

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.: 55C-0038
DATE: JULY 15, 2009

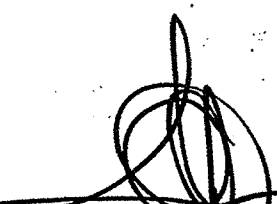
Resident Engineer: Hamid Abedzadeh
Inspector: David Dimaggio/Mario Garcia
Contractor: KLM Construction Inc.
Completion Date: May 20, 2008

FUNDED BY: HBRRP FUNDS AND COUNTY OF ORANGE

POST-PROJECT OWNERSHIP & MAINTENANCE RESPONSIBILITY: COUNTY OF ORANGE

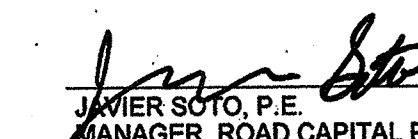
DEVIATIONS FROM STANDARDS

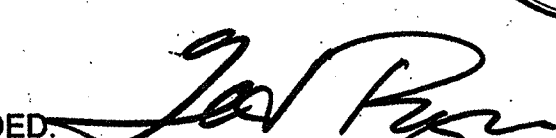
THE FOLLOWING RDMD STANDARDS HAVE BEEN MODIFIED:
STD PLAN 1103, PRIMARY HIGHWAY TYPICAL SECTIONS
- 11 FT. TRAVEL LANE
- 5 FT. SHOULDER

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

RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT

APPROVED FOR CONTRACT ADMINISTRATION PURPOSES:

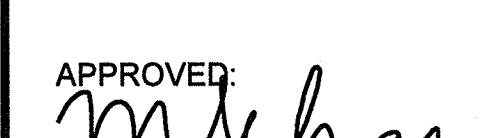
SUBMITTED:  5/16/07
JAVIER SOTO, P.E.
MANAGER, ROAD CAPITAL PROJECTS

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

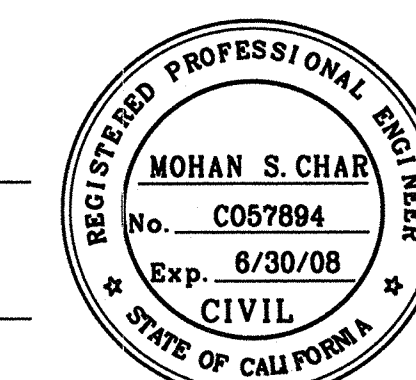
APPROVED:  5/21/07
IGNACIO G. OSORIO, P.E.
DIRECTOR OF PUBLIC WORKS/CHIEF ENGINEER

PREPARED BY

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

APPROVED: 
REGISTERED CIVIL ENGINEER

8/25/06
DATE

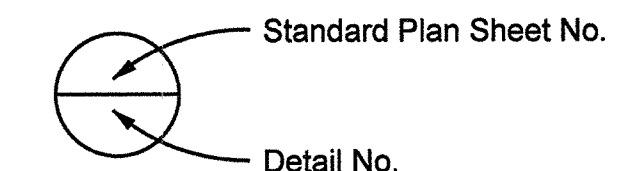


INDEX OF SHEETS

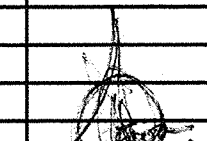
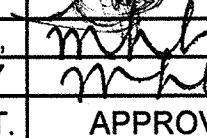
SHEET	DESCRIPTION
1.	TITLE SHEET
2.	METAL BEAM GUARD RAILING PLAN
2S1.	TYPE ST-20S RAIL DETAILS NO. 1
2S2.	TYPE ST-20S RAIL DETAILS NO. 2
2S3.	TYPE ST-20S RAIL DETAILS NO. 3
2S4.	TYPE ST-20S RAIL DETAILS NO. 4
3.	TRAFFIC HANDLING PLAN
4.	GENERAL PLAN
5.	FOUNDATION PLAN
6.	DEMOLITION PLAN
7.	BARRIER RECONSTRUCTION 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)



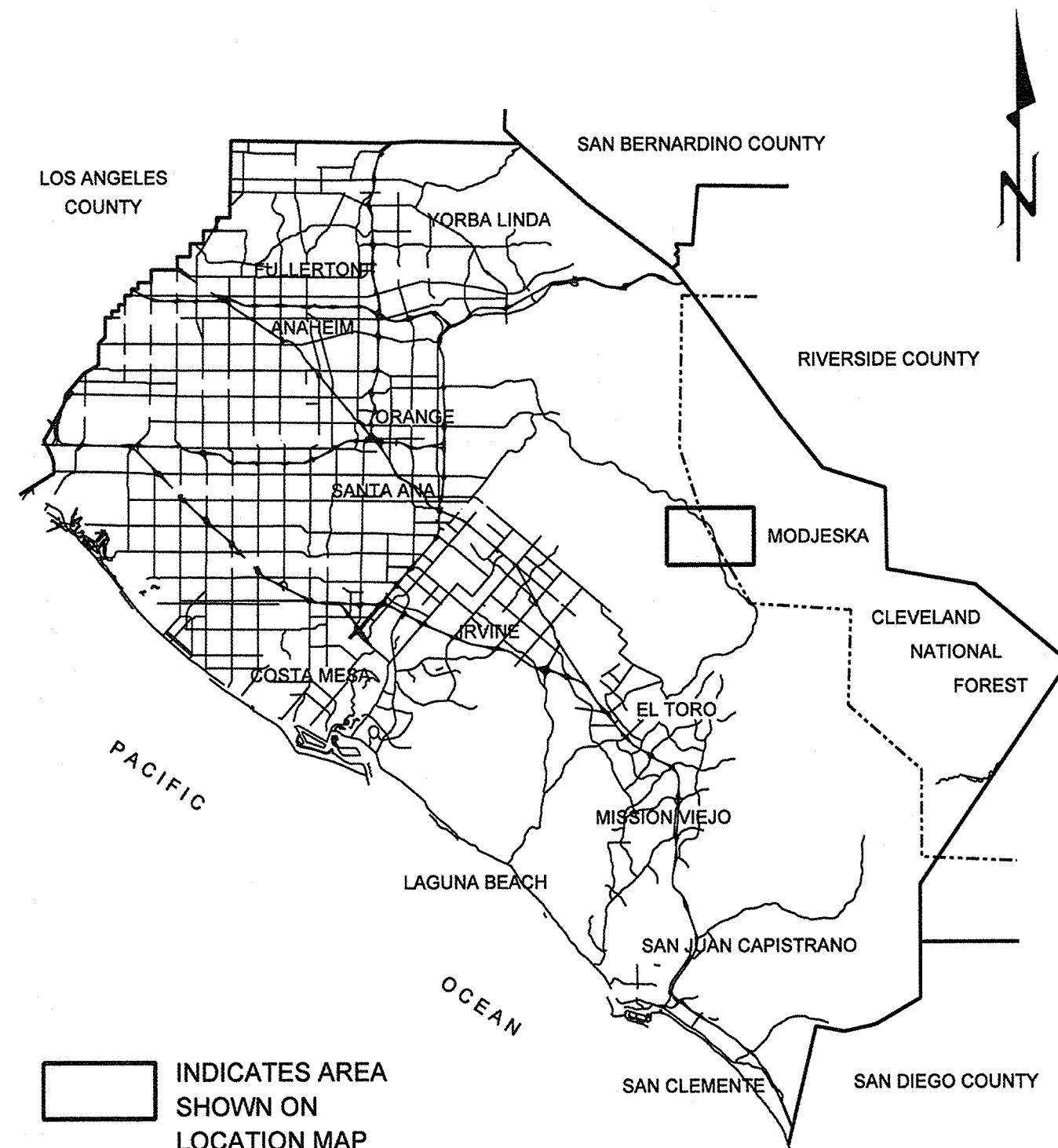
UTILITY OWNER	PHONE NO.	CONTACT
IRVINE RANCH WATER DISTRICT (I.R.W.D.)	949-453-5551	MALCOLM CORTEZ
SOUTHERN CALIFORNIA EDISON	714-934-0847	JENNIFER WARD
SBC (PACIFIC BELL)	714-237-6950	STEVE HICKS
UNDERGROUND SERVICE ALERT	800-422-4133	

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

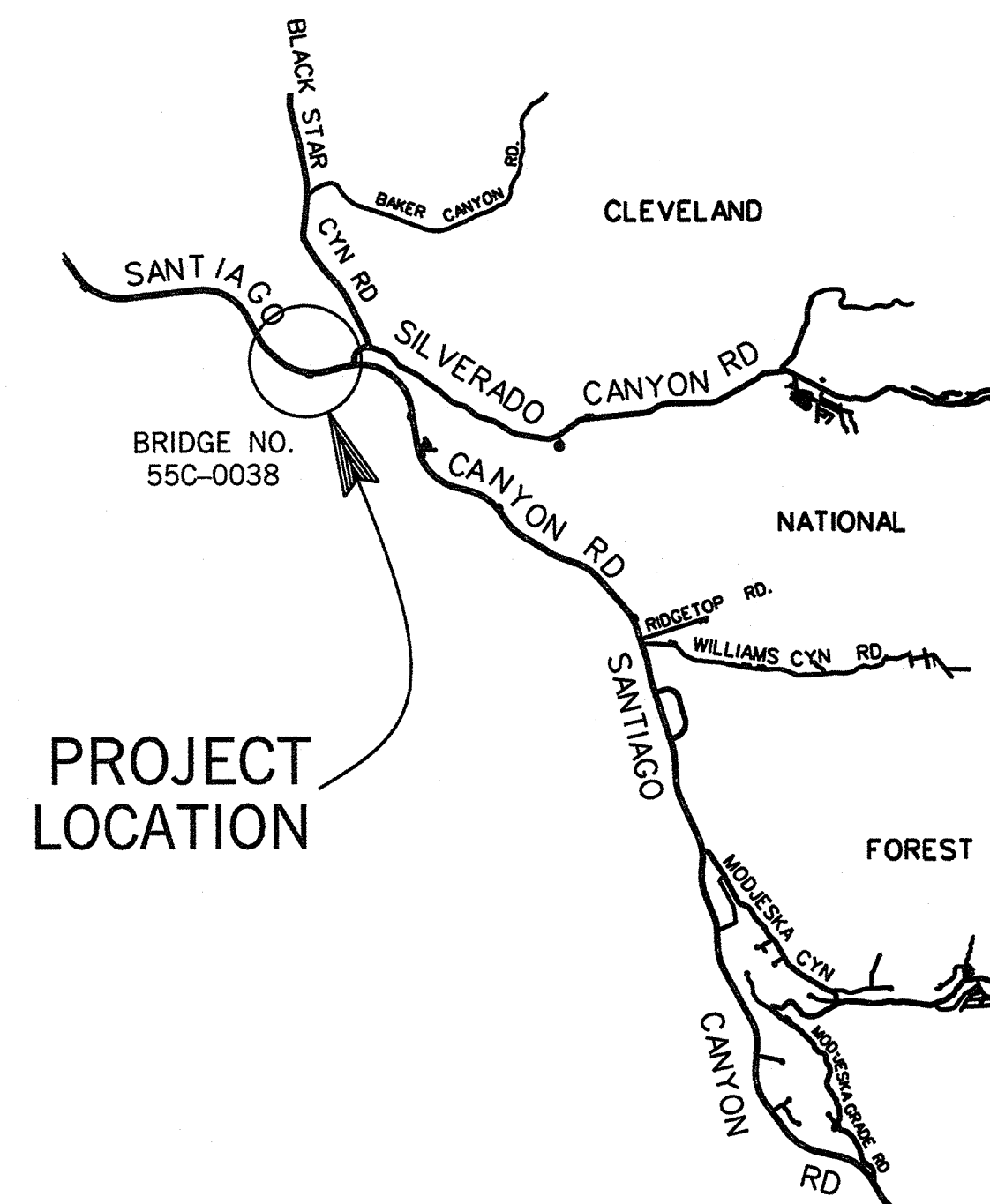
REVISIONS

BRIDGE NO. 55C-0038
DWG. NO. _____

SHEET 1 OF 15

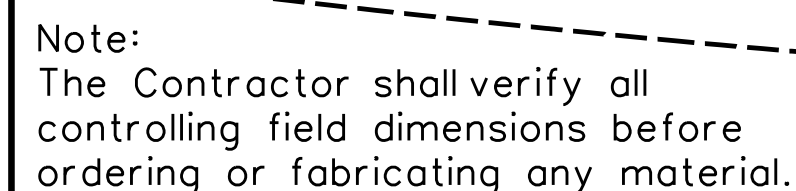
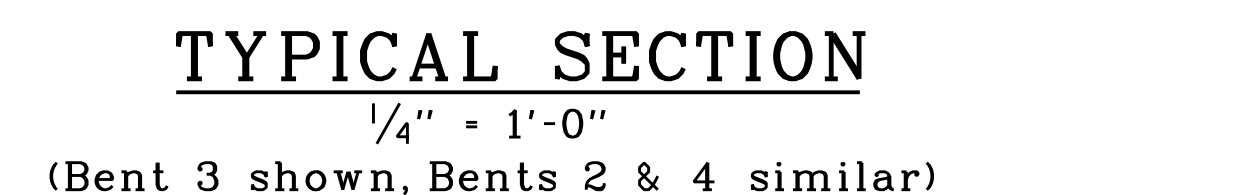


