

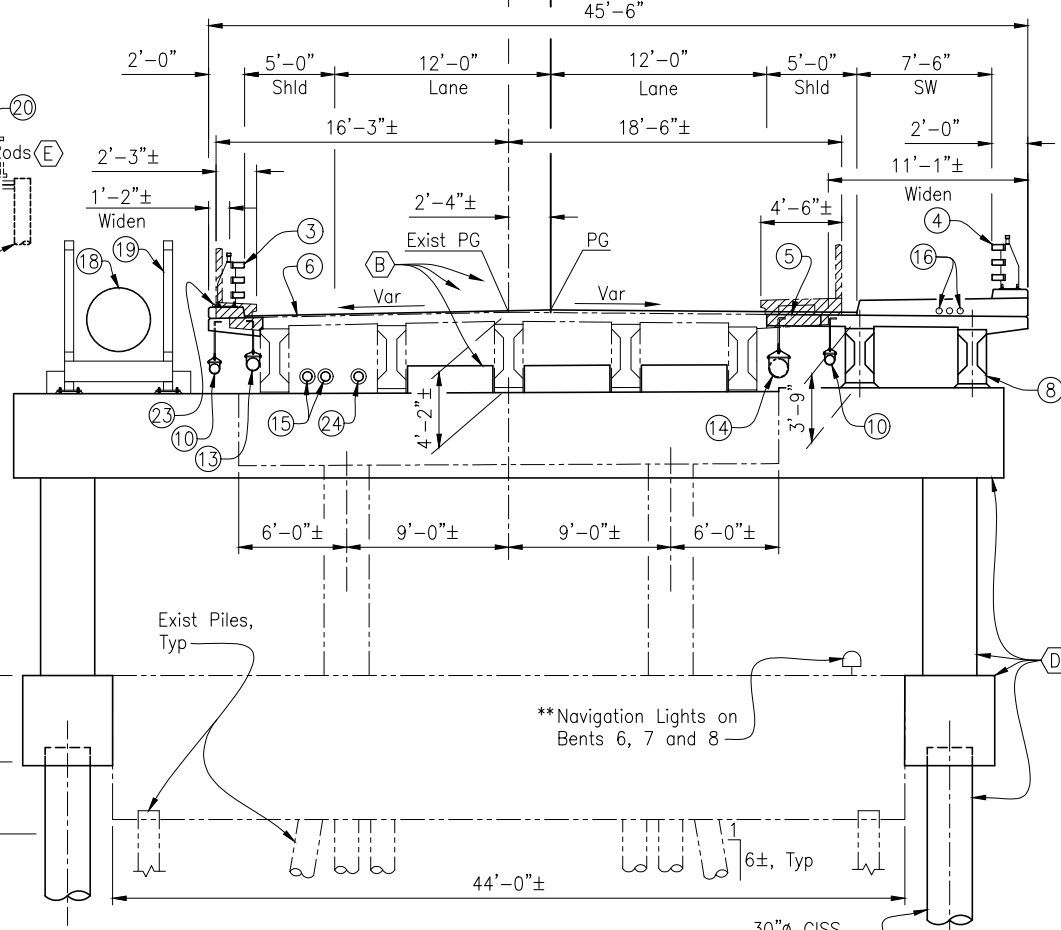
**ELEVATION**  
1"=30'

**RETROFIT LEGEND:**

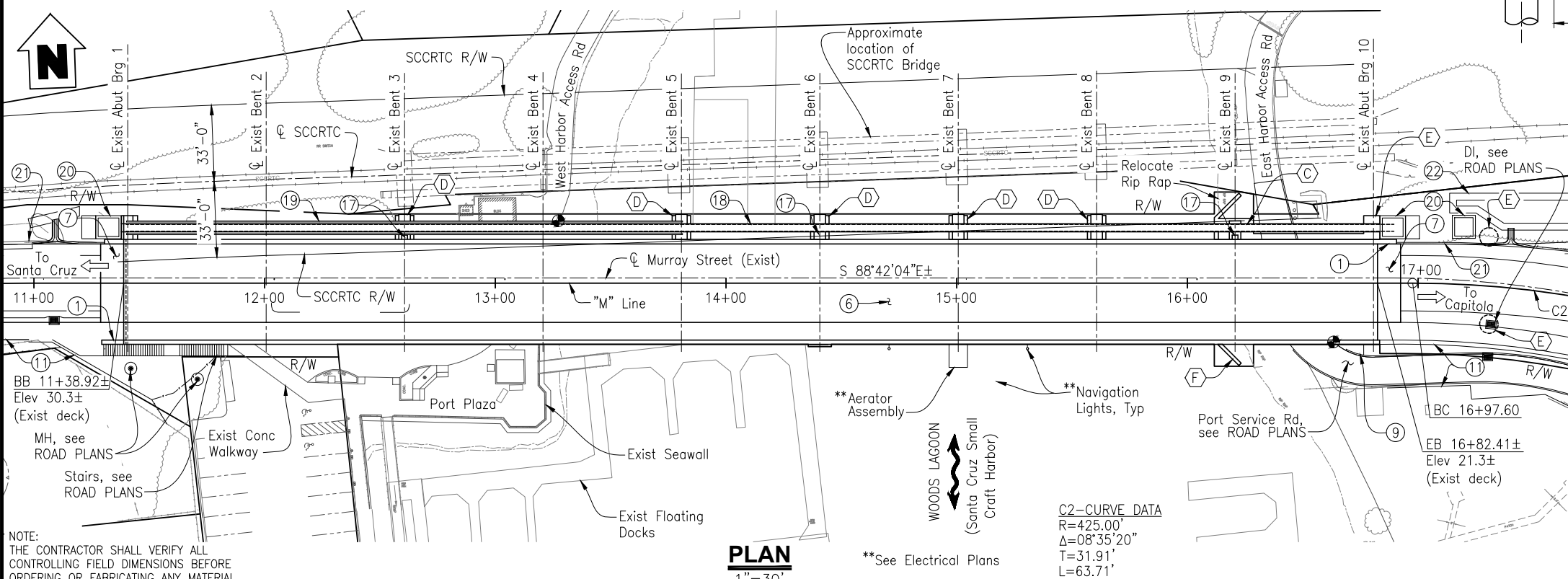
- (A) Concrete Infill Wall
- (B) Shear Key and Seat Extension
- (C) Foundation Retrofit with CISS Piles
- (D) Bent Retrofit with CISS Piles
- (E) Abutment Retrofit with Tie Rods and Anchor Piles
- (F) Curtain Wall

**LEGEND:**

- Indicates Existing Structure
- Indicates New Structure
- ← Indicates Direction of Traffic
- ~ Indicates Direction of Flow
- F Indicates Fixed Bearing
- E Indicates Expansion Bearing
- ▨ Indicates Bridge Removal (Portion)
- Indicates Point of Minimum Vertical Clearance over Port Service Road



**TYPICAL SECTION**  
3/16"=1'-0"



**PLAN**  
1"=30'

**NOTES:**

1. For General Notes and Index to Plans, see "INDEX TO PLANS" sheet.
  2. For Hydrologic Summary, see "FOUNDATION PLAN" sheet.
  3. For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
- (10) Deck Drainage
  - (11) Retaining Wall
  - (12) Reconstruct portion of Seawall
  - (13) 4" Gas Line in 8" casing (PG&E)
  - (14) Reconstruct 12" Water Line (City)
  - (15) PG&E Electrical in 6" casing
  - (16) Future Utility Opening
  - (17) Reset Structure Mounted Electrolier
  - (18) Sanitary Sewer Force Main (SSFM)
  - (19) SSFM Steel Truss Bridge (Spans 1-4)
  - (20) SSFM Vault
  - (21) Midwest Guardrail System, see ROAD PLANS
  - (22) Bioretention Facility, see ROAD PLANS
  - (23) Street Lighting Conduit
  - (24) Comcast Line in 6" casing

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

REGISTERED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**GENERAL PLAN**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

03-08-10	06-16-10	02-08-11	03-22-11	05-28-13	09-18-13	07-01-15	04-15-20	07-23-21	12-07-22	03-28-23	04-21-23
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SCALE	AS SHOWN
SHEET	126 OF 196
VAULT NO.	

B-1

# LOAD AND RESISTANCE FACTOR DESIGN

DESIGN: AASHTO LRFD Bridge Design Specifications, 8th edition and the California Amendments preface dated January 2019.

SEISMIC DESIGN: Existing Structure: Memo to Designers 20-4.  
New Components: Caltrans Seismic Design Criteria (SDC), Version 2.0 dated April 2019.

DEAD LOAD: Includes 35 psf for future wearing surface. Stay-in-place forms not allowed.

LIVE LOADING: HL93 and permit design load.

SEISMIC LOADING: Soil Profile Type F  
Moment Magnitude: Mmax = 7.9  
Peak Ground Acceleration 0.60  
See Site Specific ARS Curve

STRUCTURAL STEEL: Steel Plates: ASTM A709, Grade 50  
fy = 50,000 psi minimum

Tie Rods: ASTM A449, Type 1  
fy = 81,000 psi minimum

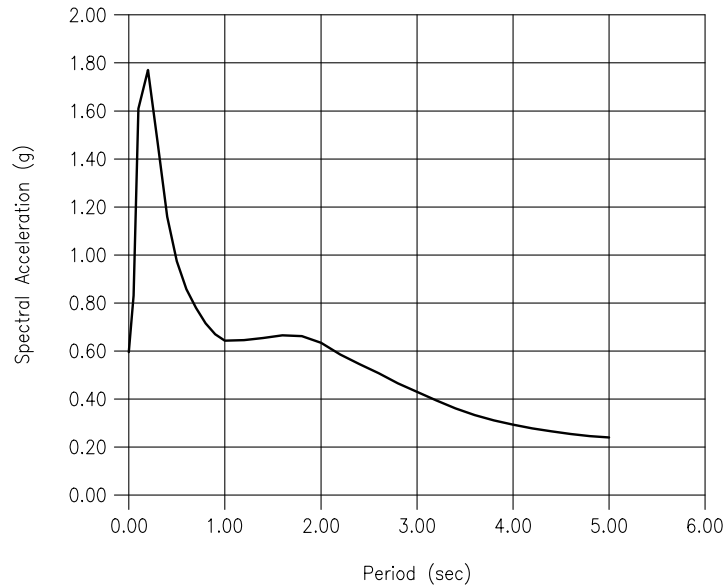
Steel Pipe Piles (CISS Piles): ASTM A53

REINFORCED CONCRETE: fy = 60 ksi  
fc = 3.6 ksi  
n = 8

EXISTING REINFORCED CONCRETE: fye = 44 ksi (Expected, Grade 40)  
f'ce = 5 ksi for existing concrete (Aged)  
n = 7

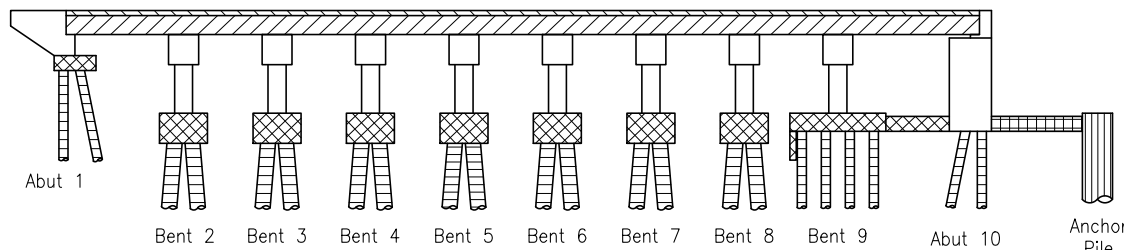
PRESTRESSED CONCRETE: See Prestressing Notes on "PC/PRETENSIONED I GIRDER" sheet.

