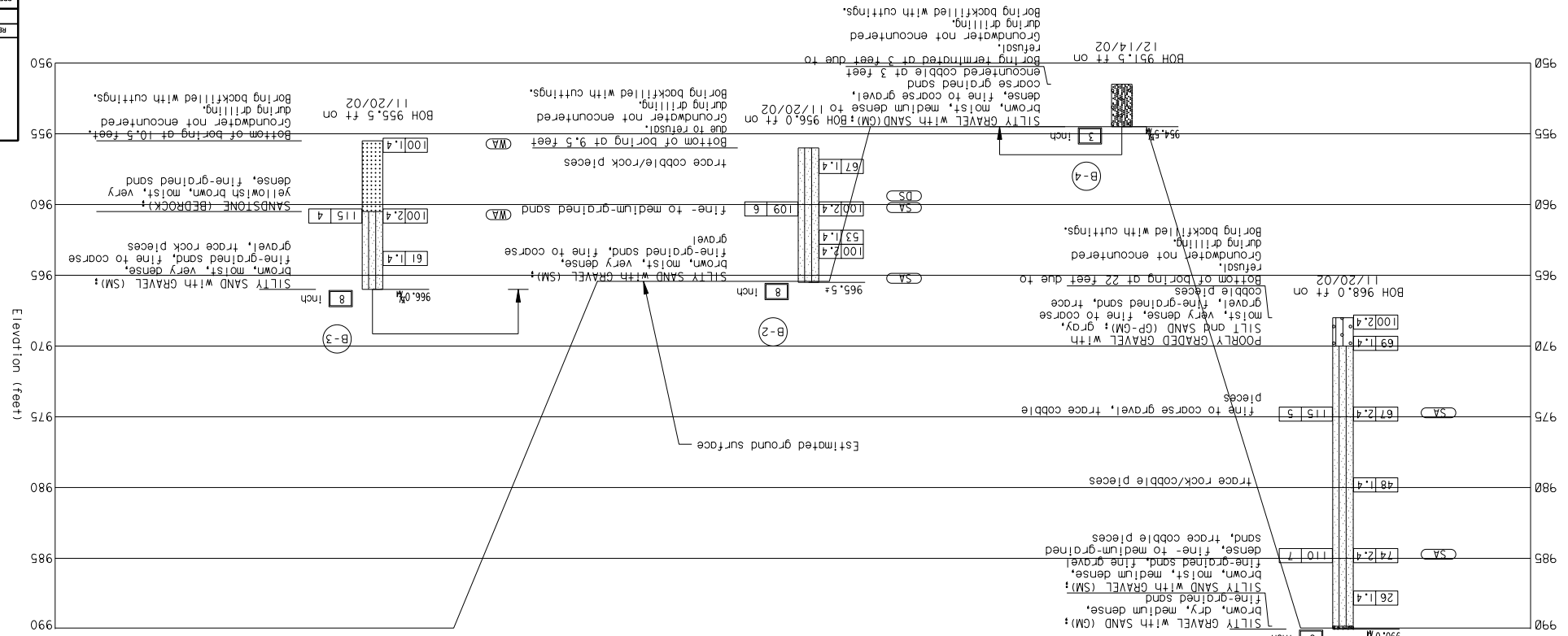
CONSISTENCY CLASSIFICATION FOR SOILS	
According to the Standard Penetration Test	
GRANULAR	COHESIVE
Penetration Index	Penetration Index
0-4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
>50	Very Hard

NOTE: Classification of earth material is shown on this sheet. Is inspection and based on visual inspection and/or mechanical analysis where indicated.

LEGEND OF EARTH MATERIALS	
SYMBOLS	LETTER
CL	CL
OL	OL
ML	ML
GM	GM
GP	GP
GC	GC
SM	SM
SP	SP
CH	CH
OH	OH
PT	PT
TS	TS



- SOIL TESTS
- (AL) ATTERBERG LIMITS
 - (GP) POCKET PENETROMETER
 - (TV) TORVANE SHEAR
 - (R) R-VALUE
 - (SA) SIEVE ANALYSIS
 - (W) WASH #200
 - (5128) AUGER BORING (DRY)
 - (24) MODIFIED CALIFORNIA SAMPLER (2.42" I.D., 3" O.D.)
 - (14) STANDARD PENETRATION TEST
- CONSOLIDATION
- (CS) DIRECT SHEAR
 - (HTD) HYDROMETER ANALYSIS
- CHEMICAL TESTING
- (CND) CONSOLIDATION
- COMPACTION
- (CND) CONSOLIDATION



EXPLANATION

DVA BORING LOCATION

DESIGNED: N. SU

CHECKED: V. R. N.

DRAWN: L. J. H.

DATE: 12/18/06

SCALE: 1/8"=1'-0"

DATE: 12/18/06

VARIES

PREPARED UNDER SUPERVISION OF

REVISIONS

REV. DATE

DESCRIPTION

BRIDGE No. 55C-0038

SANTA ANITA CANYON ROAD

BRIDGE SC-9

ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT

LOG OF TEST BORINGS

SHEET 14 OF 15

AS BUILT

NO As-Built Changes

CORRECTION BY: D.D.

CONTRACT NO.: JULY 15, 2009

DATE:

[illegible]

AS BUILT

CORRECTION BY: _____ D.D. _____

CONTRACT NO.: _____

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No As-Built Changes