VICINITY MAP
NO SCALE



PROJECT
LOCATION

LOCATION MAP
NO SCALE



- LEGEND**

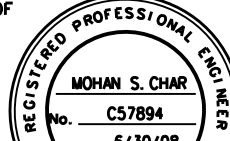
 - Existing structure
 - New construction
 - ➡ Direction of traffic
 - ➡ Direction of flow
 -  Exist Bridge removal
 -  Exist Metal Railing and Deck Slab Removal
 -  MBGR, See "Roadway Plan"
 - ① Deck Drains, Type B B7-5
7-3
For locations, see "Deck Reconstruction Plan"
 - ② Paint "Santiago Canyon Road Bridge"
 - ③ Paint "Br. No. 55C-0038"

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

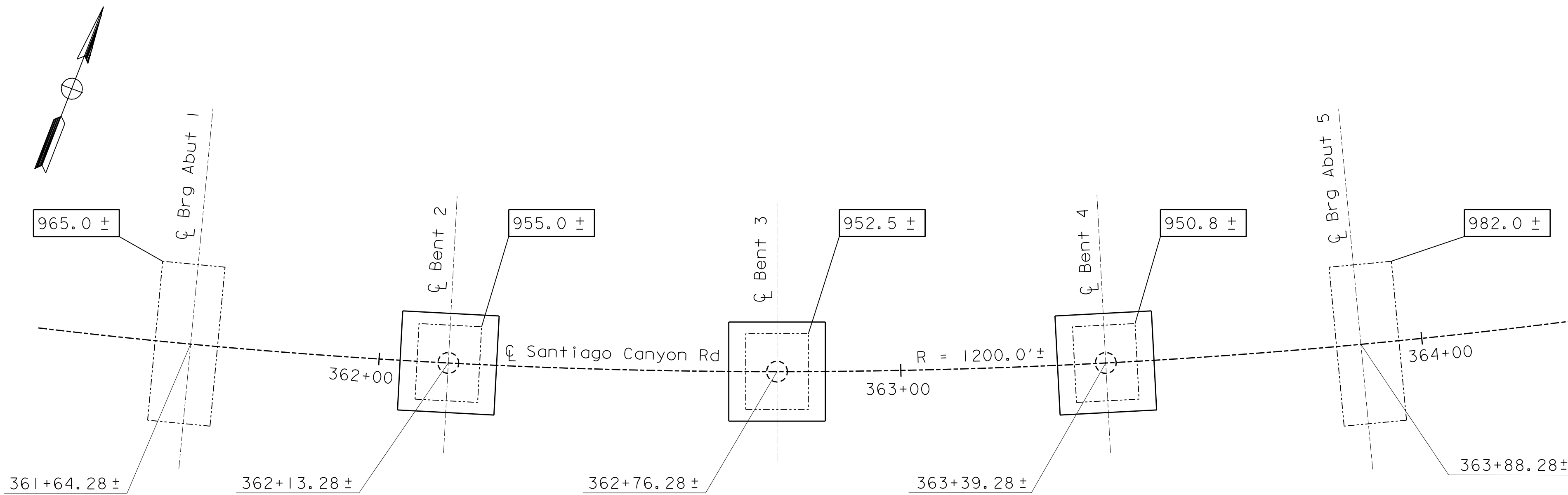
A Column Steel Casing
(Class F) Retrofit

B Footing Retrofit

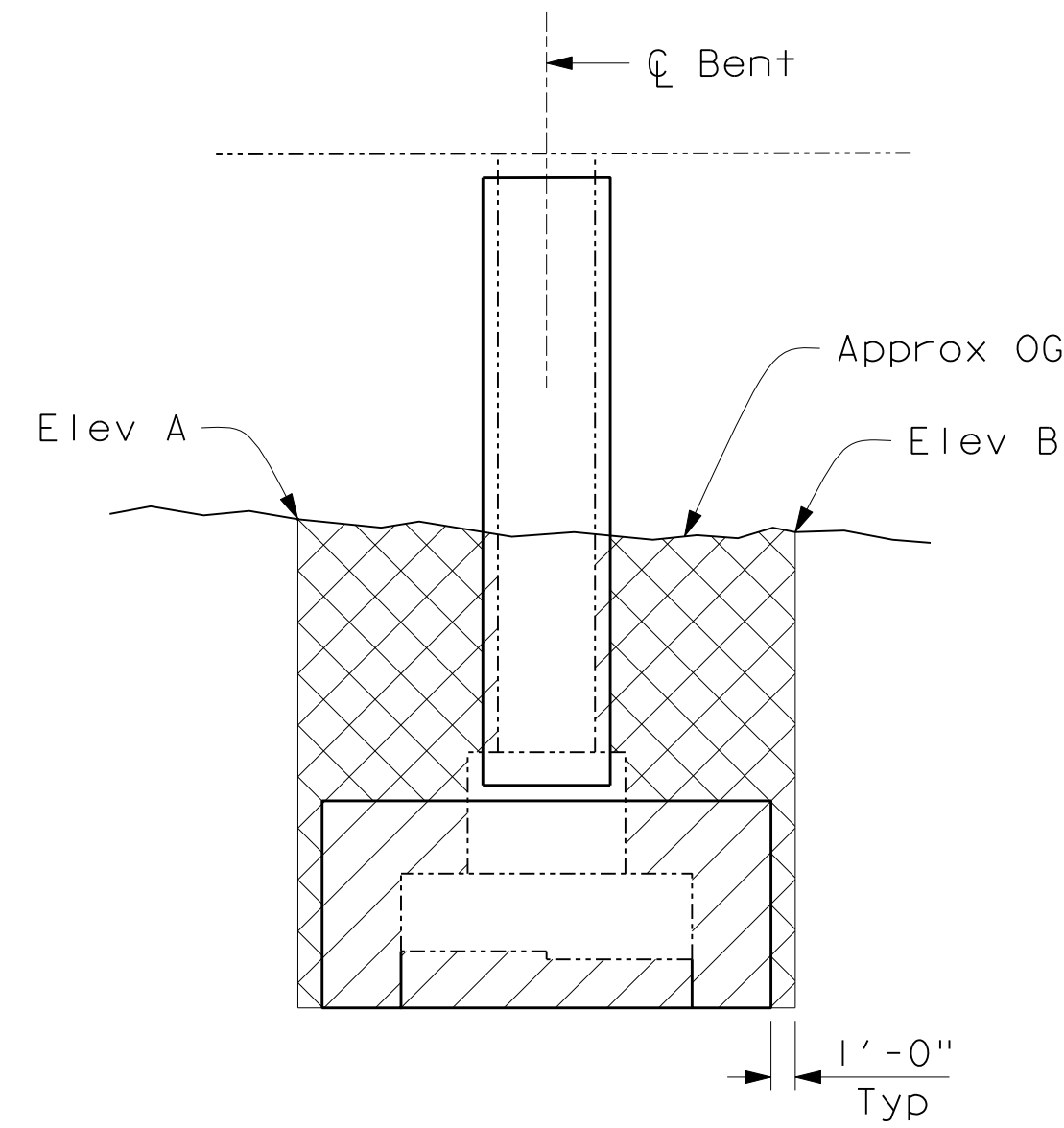
- ① Exist 8" ϕ : Water Main (I.R.W.D.)
(Protect in Place)
- ② Exist 4" ϕ : Telephone Line
(SBC Pacific Bell) (Protect in Place)
- ③ Exist Overhead Southern California
Edison Power Line (Protect in Place)
- ④ Exist Southern California Edison
Power Pole (Protect in Place)

	5/21/08	CHANGED BARRIER TO STEEL TYPE ST-20S RAIL & STAINED TYPE 732B
	REV.	DATE
R E V I S I O N S		
PREPARED UNDER SUPERVISION OF 		
		
		12/18/06
		DATE

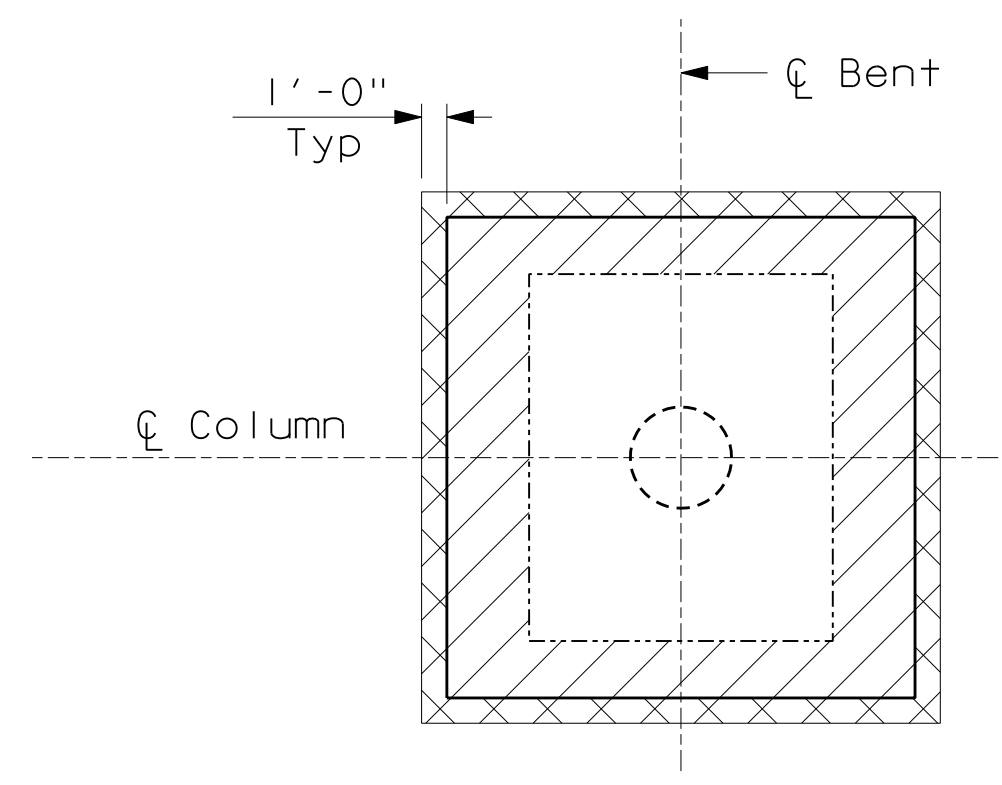
ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT		
SANTIAGO CANYON ROAD BRIDGE SC-9		
BRIDGE No. 55C-0038		
GENERAL PLAN		
DESIGNED	<u>U. SANDIRA</u>	SHEET
DRAWN	<u>M. ANDRASEK</u>	4 R1
CHECKED	<u>M. CHAR</u>	
SCALE	DATE	DRAWING NO.
VARIES	12/18/06	
		OF 15



PLAN
1"=15'



BENT FOOTING ELEVATION



BENT FOOTING PLAN

LIMITS OF PAYMENT FOR STRUCTURAL EXCAVATION & BACKFILL
No Scale

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

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

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

GENERAL NOTES
LOAD FACTOR DESIGN

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

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

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%.