PILES: See PILE DATA TABLE this sheet.



## ARS CURVE

- NOTES:
- All drilled or cored holes to miss/avoid existing reinforcement.
  - All reinforcement must be pre-fabricated epoxy coated, except Cast-in-steel-shell (CISS) pile reinforcement and girder stirrups. CISS pile reinforcement to be uncoated and girder stirrups to be epoxy coated.
  - Minimum concrete cover for all rebar must be 3" unless noted otherwise.
  - Roughen existing concrete surfaces when pouring concrete against existing concrete surfaces.
  - Contractor to determine location of mechanical couplers. All adjacent mechanical couplers must be staggered by a minimum distance of 5'-0"
  - Bird deterrent spikes to be placed atop of each bent cap and abutments.



## CONCRETE STRENGTH AND TYPE LIMITS

Not to Scale

- Structural Concrete, Bridge
- Structural Concrete, Bridge Footing
- Structural Concrete, Bridge (Polymer Fiber) (4,000 psi at 28 days)
- Precast Prestressed I Girders, see "PC/PRETENSIONED I GIRDER" sheets
- Cast-In-Drilled Hole Concrete Piling with Casing (4,000 psi at 28 days)
- Cast-In-Steel-Shell Concrete Pile (4,000 psi at 28 days)
- Lean Concrete Backfill

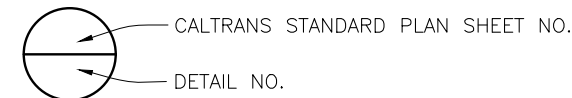
NOTE: THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

# CALTRANS STANDARD PLANS DATED 2018

- A3A ABBREVIATIONS (SHEET 1 OF 3)
- A3B ABBREVIATIONS (SHEET 2 OF 3)
- A3C ABBREVIATIONS (SHEET 3 OF 3)
- A10A LEGEND - LINES AND SYMBOLS (SHEET 1 OF 5)
- A10B LEGEND - LINES AND SYMBOLS (SHEET 2 OF 5)
- A10C LEGEND - LINES AND SYMBOLS (SHEET 3 OF 5)
- A10D LEGEND - LINES AND SYMBOLS (SHEET 4 OF 5)
- A10E LEGEND - LINES AND SYMBOLS (SHEET 5 OF 5)
- RSP A62B LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL - BRIDGE SURCHARGE AND WALL
- A62C LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL - BRIDGE
- RSP B0-1 BRIDGE DETAILS
- RSP B0-3 BRIDGE DETAILS
- B0-5 BRIDGE DETAILS
- B0-13 BRIDGE DETAILS
- B6-1 T-BEAM DETAILS
- B6-10 UTILITY OPENINGS - T-BEAM
- B6-21 JOINT SEALS (MAXIMUM MOVEMENT RATING = 2")
- B7-5 DECK DRAINS
- B7-6 DECK DRAINS - TYPES D-1 AND D-2

## DATED 2023

- B9-3 STRUCTURE APPROACH - TYPE R (10)
- B9-4 STRUCTURE APPROACH - TYPE EQ (10)
- B9-5 STRUCTURE APPROACH - SLAB DETAILS



## PILE DATA TABLE

LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		DESIGN TIP ELEVATIONS (ft)	SPECIFIED TIP ELEVATIONS (ft)	NOMINAL DRIVING RESISTANCE (kips)
		COMPRESSION	TENSION			
Abut 1 (S)	CISS NPS 16x0.5	170	0	-15 (a), -14 (d)	-15	170
Abut 1 (N)	CISS NPS 16x0.5	110	0	3 (a), 0 (d)	0	110
Bent 2 (S)	CISS NPS 30x0.625	460	170	-53 (a), -55 (b), -53 (d)	-55	1,340
Bent 3 (S)	CISS NPS 30x0.625	460	170	-53 (a), -55 (b), -53 (d)	-55	1,340
Bent 3 (N)	CISS NPS 30x0.625	330	0	-23 (a), -19 (d)	-23	1,050
Bent 4 (S)	CISS NPS 30x0.625	440	70	-34 (a), -36 (b), -39 (d)	-39	1,560
Bent 5 (S)	CISS NPS 30x0.625	450	190	-68 (a), -72 (b), -68 (d)	-72	1,530
Bent 5 (N)	CISS NPS 30x0.625	400	240	-43 (a), -54 (b), -48 (d)	-54	1,530
Bent 6 (S)	CISS NPS 30x0.625	450	190	-88 (a), -91 (b), -80 (d)	-91	1,620
Bent 6 (N)	CISS NPS 30x0.625	380	250	-88 (a), -95 (b), -80 (d)	-95	1,700
Bent 7 (S)	CISS NPS 30x0.625	500	190	-105 (a), -103 (b), -80 (d)	-105	1,640
Bent 7 (N)	CISS NPS 30x0.625	440	250	-105 (a), -107 (b), -80 (d)	-107	1,730
Bent 8 (S)	CISS NPS 30x0.625	500	190	-105 (a), -103 (b), -80 (d)	-105	1,640
Bent 8 (N)	CISS NPS 30x0.625	440	250	-105 (a), -107 (b), -80 (d)	-107	1,730
Bent 9 (S)	CISS NPS 16x0.5	330	40	-87 (a), -62 (b), -33 (d)	-87	520
Bent 9 (N)	CISS NPS 16x0.5	330	80	-87 (a), -86 (b), -33 (d)	-87	530
Abut 10 (S)	CISS NPS 16x0.5	260	60	-32 (a), -31 (b), -26 (d)	-32	260
Abut 10 (N)	CISS NPS 16x0.5	180	50	-41 (a), -39 (b), -34 (d)	-41	180
Abut 10 Anchor	96" CIDH	N/A	N/A	-53 (d)	-53	N/A

Notes: 1. Design tip elevations for Abutments and Bents are controlled by a) Compression, b) Tension, c) Settlement, d) Lateral load.  
2. (N) and (S) designate piles at North and South side of Bents, respectively.

# INDEX TO PLANS

SHEET NO.	TITLE
B-1	GENERAL PLAN
B-2	INDEX TO PLANS
B-3	FOUNDATION PLAN
B-4	ABUTMENT 1 PARTIAL REMOVAL
B-5	ABUTMENT 1 LAYOUT
B-6	ABUTMENT 1 DETAILS NO. 1
B-7	ABUTMENT 1 DETAILS NO. 2
B-8	BENT 2 LAYOUT
B-9	BENT 3 LAYOUT
B-10	BENTS 2 & 3 DETAILS NO. 1
B-11	BENTS 2 & 3 DETAILS NO. 2
B-12	BENTS 2 & 3 DETAILS NO. 3
B-13	BENT 4 LAYOUT
B-14	BENT 4 DETAILS NO. 1
B-15	BENT 4 DETAILS NO. 2
B-16	BENT 4 DETAILS NO. 3
B-17	BENT 4 DETAILS NO. 4
B-18	BENTS 5 THRU 8 LAYOUT
B-19	BENTS 5 THRU 8 DETAILS NO. 1
B-20	BENTS 5 THRU 8 DETAILS NO. 2
B-21	BENTS 5 THRU 8 DETAILS NO. 3
B-22	BENT 9 AND ABUTMENT 10 PLAN
B-23	BENT 9 AND ABUTMENT 10 ELEVATION
B-24	BENT 9 LAYOUT NO. 1
B-25	BENT 9 LAYOUT NO. 2
B-26	BENT 9 DETAILS NO. 1
B-27	BENT 9 DETAILS NO. 2
B-28	BENT 9 DETAILS NO. 3
B-29	ABUTMENT 10 PARTIAL REMOVAL
B-30	ABUTMENT 10 PLAN & ELEVATION
B-31	ABUTMENT 10 DETAILS NO. 1
B-32	ABUTMENT 10 DETAILS NO. 2
B-33	ABUTMENT 10 DETAILS NO. 3
B-34	PILE DETAILS
B-35	FENDER DETAILS
B-36	TYPICAL SECTION
B-37	POLYESTER CONCRETE OVERLAY DETAILS
B-38	GIRDER LAYOUT
B-39	END DIAPHRAGM DETAILS NO. 1
B-40	END DIAPHRAGM DETAILS NO. 2
B-41	END DIAPHRAGM DETAILS NO. 3
B-42	PC/PRETENSIONED I GIRDER (HARPED STRANDS)
B-43	PC/PRETENSIONED I GIRDER (MISC DETAILS)
B-44	DECK DRAIN DETAILS
B-45	CALIFORNIA ST-75 BRIDGE RAIL DETAILS NO. 1 (Mod)
B-46	CALIFORNIA ST-75 BRIDGE RAIL DETAILS NO. 2 (Mod)
B-47	CALIFORNIA ST-75 BRIDGE RAIL DETAILS NO. 3 (Mod)
B-48	CALIFORNIA ST-75 BRIDGE RAIL DETAILS NO. 4 (Mod)
B-49	CALIFORNIA ST-75 BRIDGE RAIL DETAILS NO. 5 (Mod)
B-50	CALIFORNIA ST-75SW BRIDGE RAIL DETAILS NO. 1 (Mod)
B-51	CALIFORNIA ST-75SW BRIDGE RAIL DETAILS NO. 2 (Mod)
B-52	CALIFORNIA ST-75SW BRIDGE RAIL DETAILS NO. 3 (Mod)
B-53	CALIFORNIA ST-75SW BRIDGE RAIL DETAILS NO. 4 (Mod)
B-54	CALIFORNIA ST-75SW BRIDGE RAIL DETAILS NO. 5 (Mod)
B-55	SLOPE PAVING - FULL SLOPE DETAILS NO. 1
B-56	SLOPE PAVING - FULL SLOPE DETAILS NO. 2
B-57	SLOPE PAVING - FULL SLOPE DETAILS NO. 3
B-58	LOG OF TEST BORINGS NO. 1 OF 7
B-59	LOG OF TEST BORINGS NO. 2 OF 7
B-60	LOG OF TEST BORINGS NO. 3 OF 7
B-61	LOG OF TEST BORINGS NO. 4 OF 7
B-62	AS-BUILT LOG OF TEST BORINGS NO. 5 OF 7
B-63	AS-BUILT LOG OF TEST BORINGS NO. 6 OF 7
B-64	AS-BUILT LOG OF TEST BORINGS NO. 7 OF 7
B-65	LOG OF TEST BORINGS RW No. 9-1
B-66	LOG OF TEST BORINGS RW No. 9-2
B-67	LOG OF TEST BORINGS RW No. 11
B-68	LOG OF TEST BORINGS RW No. 17-1
B-69	LOG OF TEST BORINGS RW No. 17-2
B-70	LOG OF TEST BORINGS RW No. 18-1
B-71	LOG OF TEST BORINGS RW No. 18-2