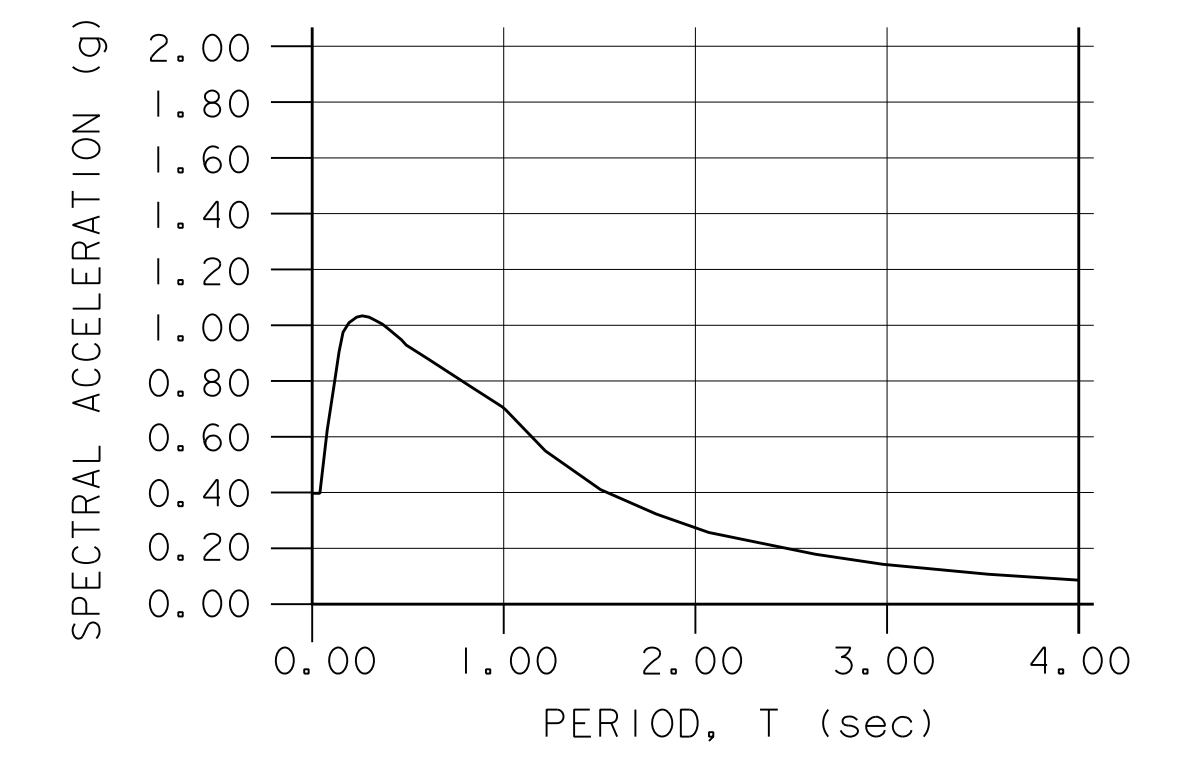
REINFORCED CONCRETE: Existing Concrete
(Assumed for Retrofit Evaluation)
 $f_y = 44,000$ psi
 $f'_c = 5000$ psi

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

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

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

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

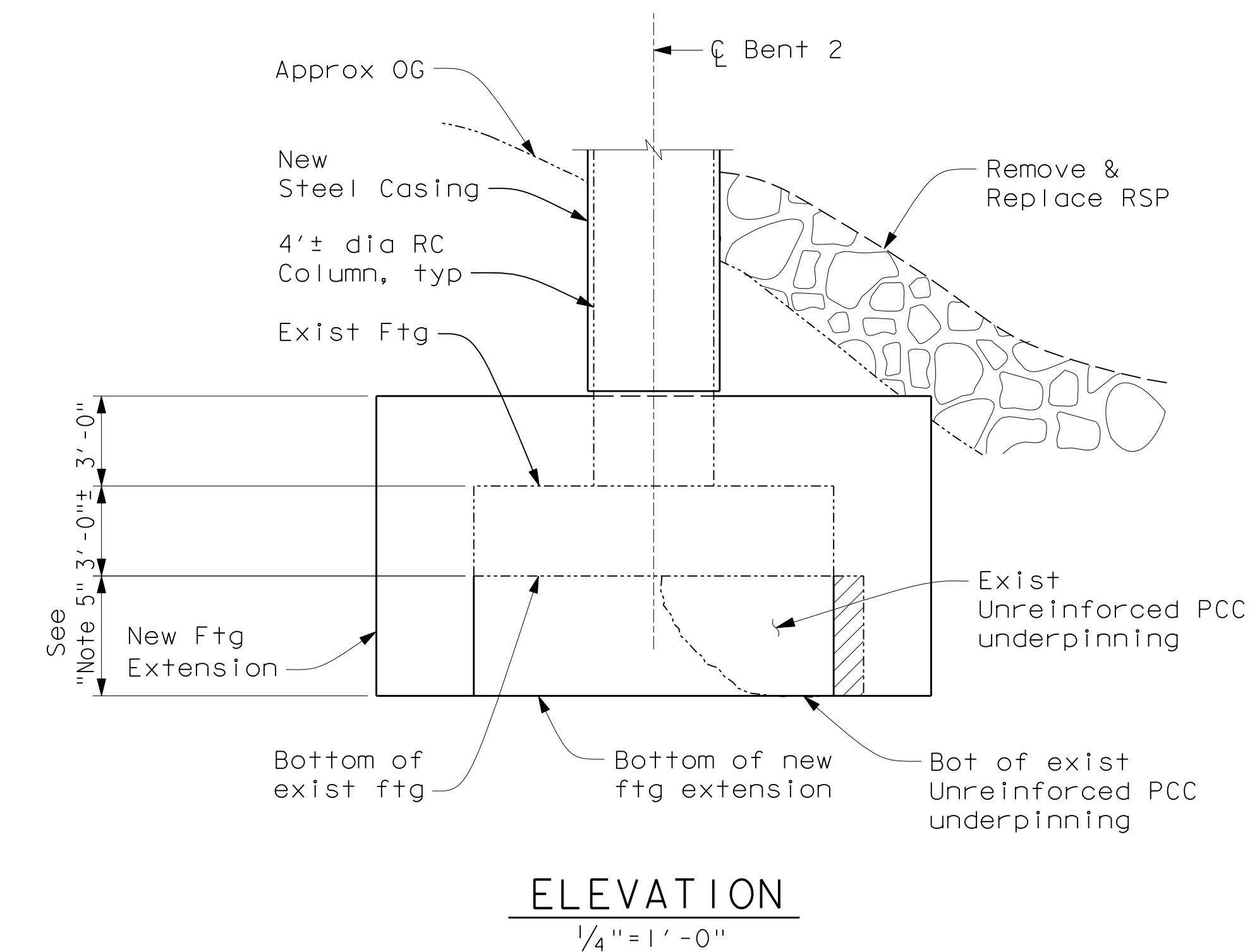
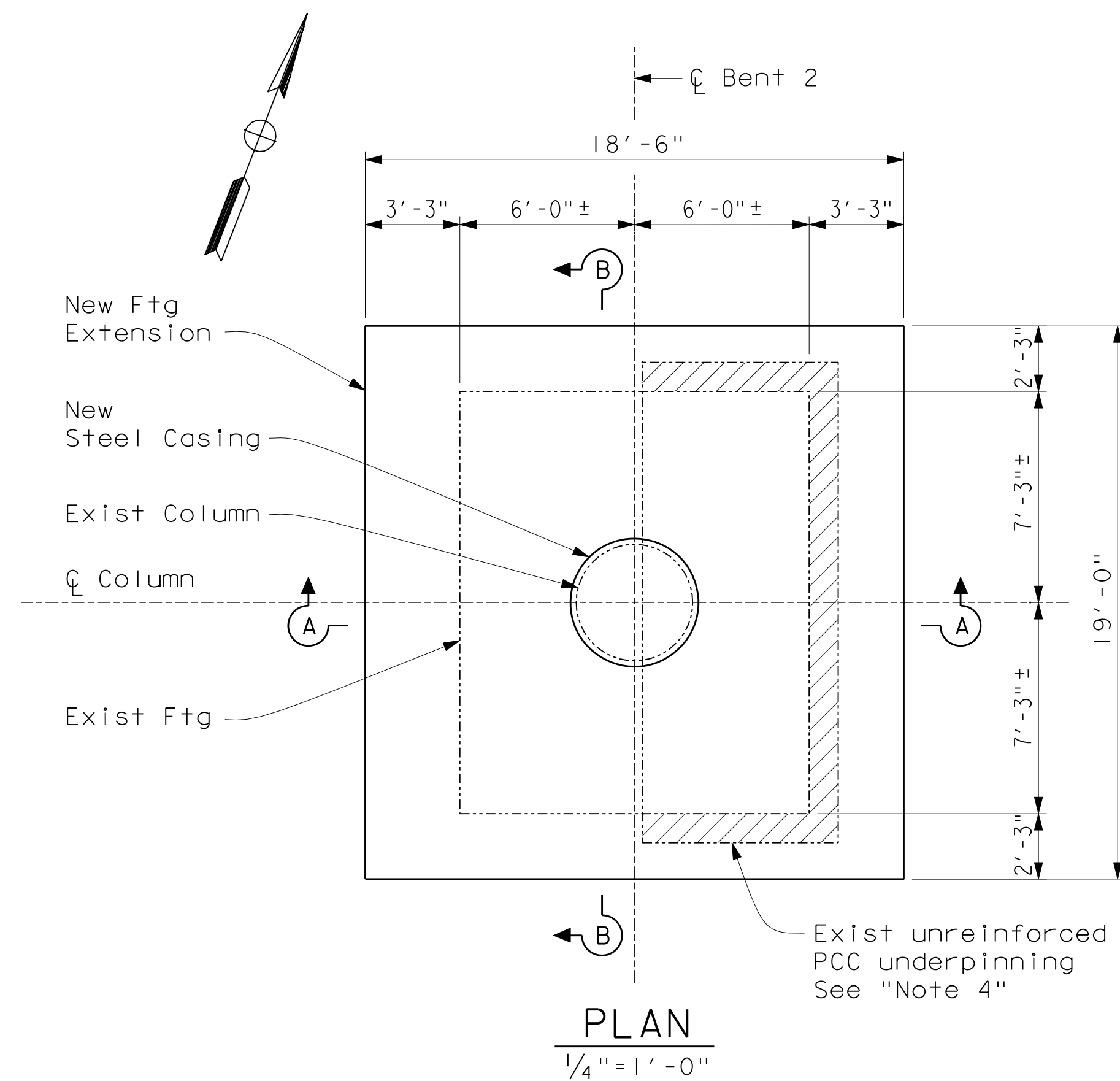