B-2

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\002-index.dwg Layout Tab: Layout1 May 17, 2024 12:50pm gimbsen

REGISTERED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

TRC Engineers, or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO. 36C0108
CONTRACT NO.
EA NO.

**MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT**

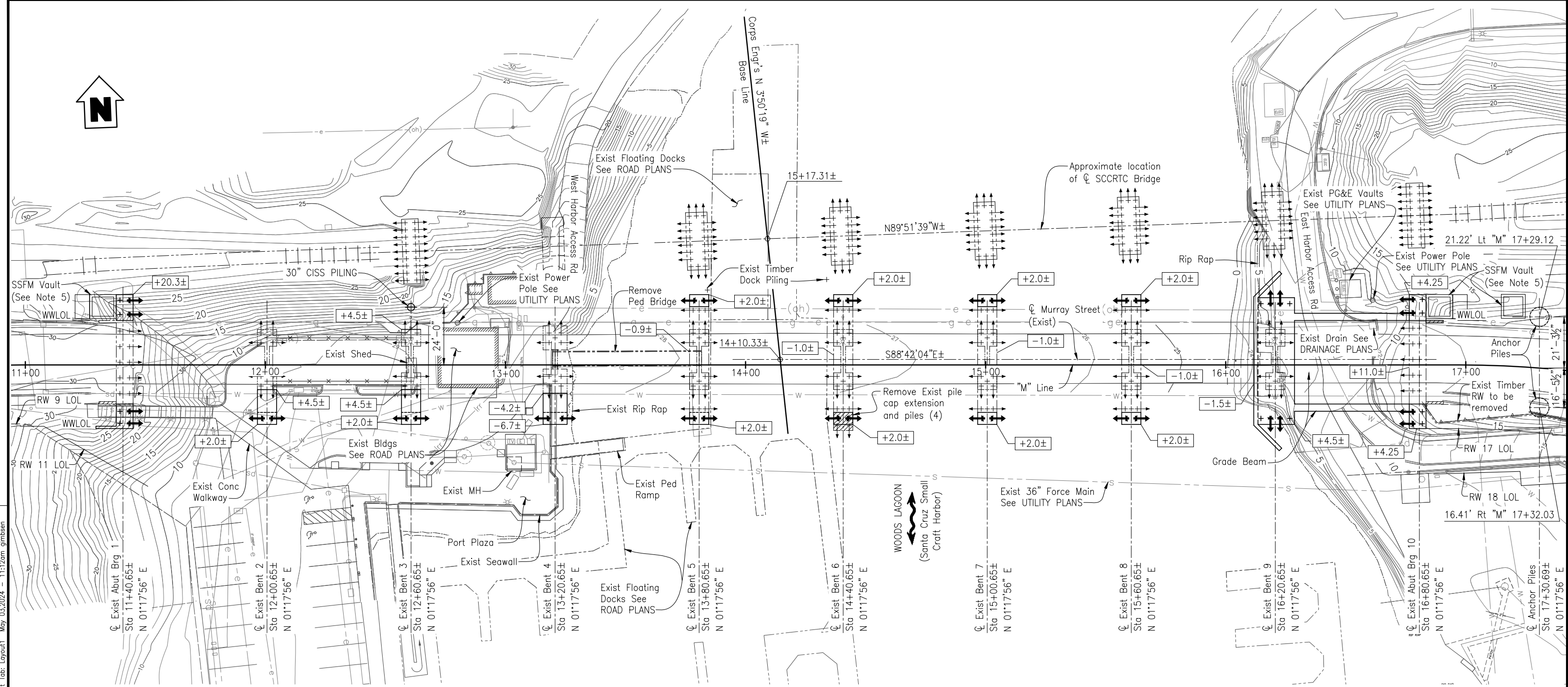
**INDEX TO PLANS**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

03-22-11	05-26-13	09-18-13	07-20-15	03-18-20	01-27-21	07-28-21	12-29-21	03-23-23	04-21-23
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SCALE AS SHOWN
SHEET 127 OF 196
Vault No.



**PLAN**  
1"=20'

**BENCHMARK**  
SANTA CRUZ CITY BENCHMARK F6-16, A LEADPLUG AND TAG IN THE TOP OF THE CONCRETE CURB AT THE EASTERN SIDE OF OWEN STREET AT ITS INTERSECTION WITH HALL STREET. ELEVATION 50.85 FEET (NGVD 29).

HYDROLOGIC SUMMARY			
DRAINAGE AREA:	3.3 SQUARE MILES		
FREQUENCY (YEARS)	CORP DESIGN FLOOD	CORP BASE FLOOD	FLOOD OF RECORD
DISCHARGE (CUBIC FEET PER SECOND)	50	100	NA
WATER SURFACE (ELEVATION AT BRIDGE)	11.4	13.3	NA

- LEGEND:**
- +2.0±— Indicates bottom of footing
  - + Indicates Exist Vertical Pile
  - + Indicates New Vertical Pile
  - +↗ Indicates Exist Battered Pile
  - ↗ Indicates New Battered Pile
  - Indicates Existing Structure
  - Indicates New Structure
  - ↔ Indicates Direction of flow

- NOTES:**
- Elevations are based on NGVD 29 datum. Mean Lower Low Water datum is approximately 2.7± below NGVD 29.
  - Roadways and curbs not shown, see ROAD PLANS.
  - See UTILITY PLANS for utilities not shown.
  - Contour lines around Bent 9 are shown prior to scour caused by the 2011 Japanese Tsunami. Current ground level surfaces are represented in section views contained on Bent 9 detail sheets.
  - See SANITARY SEWER FORCE MAIN PLANS for SSFM Vault details.

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, State of California.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

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BRIDGE NO.	36C0108
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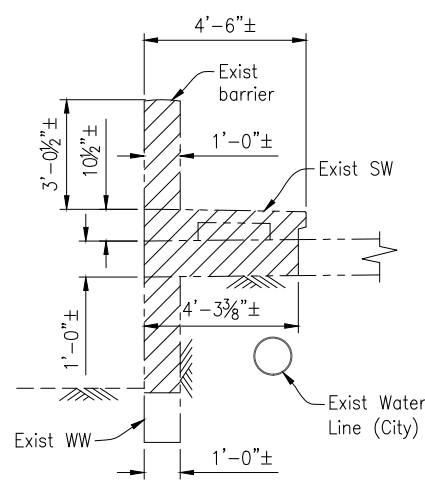
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**FOUNDATION PLAN**

REVISION DATES (PRELIMINARY STAGE ONLY)

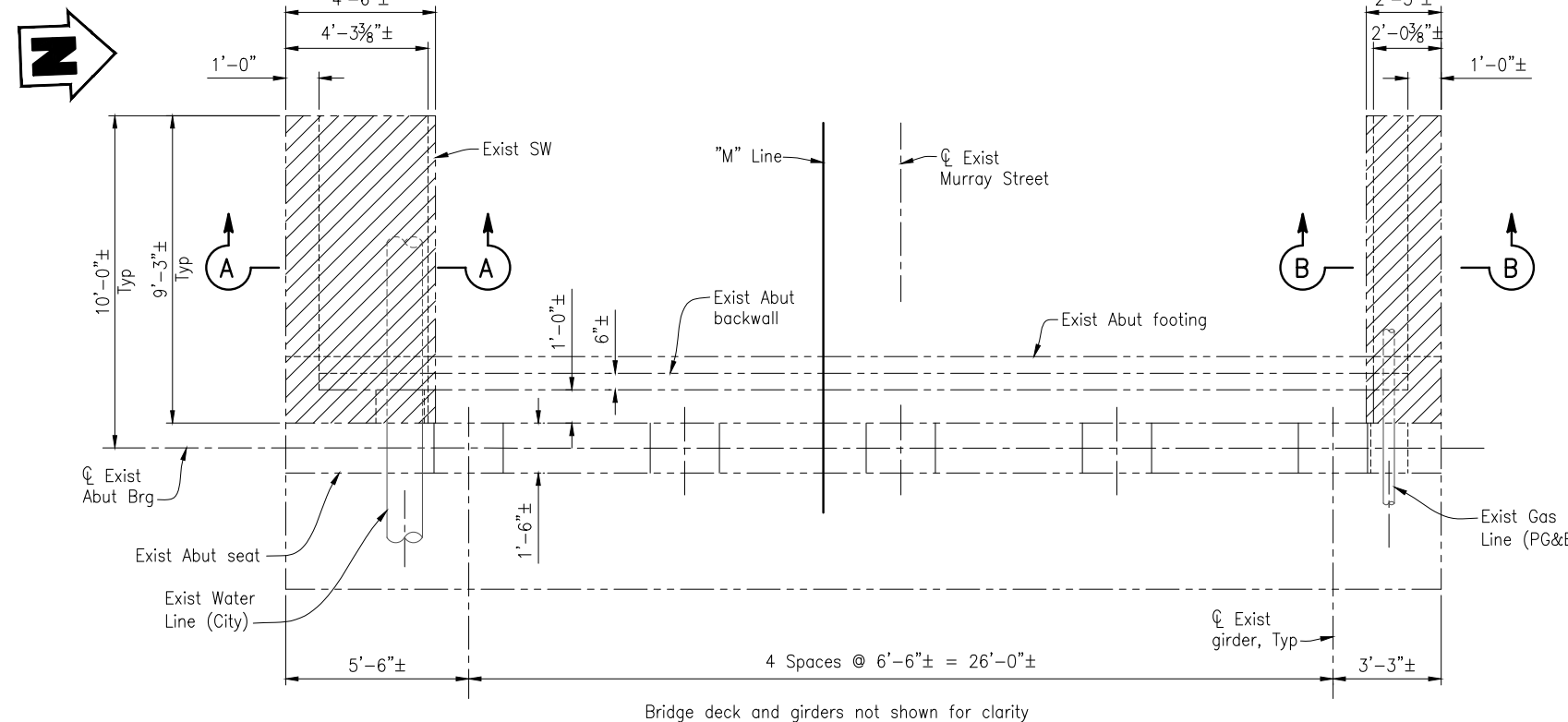
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SCALE	AS SHOWN
SHEET	128 OF 196
Vault No.	