Modified Caltrans SDC ARS Curve for Soil Profile C
(M=7.25 +/- 0.25) PGA=0.4g

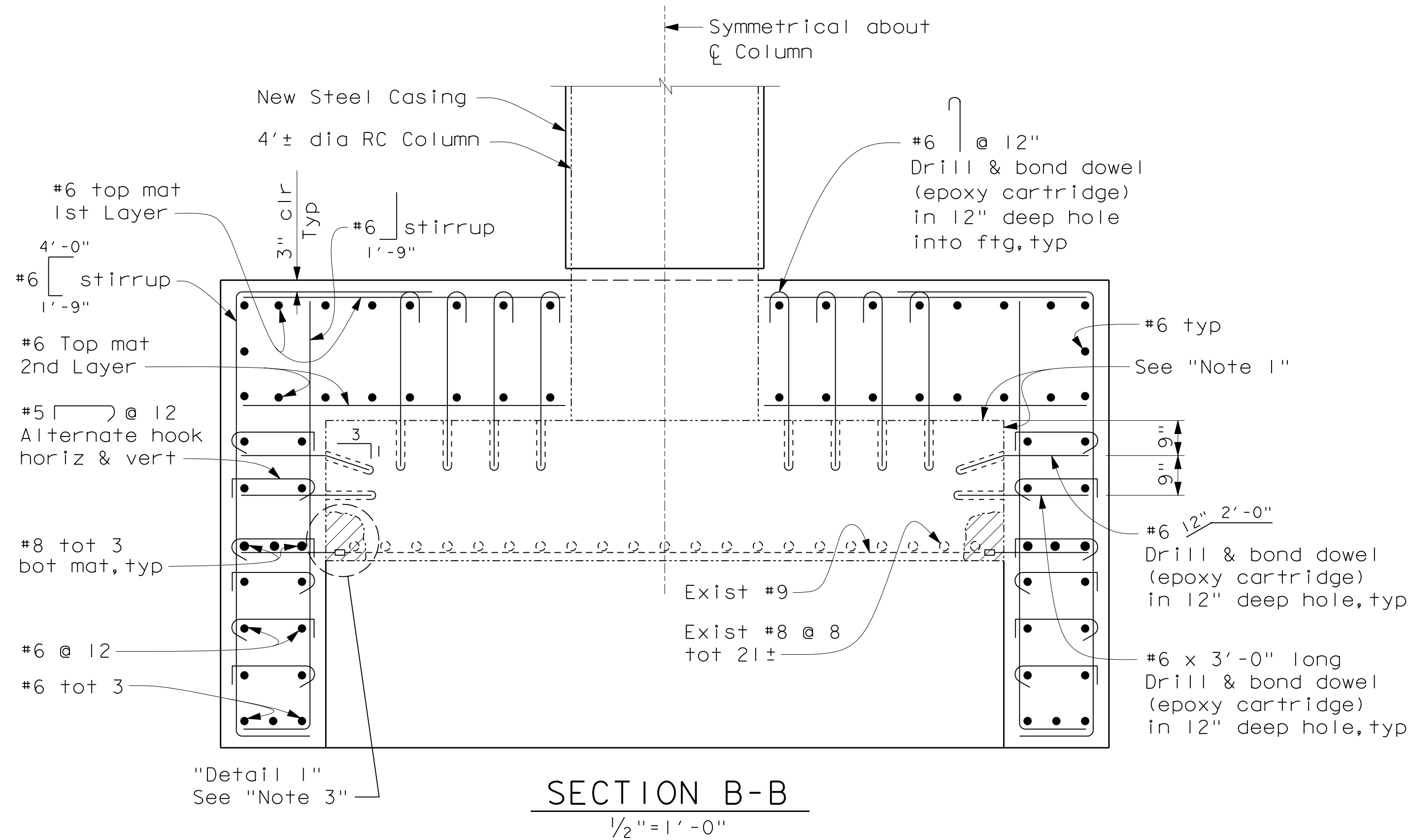
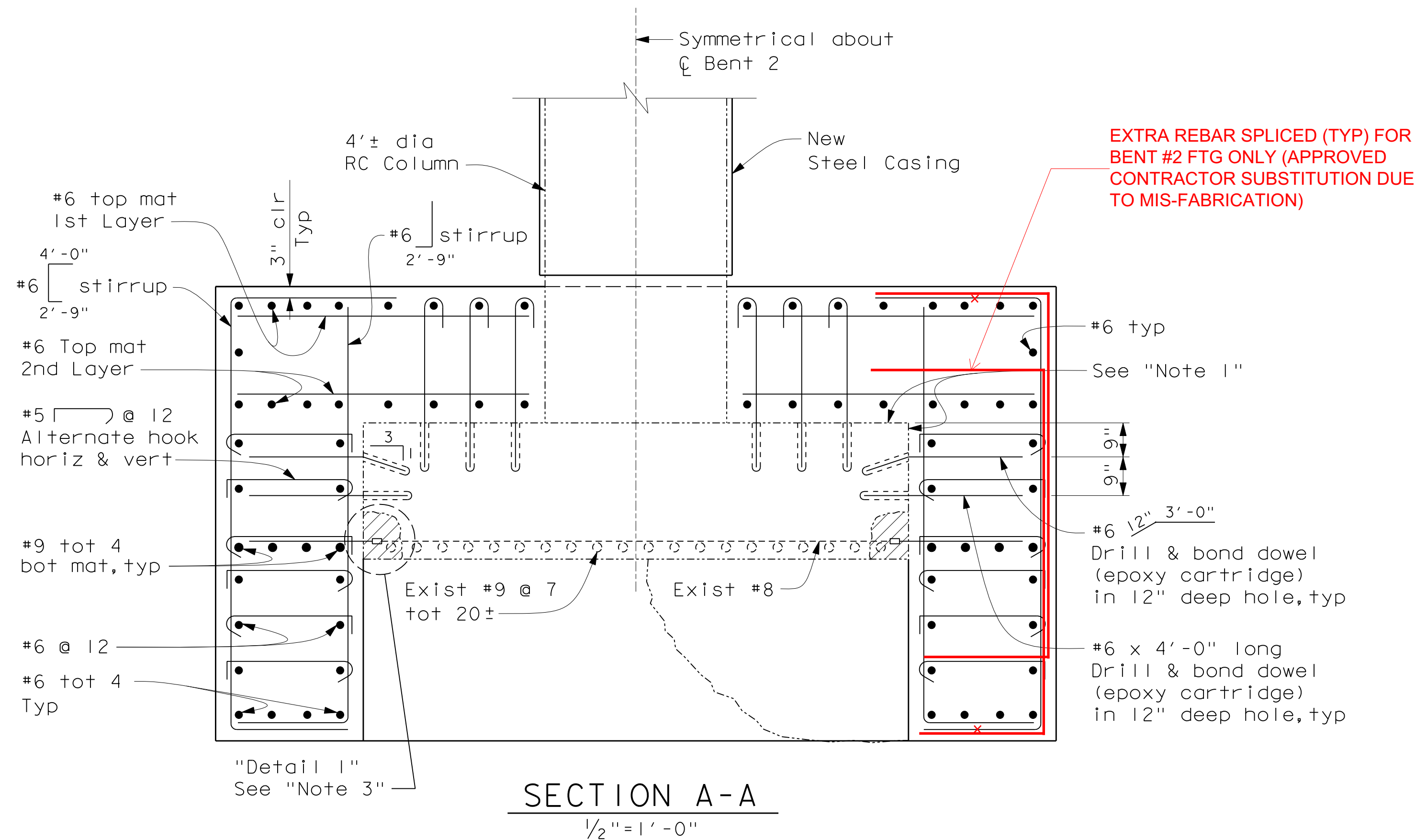
No As-Built Changes

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

		ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT			
		SANTIAGO CANYON ROAD BRIDGE SC-9			
		BRIDGE No. 55C-0038			
		FOUNDATION PLAN			
REV.	DATE	DESCRIPTION			
REVISIONS					
PREPARED UNDER SUPERVISION OF					
DESIGNED <u>LI. SANDIRA</u>		SHEET			
DRAWN <u>M. ANDRASEK</u>		5			
CHECKED <u>M. CHAR</u>		OF 15			
SCALE	DATE	DRAWING NO.			
VARIABLES	12/18/06				



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



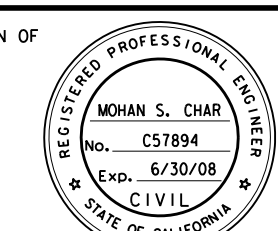
AS BUILT
CORRECTION BY: D.D.
CONTRACT NO.:
DATE: JULY 15, 2009

Notes:

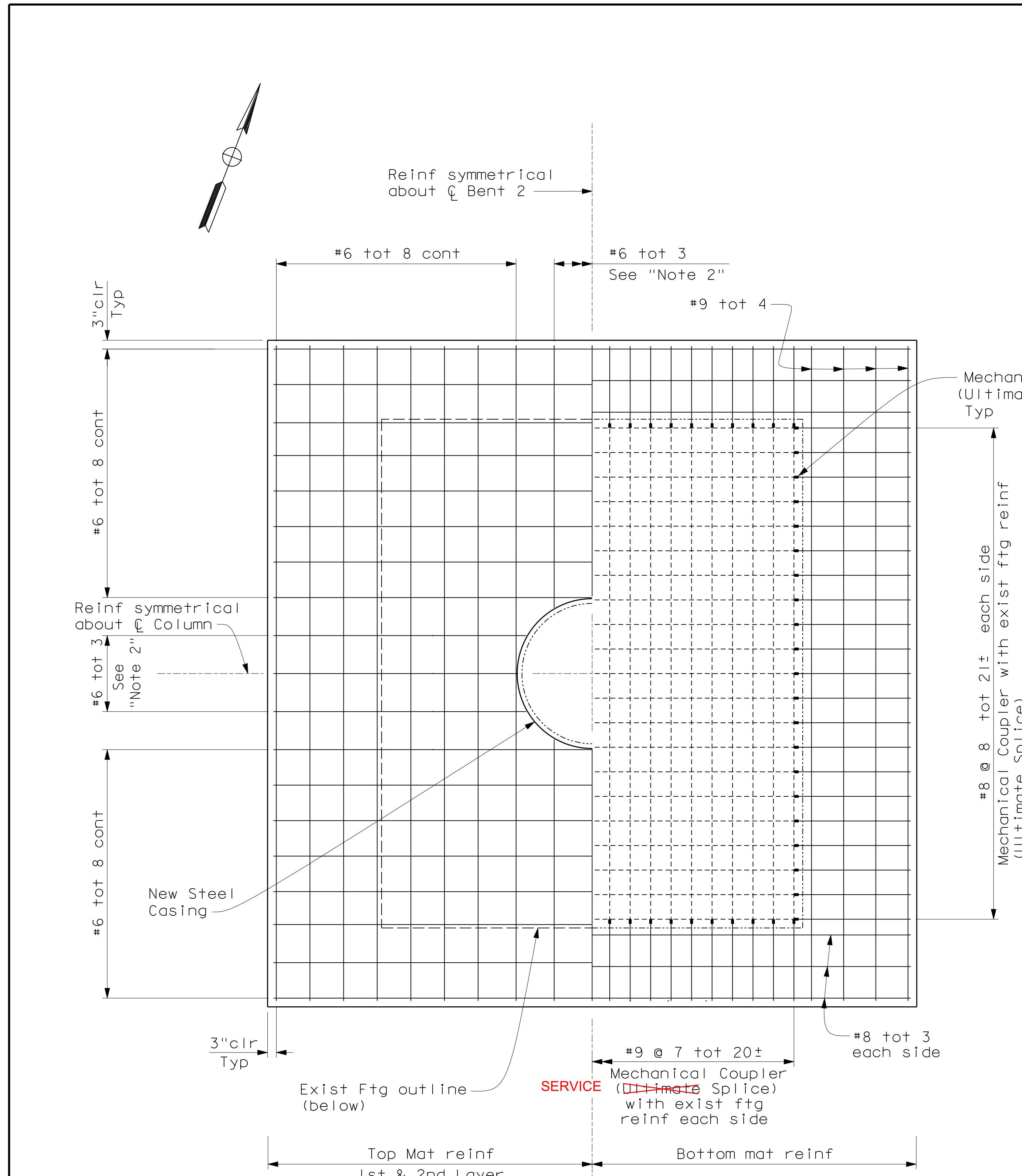
1. Roughen exist concrete surface. Apply epoxy resin adhesive just prior to placement of new concrete.
2. All bars shall be epoxy coated prefabricated reinforcement with purple coating.
3. For "Detail 1", see "Bent 3 Footing Layout & Details" sheet.
4. Existing concrete removal limit shall be to the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

Existing concrete removal

		ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT	
		SANTIAGO CANYON ROAD BRIDGE SC-9	
		BRIDGE No. 55C-0038	
		BENT 2 FOOTING LAYOUT & DETAILS	
DESIGNED	U. SANDIRA	CHECKED	M. CHAR
DRAWN	M. ANDRASEK	DATE	12/18/06
SCALE	VARIES	DRAWING NO.	9 OF 15

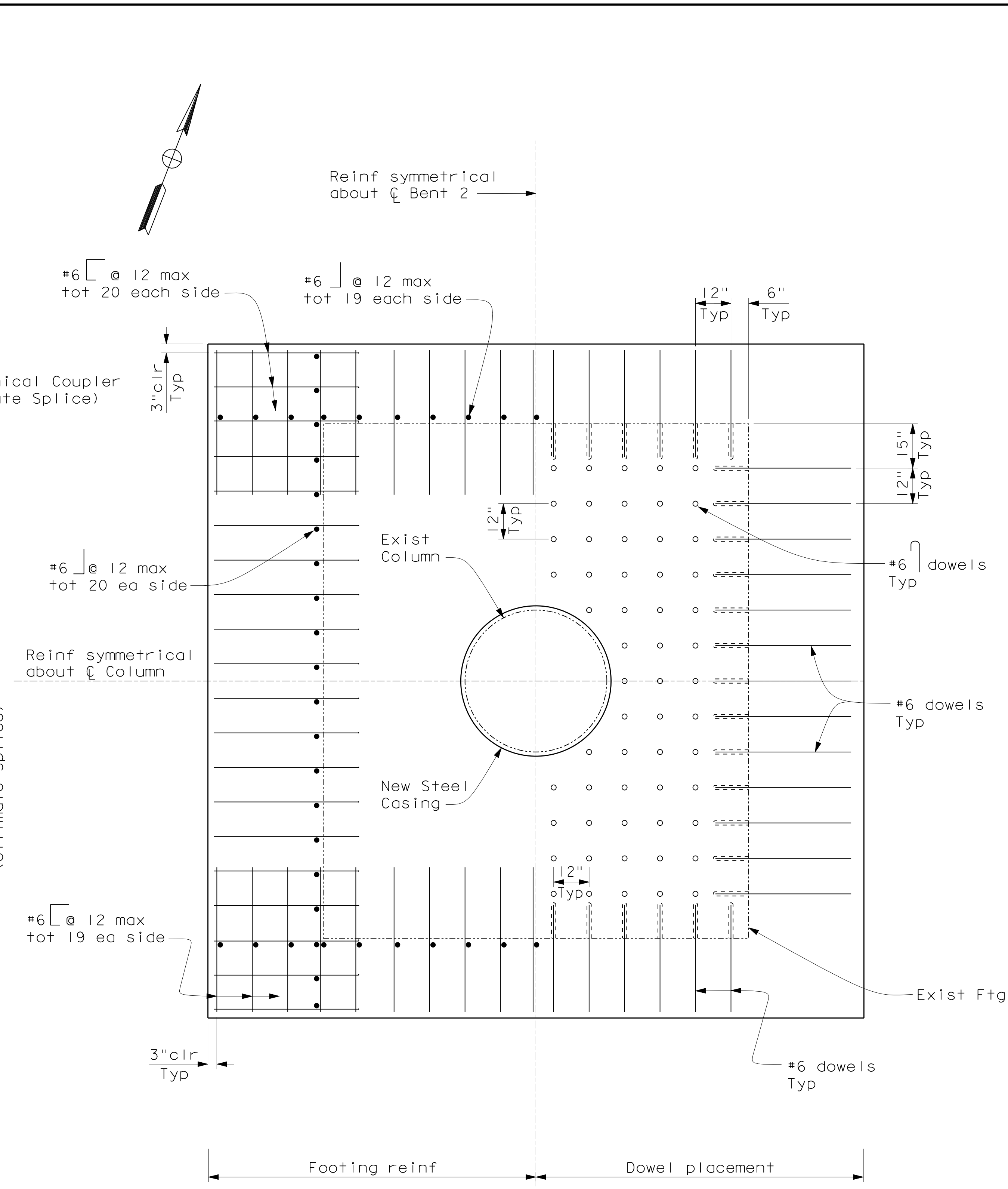


Mkhar
12/18/06



TOP & BOTTOM MAT
REINFORCEMENT LAYOUT

FOOTING REINFORCEMENT PLAN
1/2" = 1'-0"



STIRRUP & DOWEL LAYOUT
Not All Stirrups shown

Notes:

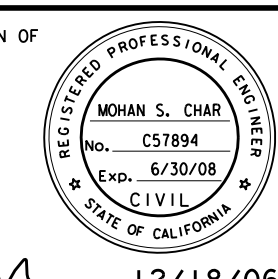
1. All bars shall be epoxy coated prefabricated reinforcement with purple coating.
2. Terminate bars 2" clear from face of existing column.