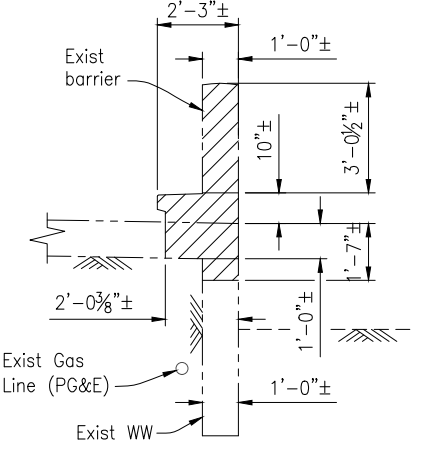
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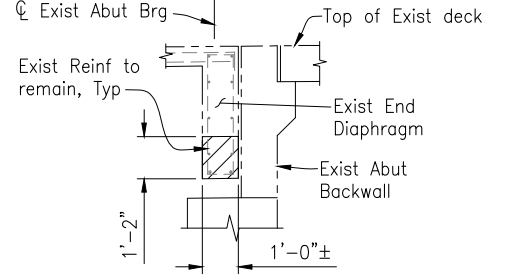
**SECTION A-A**  
3/8"=1'-0"



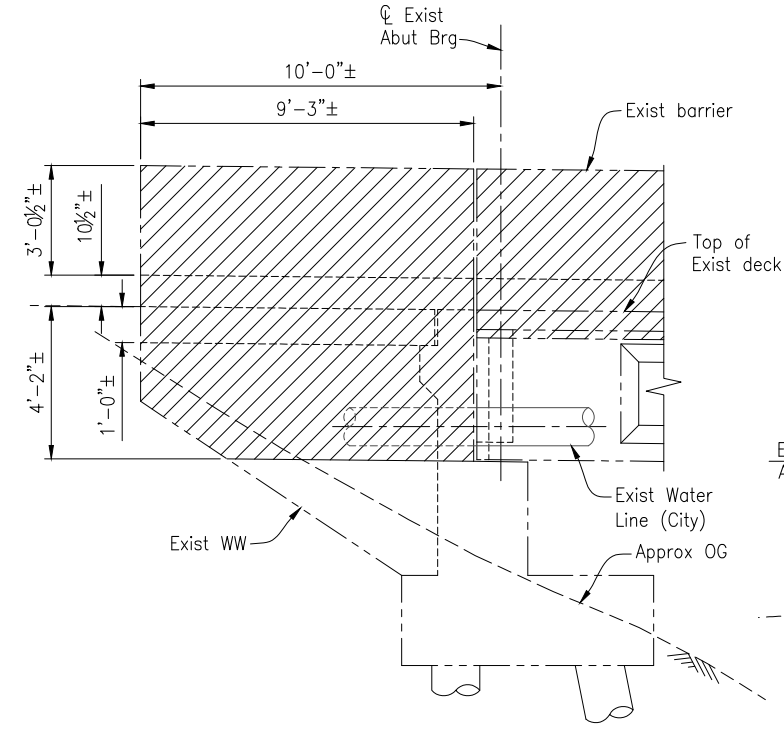
**PLAN**  
3/8"=1'-0"



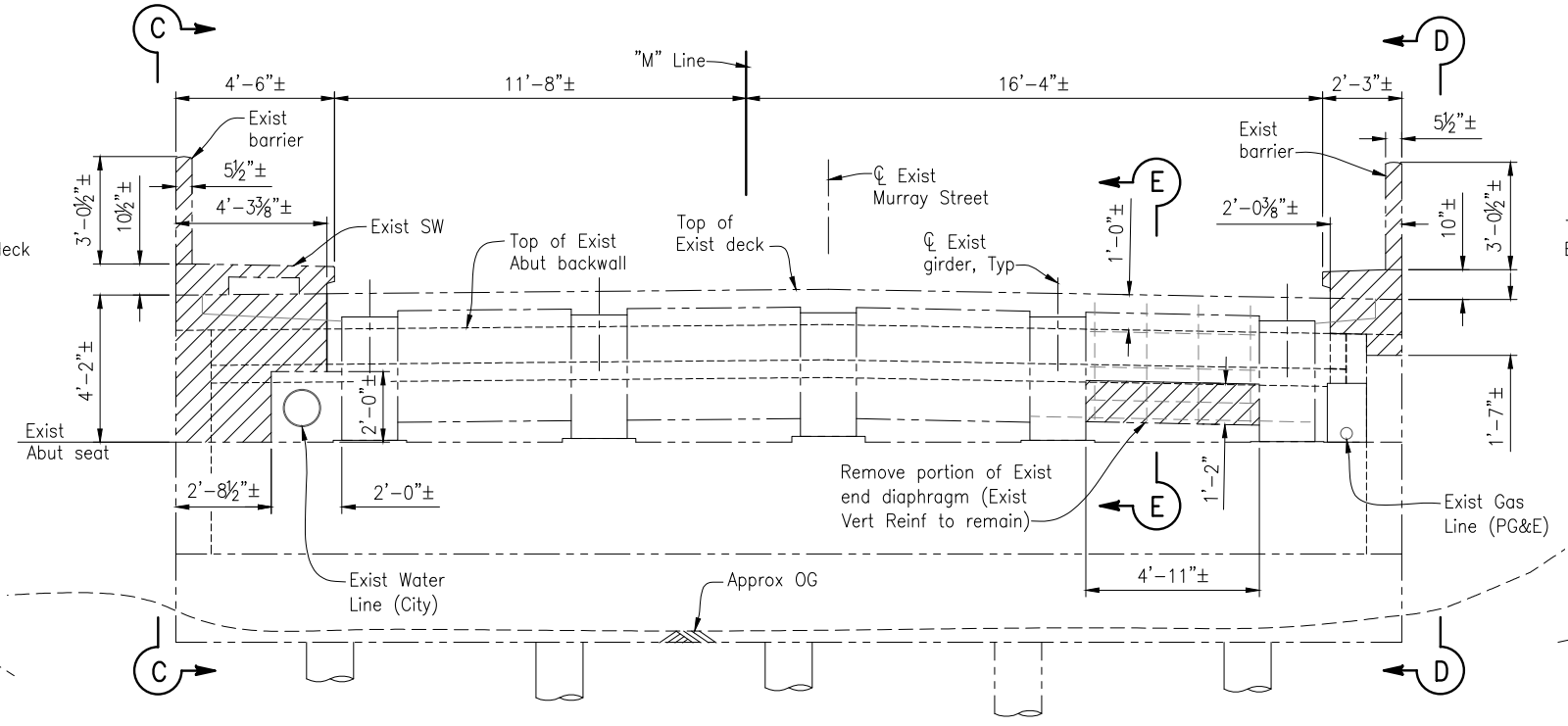
**SECTION B-B**  
3/8"=1'-0"



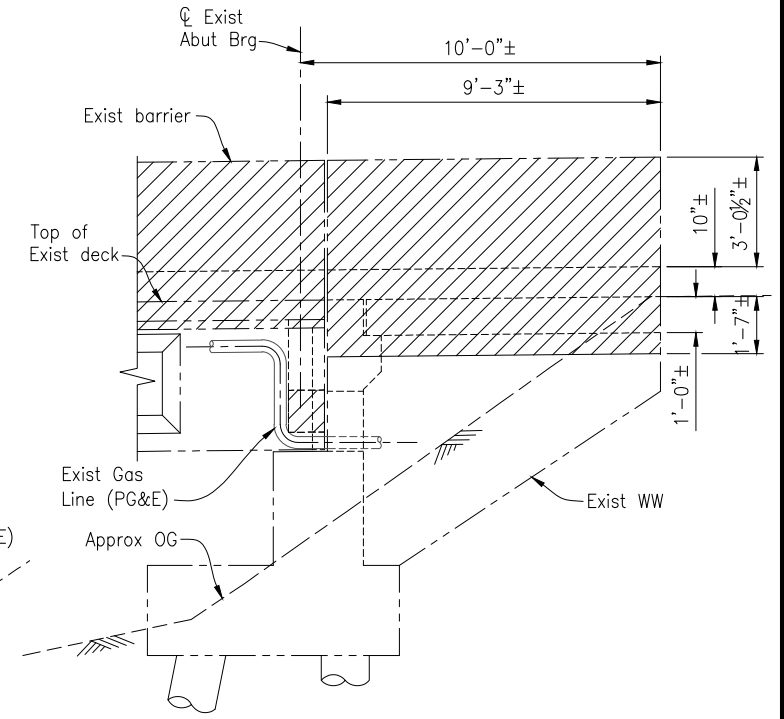
**SECTION E-E**  
3/8"=1'-0"



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



**ELEVATION**  
3/8"=1'-0"



**VIEW D-D**  
3/8"=1'-0"

**NOTES:**

- Water Line (City) to be reconstructed, see ROAD PLANS.
- Gas Line (PG&E) to be reconstructed, see ROAD PLANS.