AS BUILT

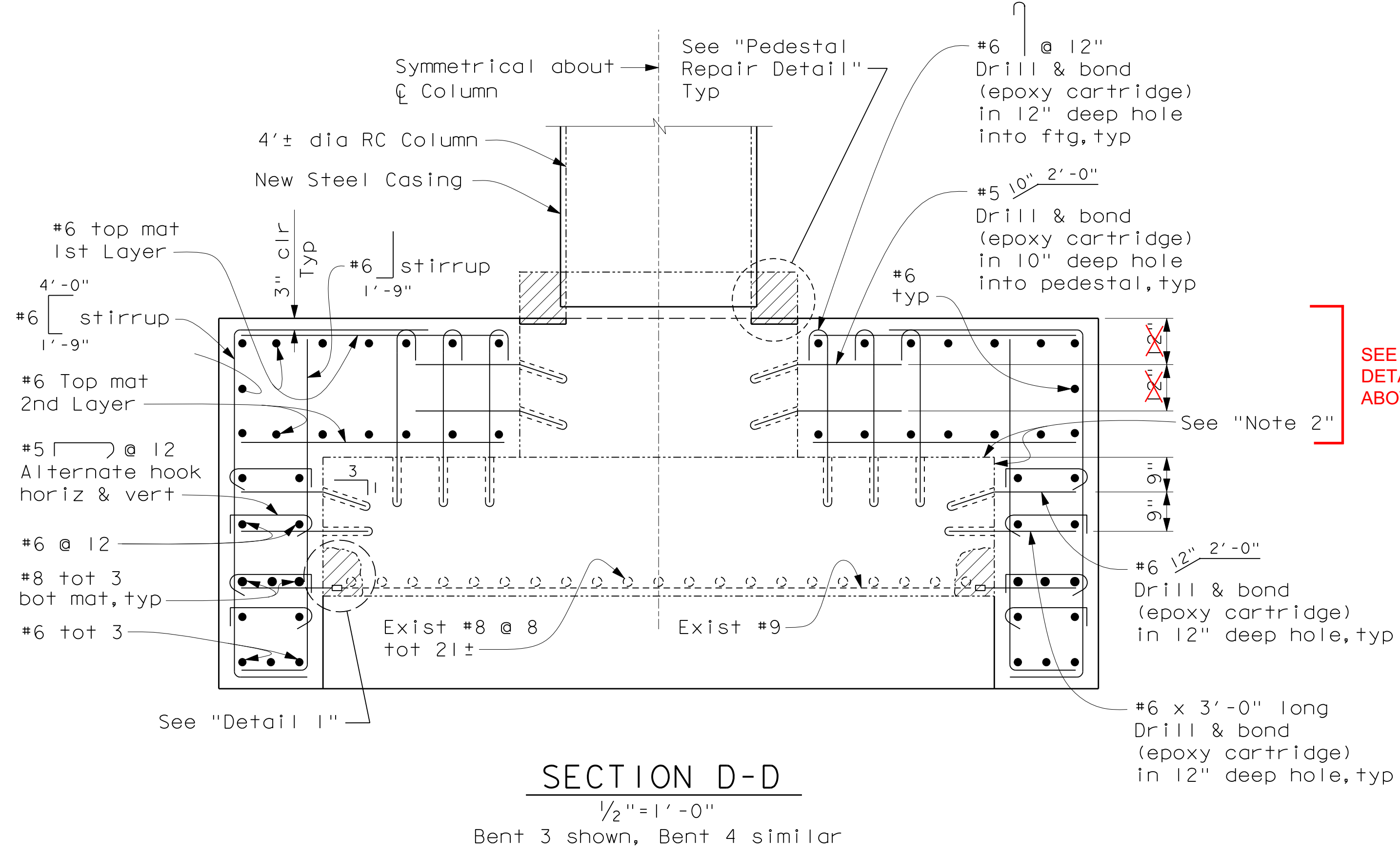
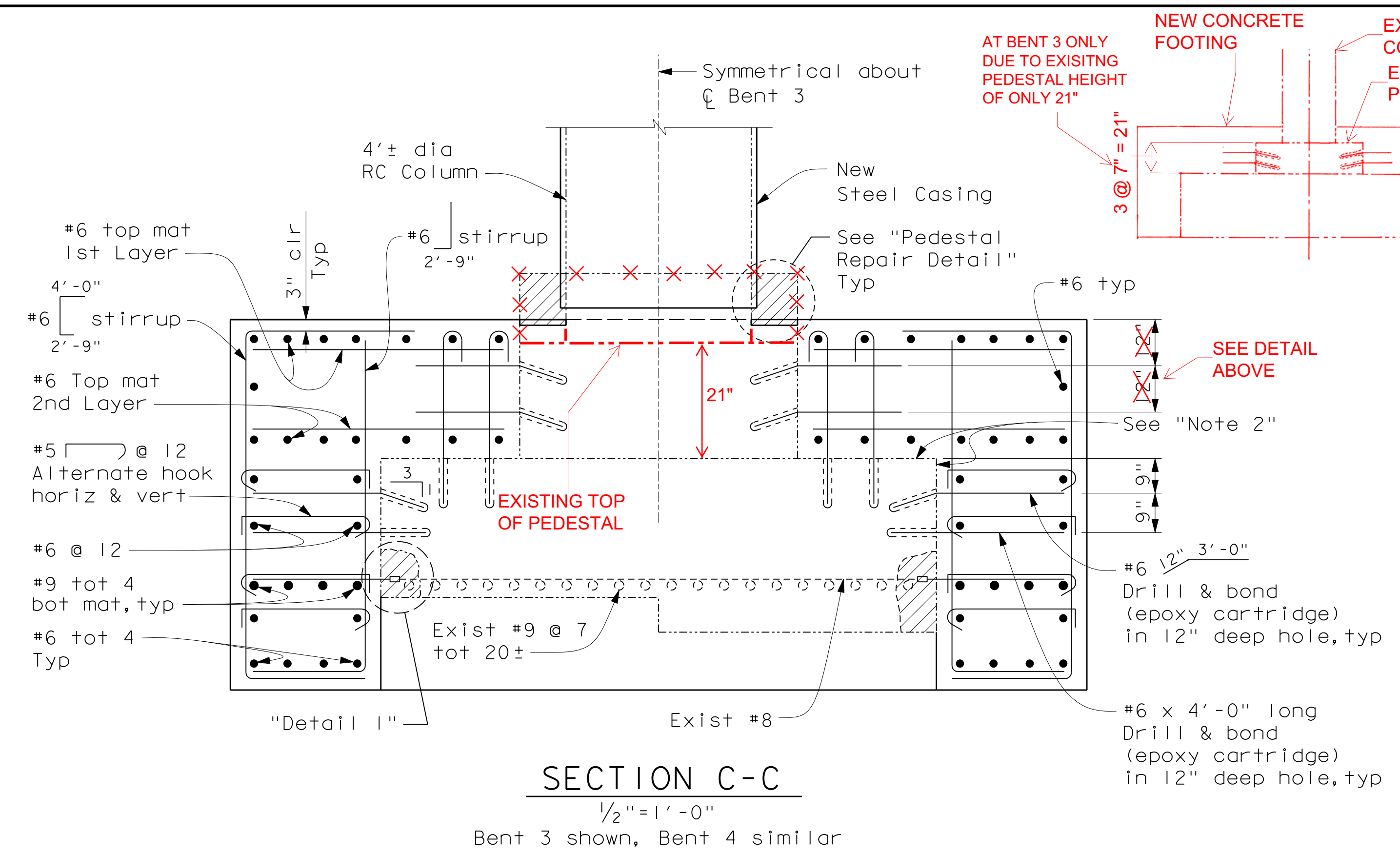
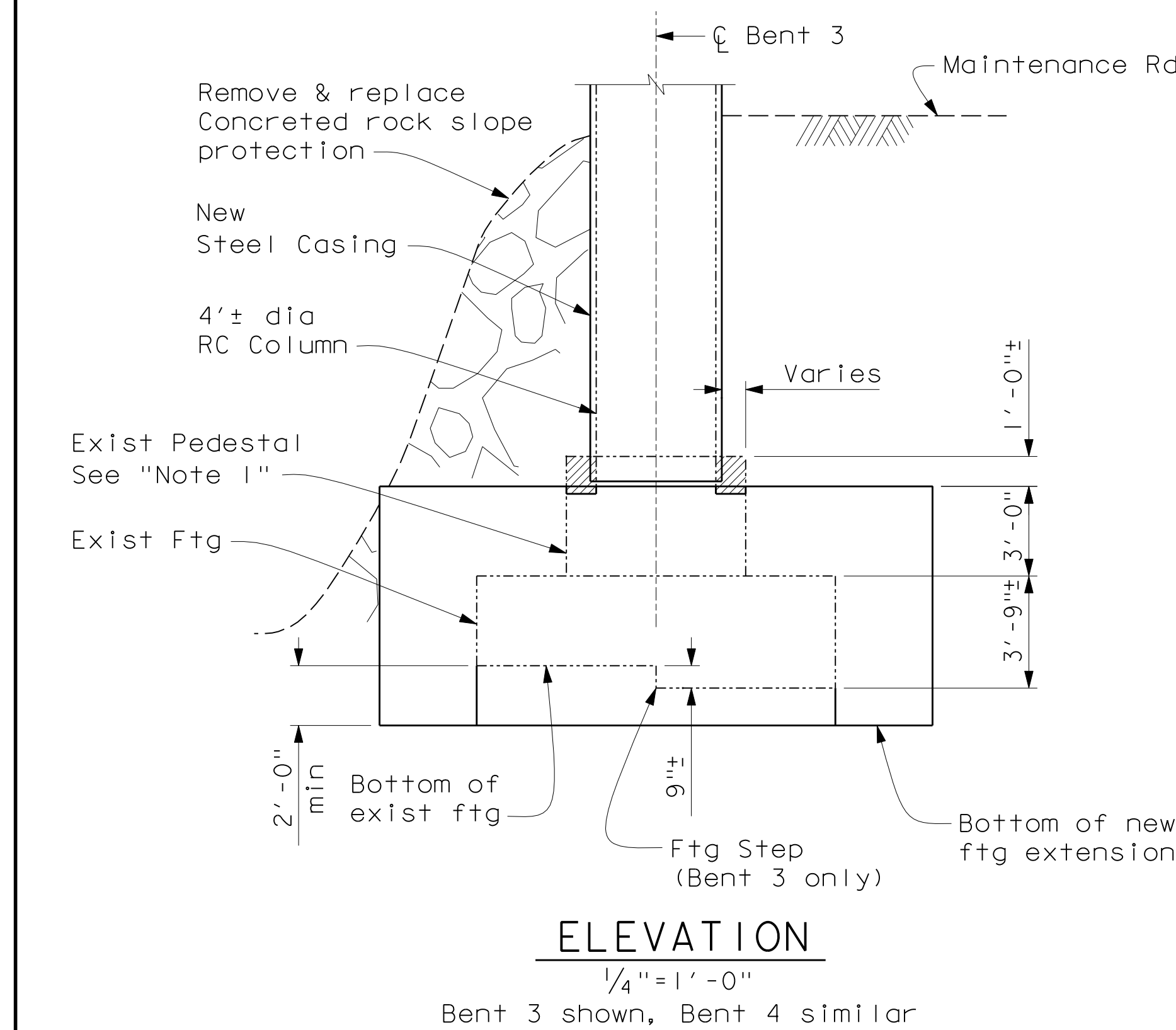
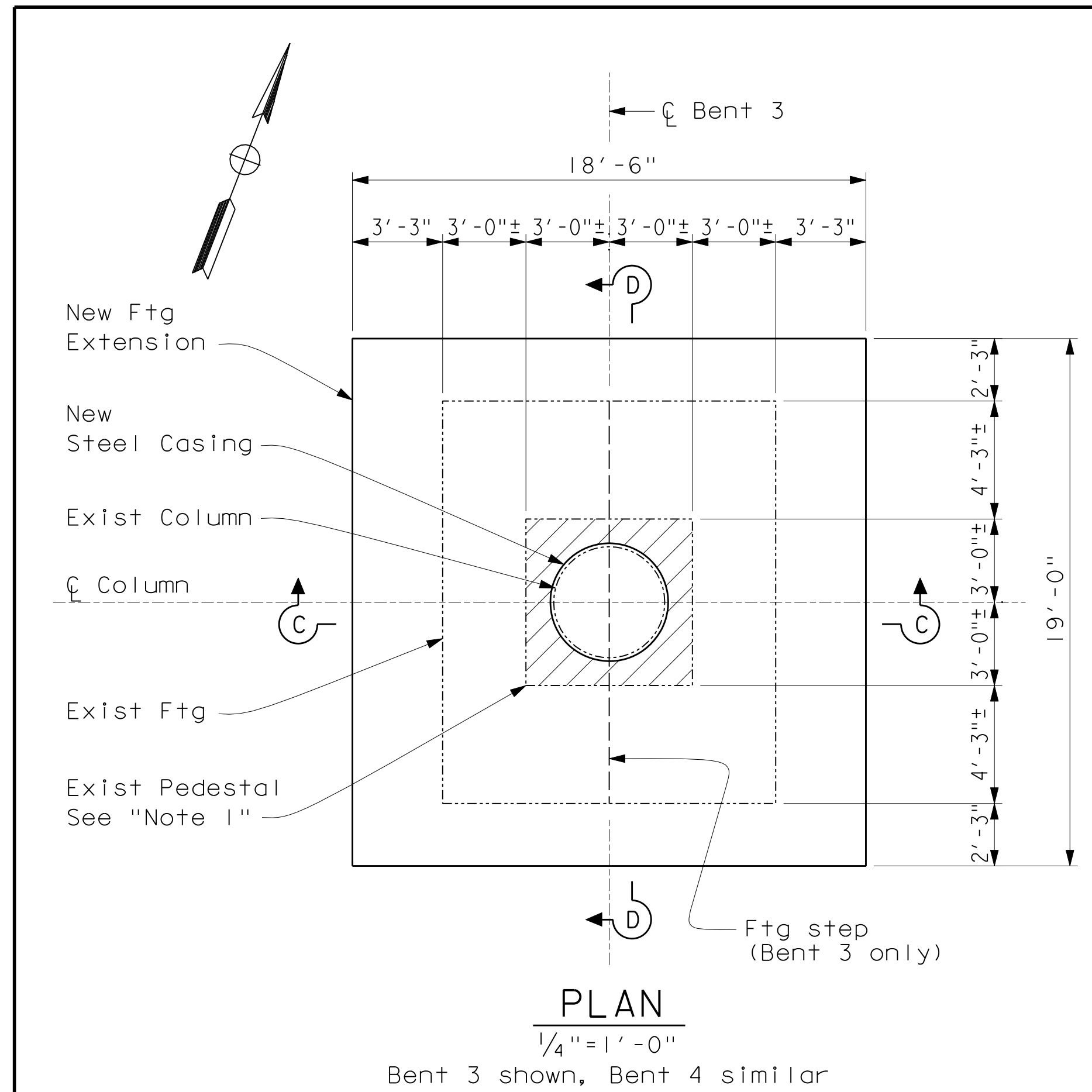
CORRECTION BY: D.D.
CONTRACT NO.:
DATE: JULY 15, 2009