**LEGEND:**

- Indicates Existing Structure
- Indicates New Structure
- ▨ Indicates Bridge Removal (Portion)

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

CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
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 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

MARK IMBRIANI  
 PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**ABUTMENT 1 PARTIAL REMOVAL**

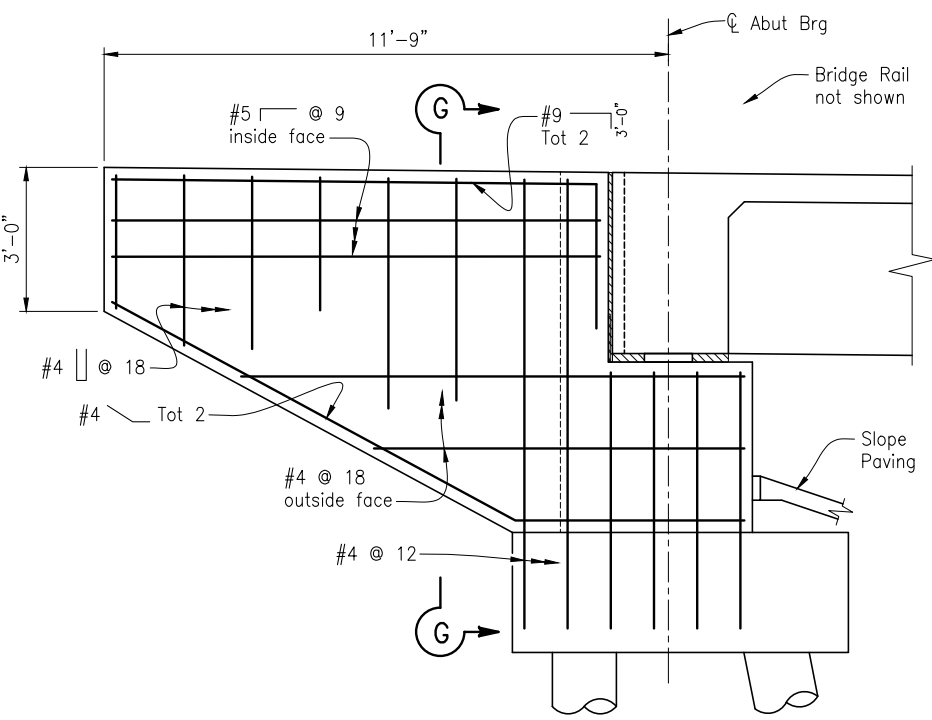
DISREGARD PRINTS BEARING EARLIER REVISION DATES →
 

03-22-11	05-26-13	09-18-13	07-20-15	03-17-20	07-28-21	12-29-22	03-28-23	04-21-23
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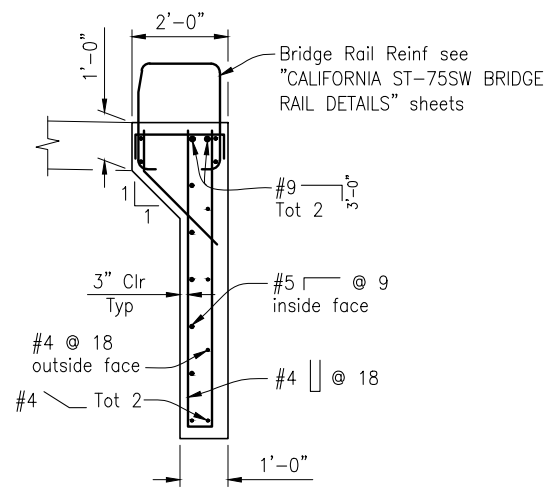
SCALE	AS SHOWN
SHEET	129 OF 196
Vault No.	



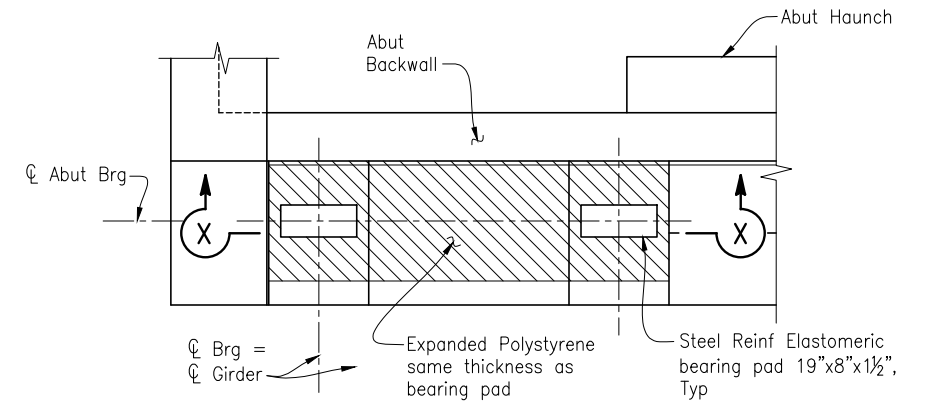




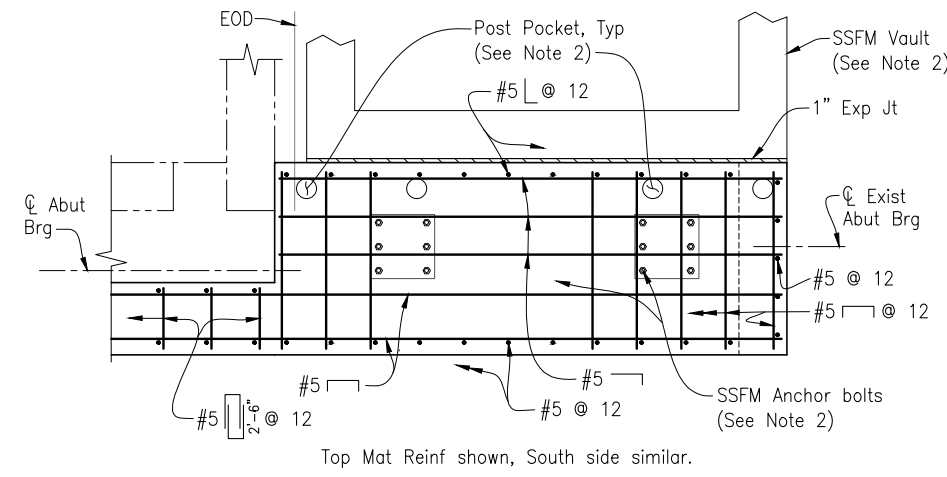
**WINGWALL ELEVATION**  
1/2"=1'-0"



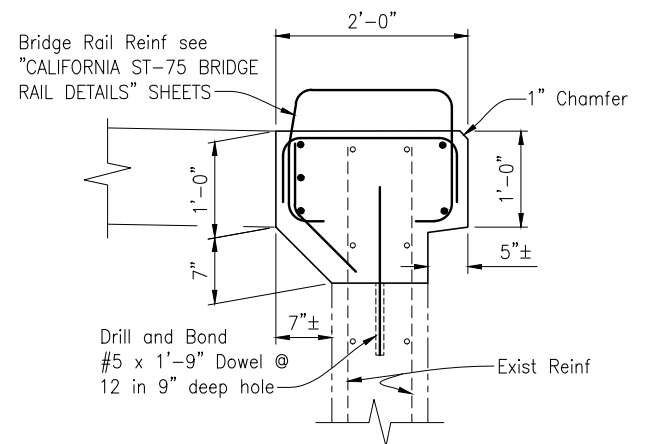
**SECTION G-G**  
1/2"=1'-0"



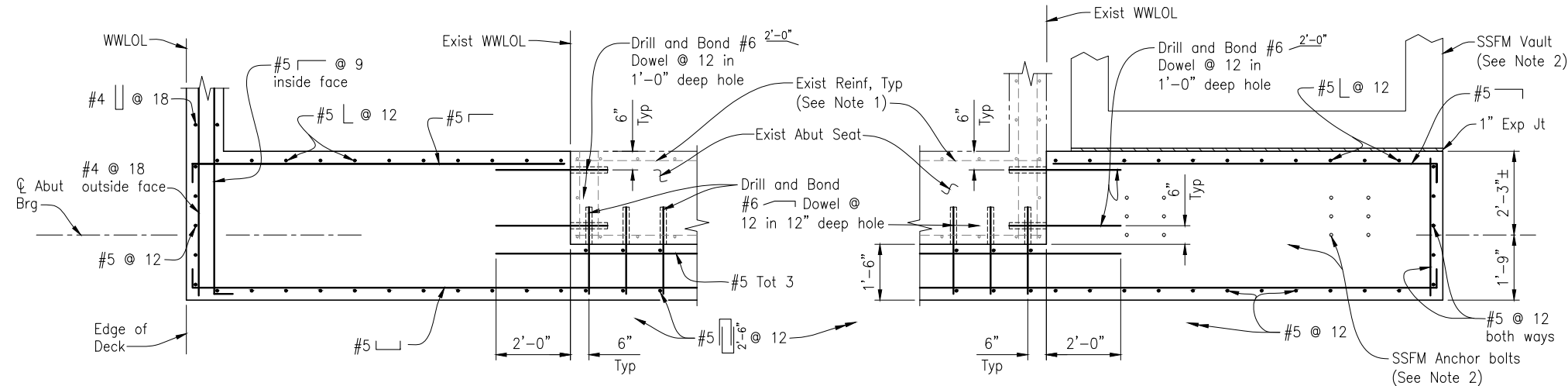
**SECTION X-X**  
**BEARING PAD DETAILS**  
1/2"=1'-0"



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



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



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

**LEGEND:**  
--- Indicates Existing Structure  
— Indicates New Structure

**NOTES:**  
1. The Contractor must protect existing reinforcement.  
2. For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.

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

REGISTERED PROFESSIONAL ENGINEER  
**CAMERON J. PINKERTON**  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

TRC Engineers or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

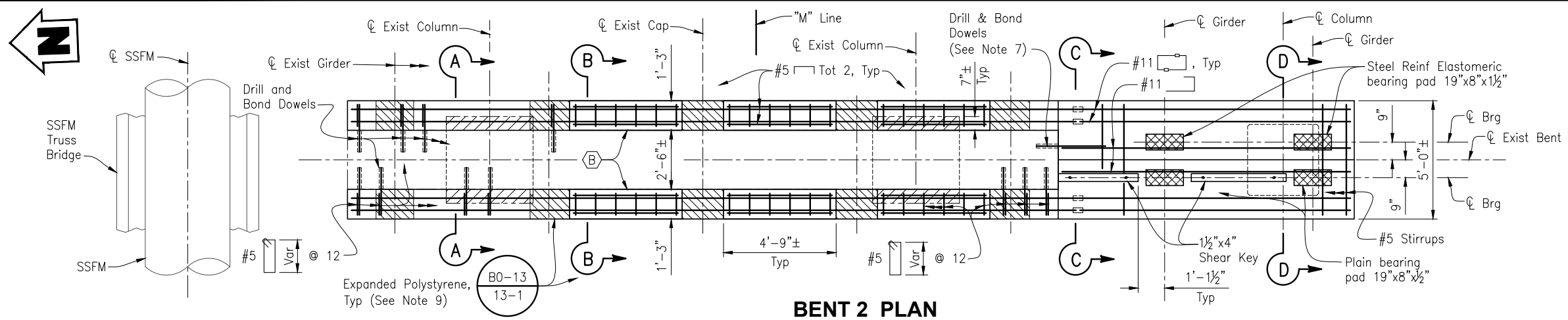
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**ABUTMENT 1 DETAILS NO. 2**

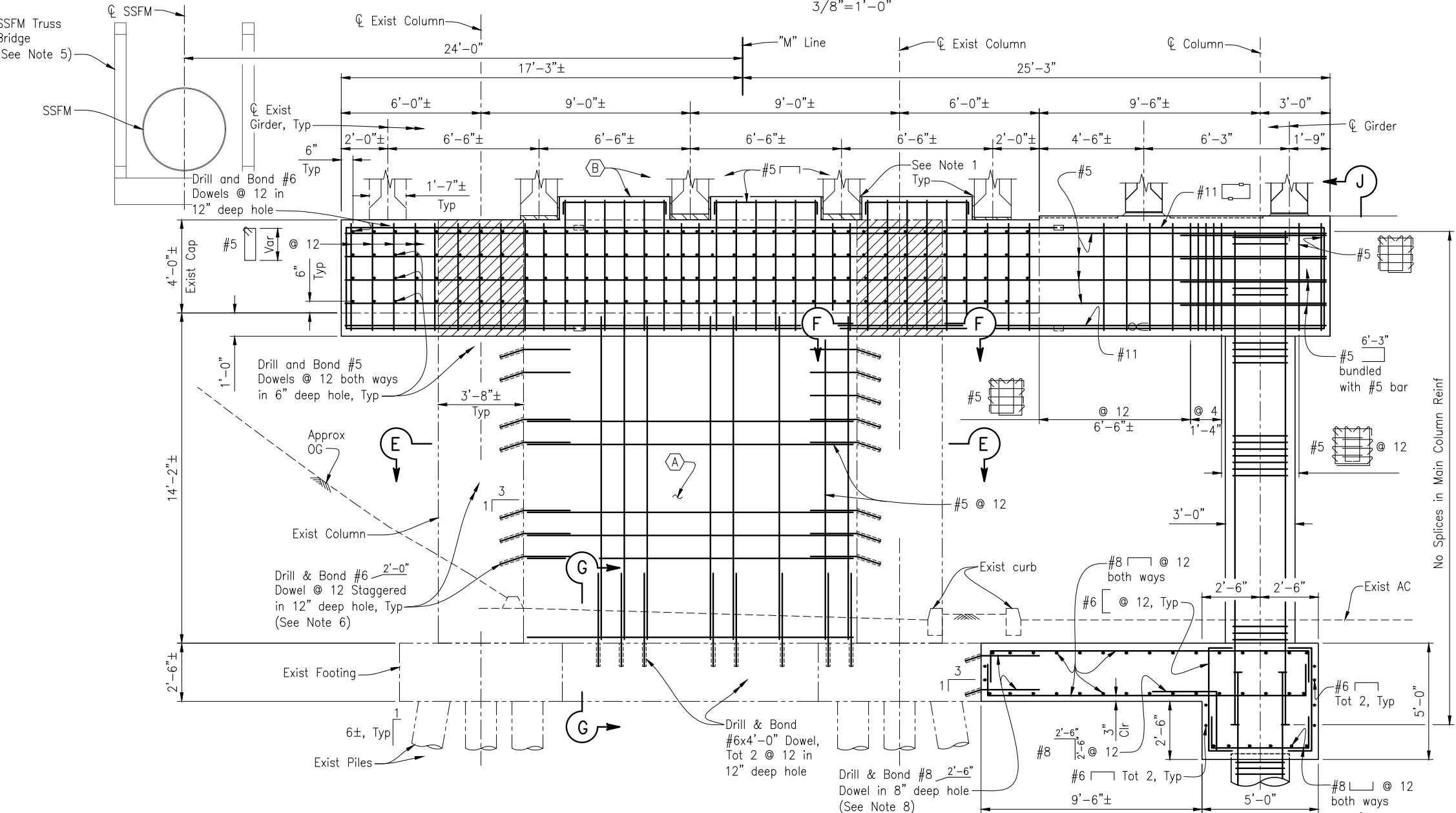
REVISION DATES (PRELIMINARY STAGE ONLY)

03-22-11	05-26-13	09-18-13	07-20-15	03-19-20	07-25-21	12-28-22	03-25-23	04-21-23
----------	----------	----------	----------	----------	----------	----------	----------	----------

SCALE	AS SHOWN
SHEET	132 OF 196
Vault No.	



**BENT 2 PLAN**  
3/8"=1'-0"



**BENT 2 ELEVATION**  
3/8"=1'-0"

- NOTES:**
- 1" Expanded Polystyrene (B0-13 13-2)
  - For SECTION A-A thru D-D, see "BENTS 2 & 3 DETAILS NO. 1" sheet.
  - For SECTION E-E thru G-G, see "BENTS 2 & 3 DETAILS NO. 2" sheet.
  - For ELEVATION J-J see "BENTS 2 & 3 DETAILS NO. 3" sheet.
  - For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
  - See DRILL & BOND STAGGER DETAIL on "BENTS 2 & 3 DETAILS NO. 2" sheet.
  - See DRILL & BOND DOWELS AT BENT CAP ENDS on "BENTS 2 & 3 DETAILS NO. 2" sheet.
  - See DOWEL LAYOUT on "BENTS 2 & 3 DETAILS NO. 3" sheet.
  - Polystyrene thickness varies, field verify.
  - The Contractor must protect existing reinforcement.

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)
  - ⊕ Indicates bundled bars
  - ⊕ Indicates Ultimate Butt Splice (Alternate Adjacent Splices)

- RETROFIT LEGEND:**
- (A) Concrete Infill Wall
  - (B) Shear Key and Seat Extension

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, State of California. Includes the TRC logo and project information.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

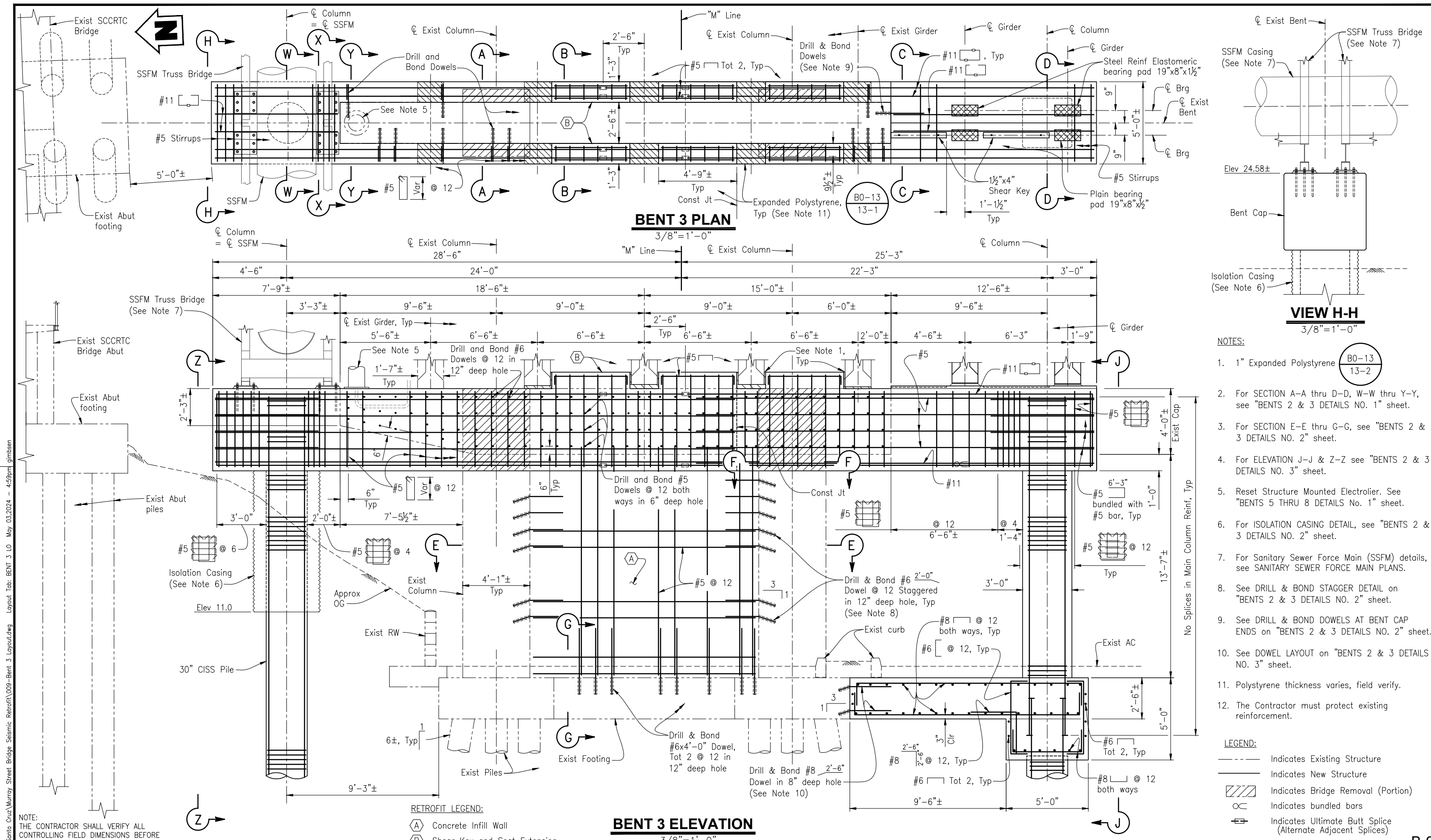
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 2 LAYOUT**

REVISION DATES (PRELIMINARY STAGE ONLY)

03-27-11	09-13-13	07-01-15	03-10-20	07-28-21	12-08-22	03-28-23	04-21-23
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SCALE	AS SHOWN
SHEET	133 OF 196
Vault No.	