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

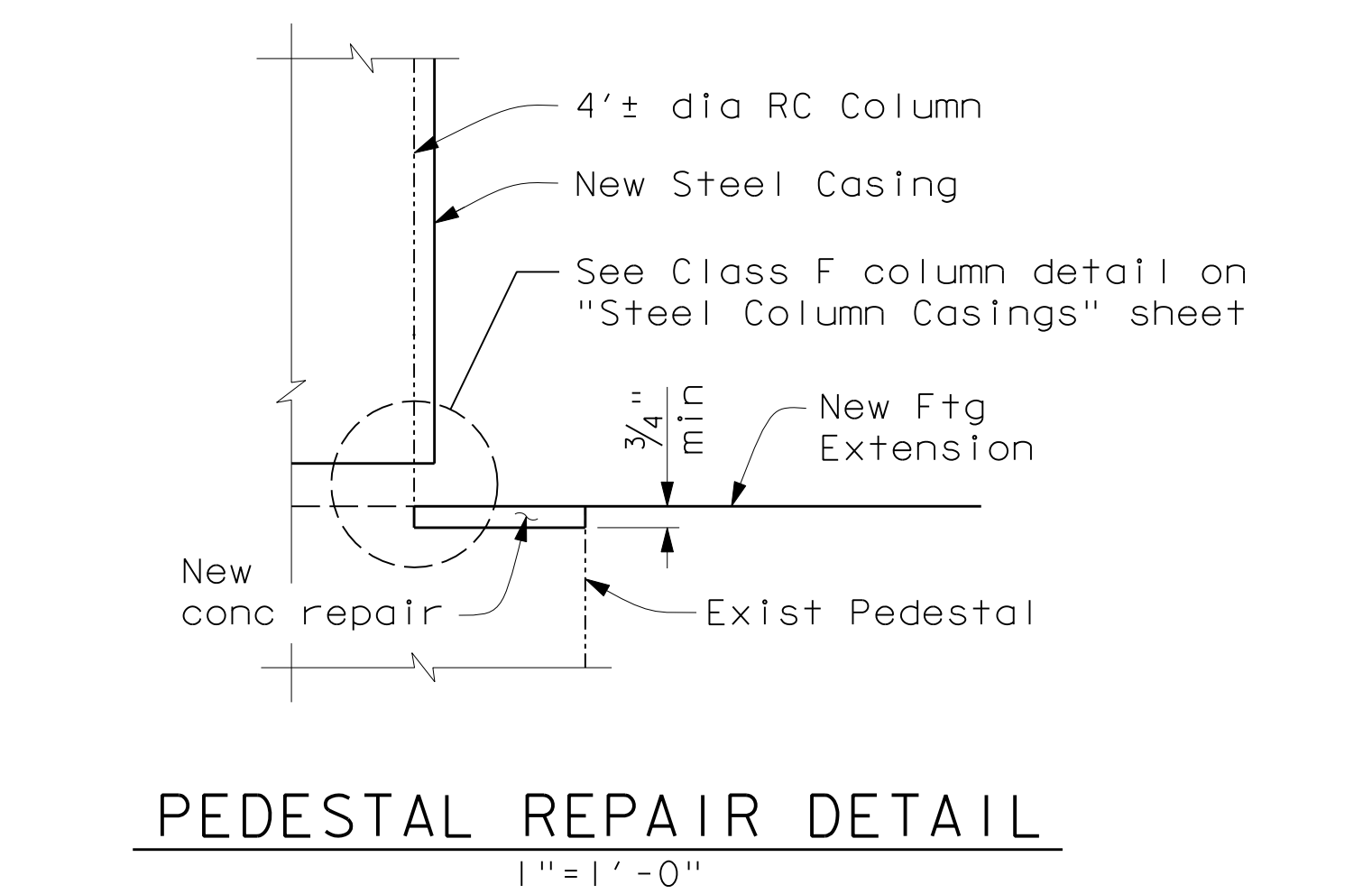
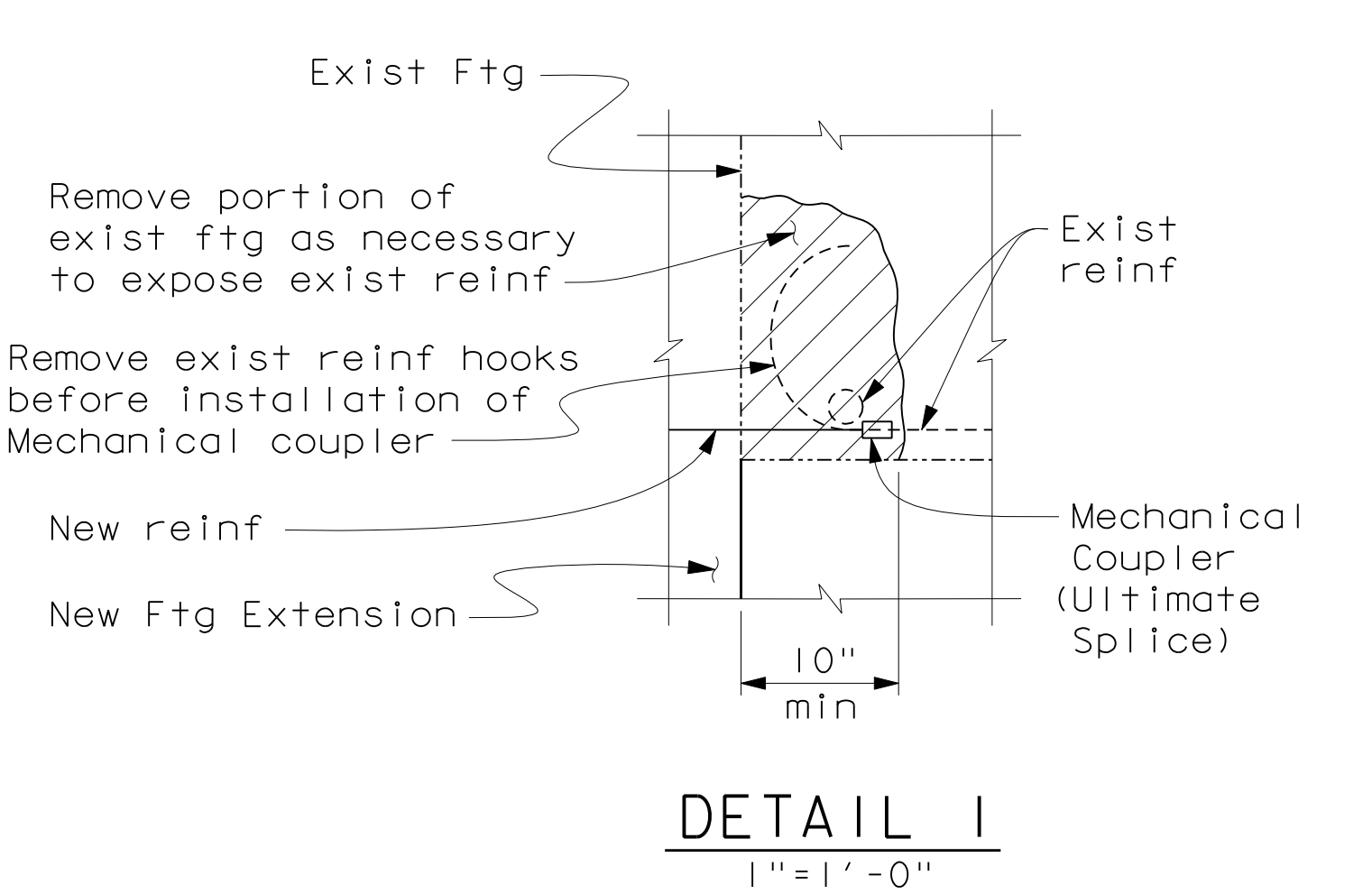
		ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT	
		SANTIAGO CANYON ROAD BRIDGE SC-9	
		BRIDGE No. 55C-0038	
		BENT 2 FOOTING DETAILS	
REV.	DATE	DESCRIPTION	
REVISIONS			
PREPARED UNDER SUPERVISION OF			
DESIGNED <u>LI, SANDIRA</u>		SHEET	
DRAWN <u>M. ANDRASEK</u>		10	
CHECKED <u>M. CHAR</u>		OF 15	
SCALE VARIES	DATE 12/18/06	DRAWING NO.	



Mkhar 12/18/06



- LEGEND**
- Existing concrete removal
- Notes:**
- Existing pedestals at Bent 3 & 4 only.
 - Roughen exist concrete surface. Apply epoxy resin adhesive just prior to placement of new concrete.
 - All bars shall be epoxy coated prefabricated reinforcement with purple coating.



AS BUILT

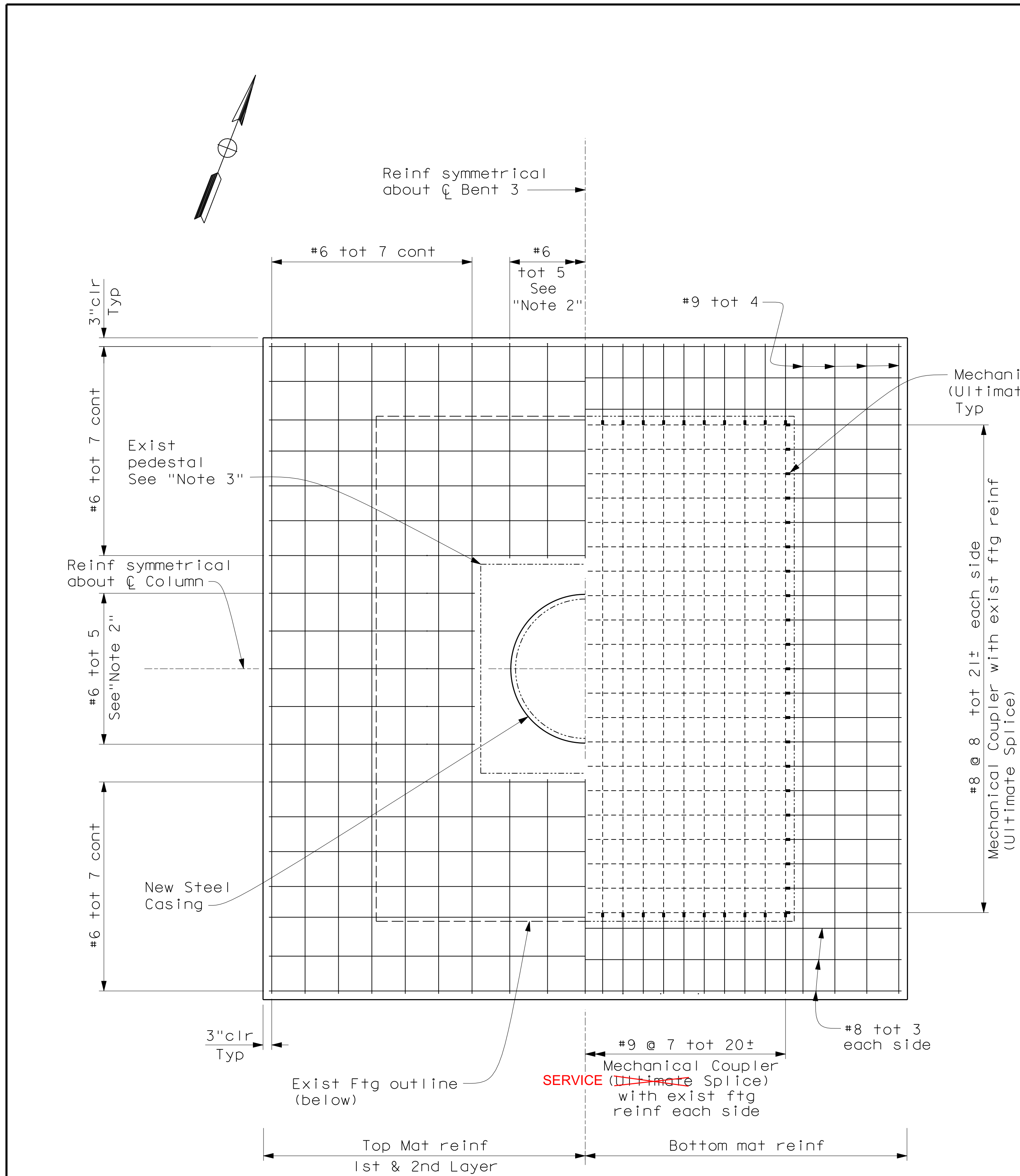
CORRECTION BY: D.D.

CONTRACT NO.:

DATE: JULY 15, 2009

ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT		
SANTIAGO CANYON ROAD BRIDGE SC-9		
BRIDGE No. 55C-0038		
BENT 3 FOOTING LAYOUT & DETAILS		
DESIGNED: <u>L. SANDIRA</u>	SHEET	
DRAWN: <u>M. ANDRASEK</u>	CHECKED: <u>M. CHAR</u>	11
SCALE: <u>VARIABLE</u>	DATE: <u>12/18/06</u>	DRAWING NO. <u></u>
OF 15		

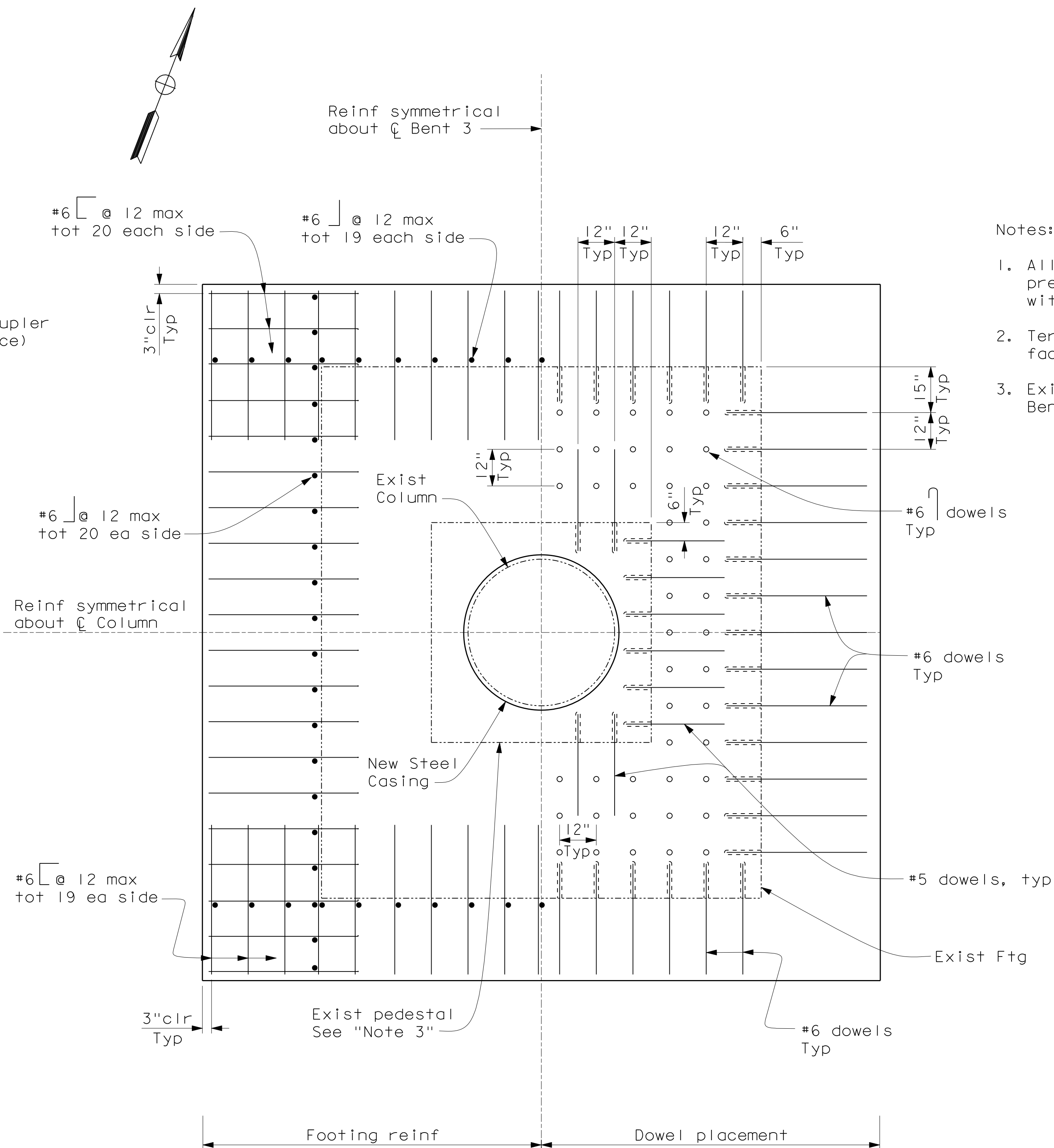
Note:
The Contractor shall verify all
controlling field dimensions before
ordering or fabricating any material.