- NOTES:**
- 1" Expanded Polystyrene (B0-13 13-2)
  - For SECTION A-A thru D-D, W-W thru Y-Y, see "BENTS 2 & 3 DETAILS NO. 1" sheet.
  - For SECTION E-E thru G-G, see "BENTS 2 & 3 DETAILS NO. 2" sheet.
  - For ELEVATION J-J & Z-Z see "BENTS 2 & 3 DETAILS NO. 3" sheet.
  - Reset Structure Mounted Electrolier. See "BENTS 5 THRU 8 DETAILS No. 1" sheet.
  - For ISOLATION CASING DETAIL, see "BENTS 2 & 3 DETAILS NO. 2" sheet.
  - For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
  - See DRILL & BOND STAGGER DETAIL on "BENTS 2 & 3 DETAILS NO. 2" sheet.
  - See DRILL & BOND DOWELS AT BENT CAP ENDS on "BENTS 2 & 3 DETAILS NO. 2" sheet.
  - See DOWEL LAYOUT on "BENTS 2 & 3 DETAILS NO. 3" sheet.
  - Polystyrene thickness varies, field verify.
  - The Contractor must protect existing reinforcement.

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)
  - ⊕ Indicates bundled bars
  - ⊕⊕ Indicates Ultimate Butt Splice (Alternate Adjacent Splices)

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

REGISTRED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0	1	2	3
---	---	---	---

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO. 36C0108
CONTRACT NO.
EA NO.

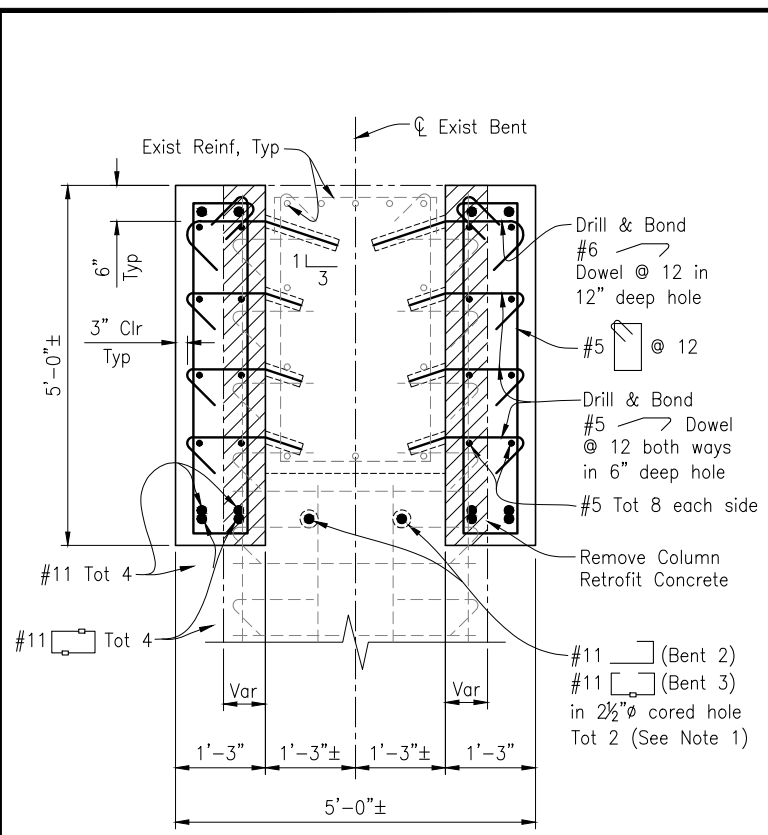
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 3 LAYOUT**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

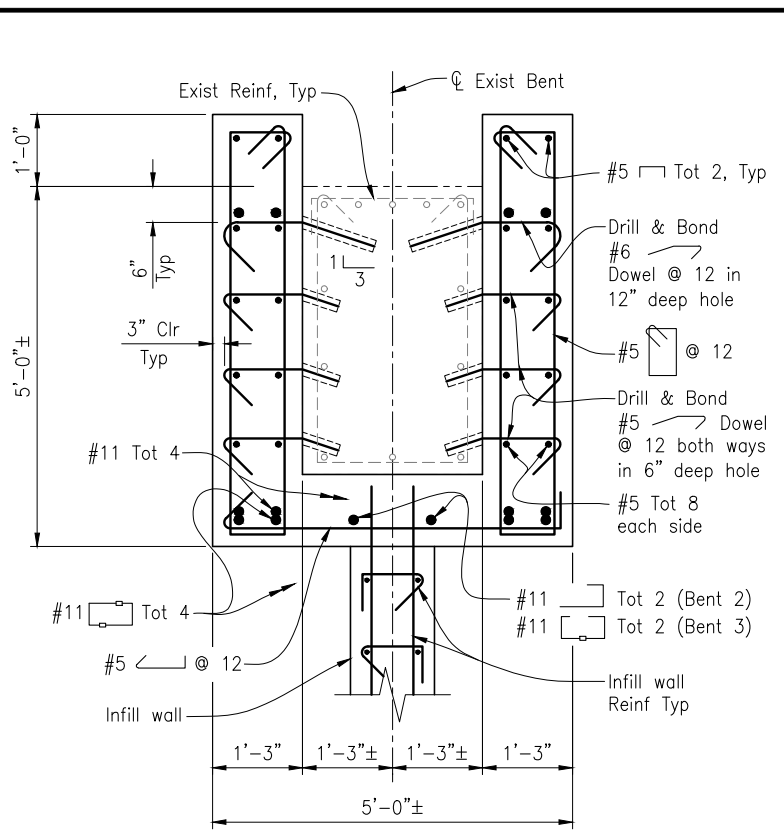
03-16-20	07-01-21	12-08-22	03-23-23	04-21-23
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SCALE AS SHOWN
SHEET 134 OF 196
Vault No.

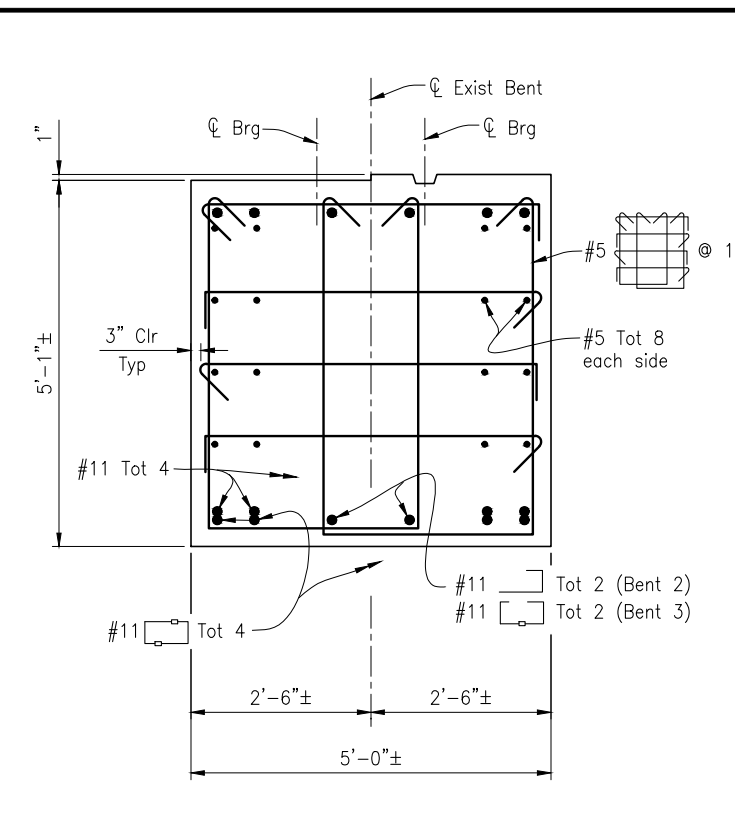
B-9



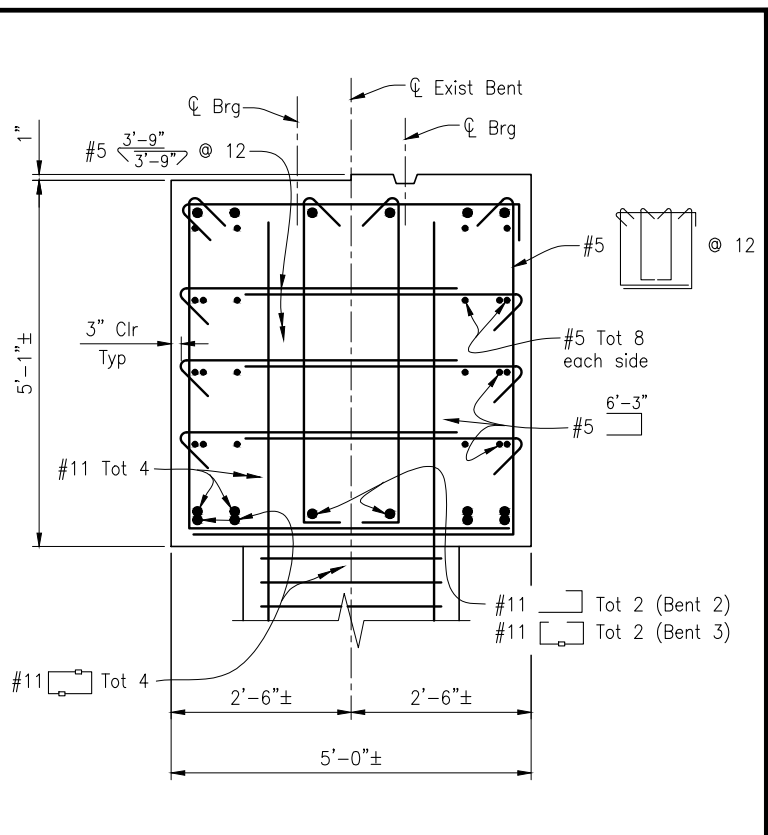
**SECTION A-A**  
3/4"=1'-0"