TOP & BOTTOM MAT
REINFORCEMENT LAYOUT

FOOTING REINFORCEMENT PLAN
1/2" = 1'-0"
Bent 3 shown, Bent 4 similar

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



STIRRUP & DOWEL LAYOUT
Not All Stirrups shown

- Notes:
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.

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

ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT		
SANTIAGO CANYON ROAD BRIDGE SC-9		
BRIDGE No. 55C-0038		
BENT 3 FOOTING DETAILS		
DESIGNED <u>LI. SANDIRA</u>	SHEET	
DRAWN <u>M. ANDRASEK</u>	CHECKED <u>M. CHAR</u>	12
SCALE VARIES	DATE 12/18/06	DRAWING NO. OF 15



Mkhar 12/18/06

[illegible]

cone penetrometer dimensions and testing procedure in accordance with ASTM Standard D-3441-79

SAMPLER TYPE		EQUIVALENT PENETRATION INDEX FOR MC= 0.5x BLOWS/FEET
AVANE SHEAR	2.4 MODIFIED CALIFORNIA SAMPLER	
AXIAL	2.42" I.D., 3" O.D.	
SH #200	STANDARD PENETRATION TEST	

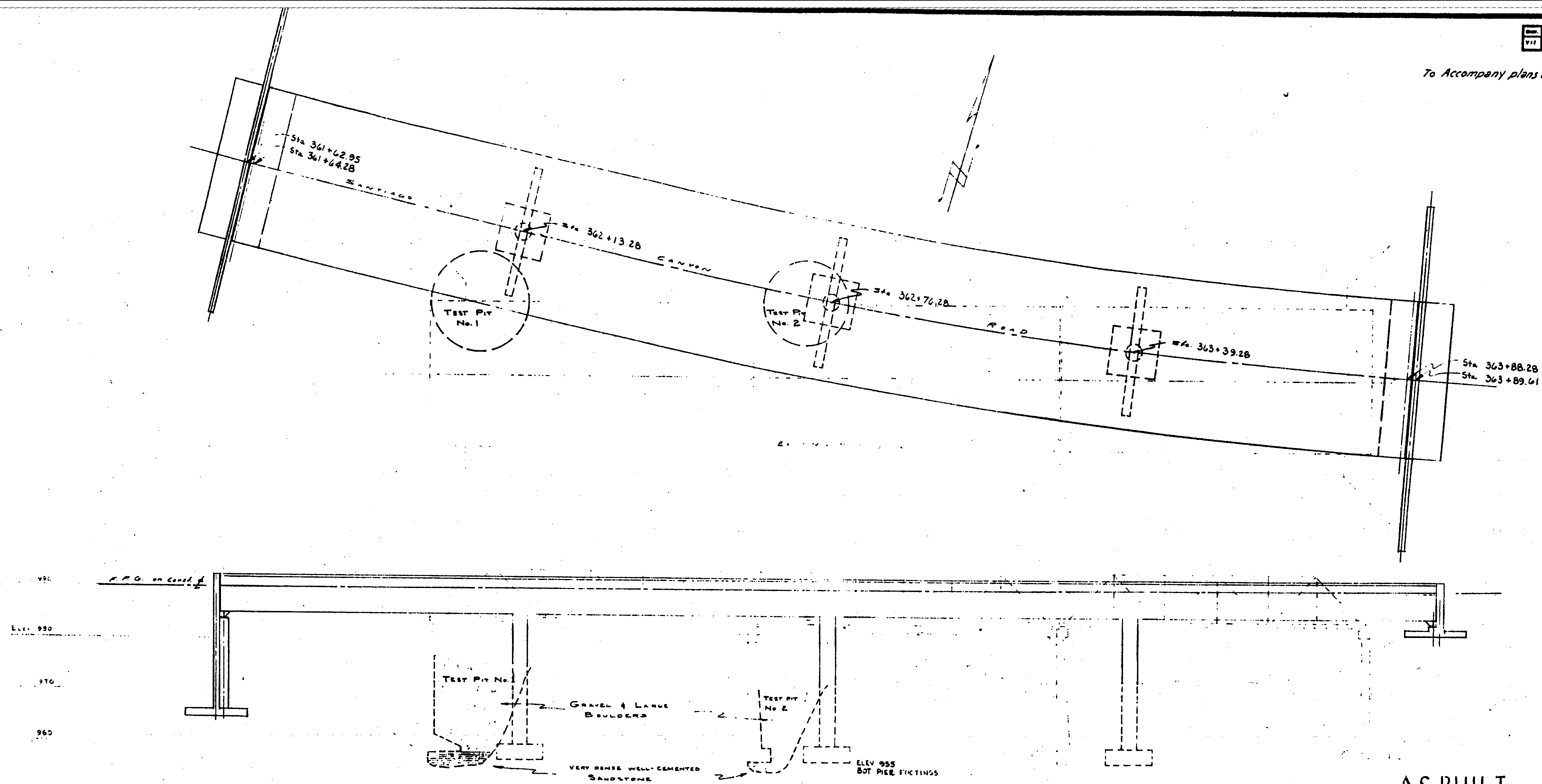


CORRECTION BY: D.D.
CONTRACT NO.:
DATE: JULY 15, 2009

ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT	
SANTIAGO CANYON ROAD BRIDGE SC-9 BRIDGE No. 55C-0038 LOG OF TEST BORINGS	

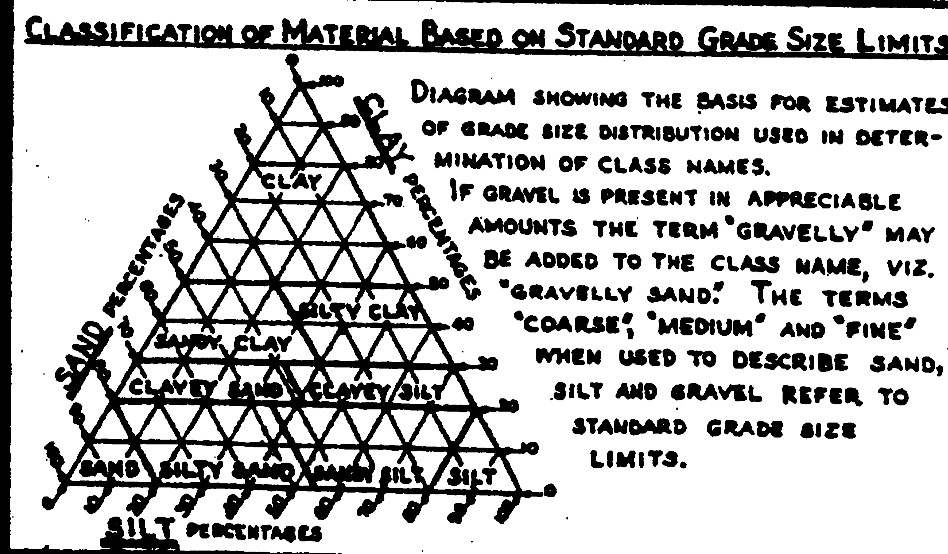
To Accompany plans dated September 4, 1962

BRIDGE DEPARTMENT



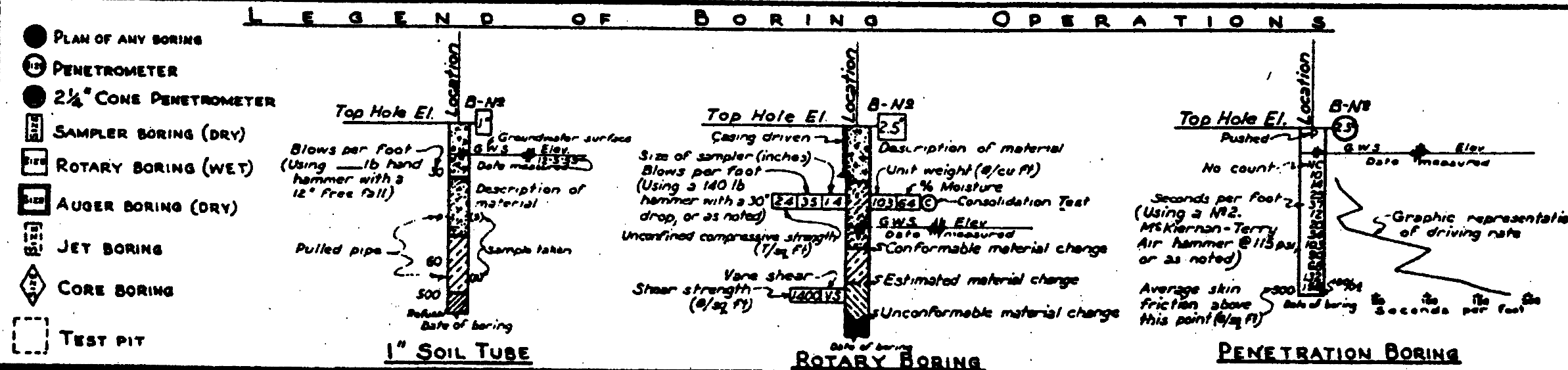
AS BUILT

CONTRACT NO. 63-7Y24C3-P
RESIDENT ENGR. D.E. Bourgeois
DATE 6/1/63



LEGEND OF EARTH MATERIALS

GRAVEL	SILTY CLAY OR CLAYEY SILT
SAND	PEAT AND/OR ORGANIC MATTER
SILT	FILL MATERIAL
CLAY	IGNEOUS ROCK
SANDY CLAY OR CLAYEY SAND	SEDIMENTARY ROCK
SANDY SILT OR SILTY SAND	METAMORPHIC ROCK



LOG OF TEST BORINGS

FAS 1279 (3)	
SANTIAGO CANYON ROAD BRIDGE (SC-9) over Santiago Creek	
LOG OF TEST BORINGS	
SCALE 1" = 100'	BRIDGE 55C-38 FILE DRAWING SHT. 23 of 29

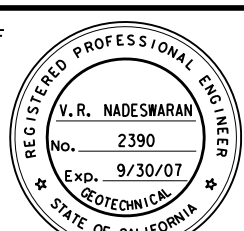
No As-Built Changes

AS BUILT

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

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

ORANGE COUNTY RESOURCES & DEVELOPMENT MANAGEMENT DEPARTMENT	
SANTIAGO CANYON ROAD BRIDGE SC-9	
BRIDGE No. 55C-0038	
AS-BUILT LOG OF TEST BORINGS	
DESIGNED N. SU	SHEET 15
DRAWN M. ANDRASEK	CHECKED V. R. N.
SCALE VARIES	DATE 12/18/06
DRAWING NO.	
OF 15	



N.R. Nader
GEOTECHNICAL PROFESSIONAL
12/18/06 DATE