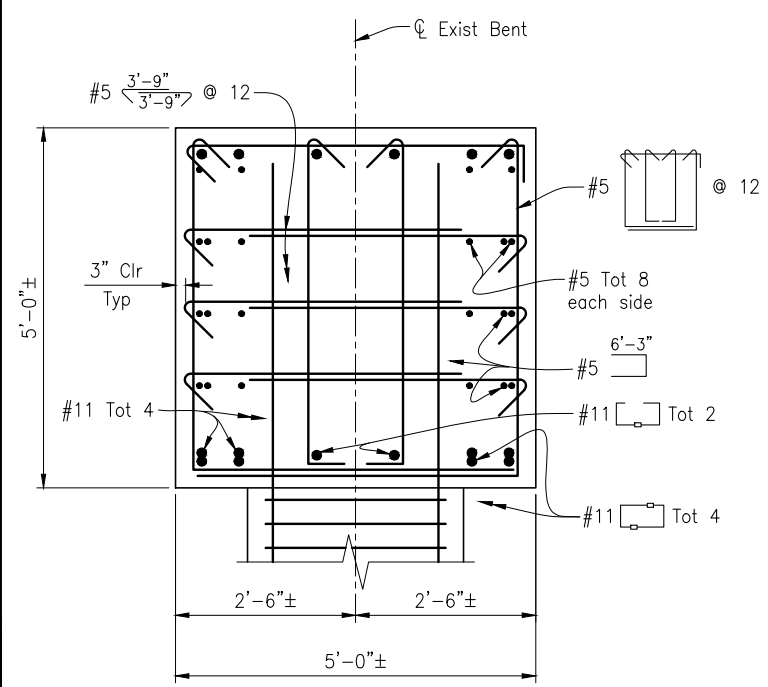
**SECTION B-B**  
3/4"=1'-0"



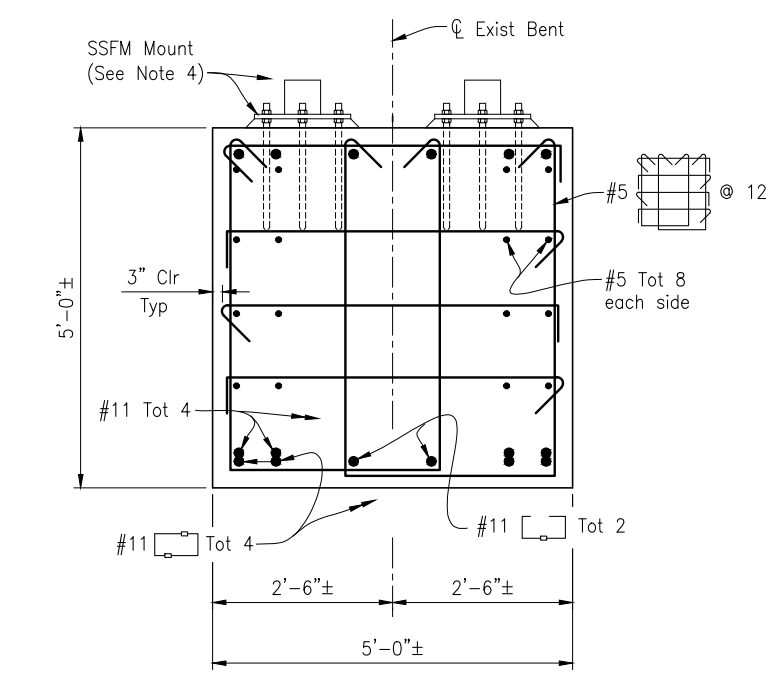
**SECTION C-C**  
3/4"=1'-0"



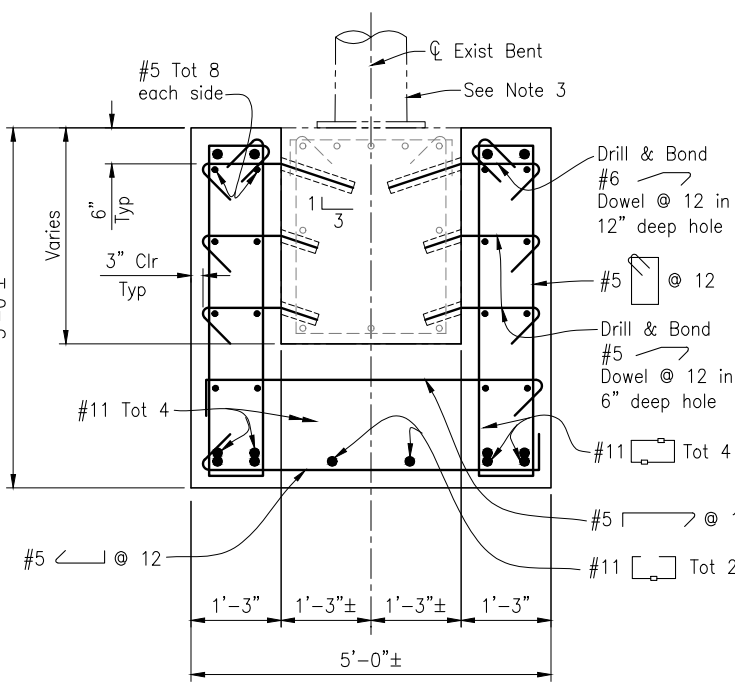
**SECTION D-D**  
3/4"=1'-0"



**BENT 3 ONLY**  
**SECTION W-W**  
3/4"=1'-0"



**BENT 3 ONLY**  
**SECTION X-X**  
3/4"=1'-0"



**BENT 3 ONLY**  
**SECTION Y-Y**  
3/4"=1'-0"

- NOTES:**
- Holes cored through existing column to miss existing reinforcement. Pressure grout bars in cored holes.
  - The Contractor must protect existing reinforcement.
  - Reset Structure Mounted Electrolier
  - For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - /// Indicates Bridge Removal (Portion)

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, State of California. Includes project name: Santa Cruz/Murray Street Bridge Seismic Retrofit V10-Bent 2-3-3-Det-1.dwg.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

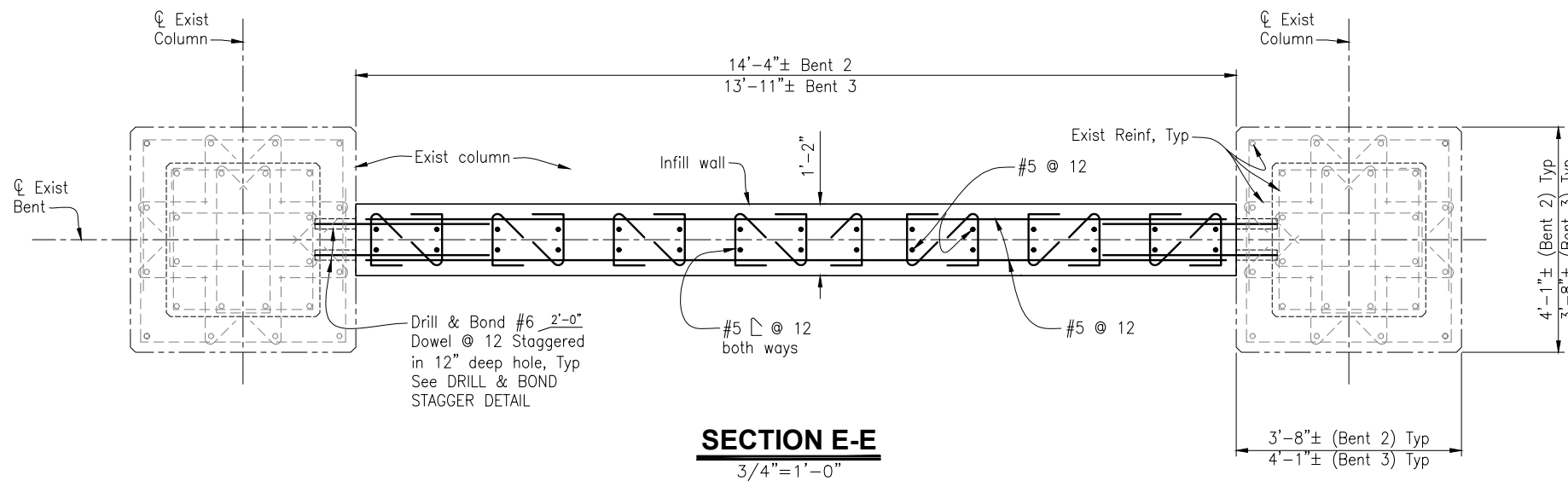
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENTS 2 & 3 DETAILS NO. 1**

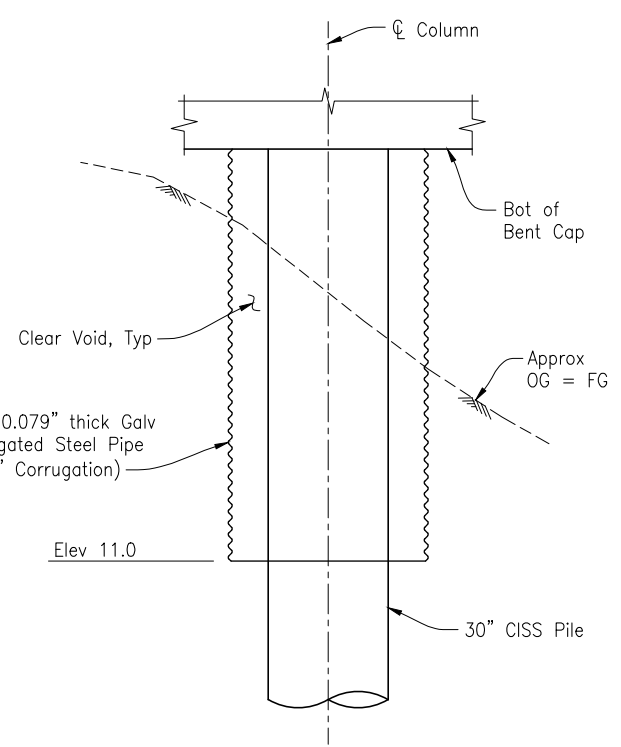
REVISION DATES (PRELIMINARY STAGE ONLY)

03-22-11	05-26-13	09-18-13	07-20-15	03-10-20	07-28-21	12-08-22	03-25-23	04-21-23
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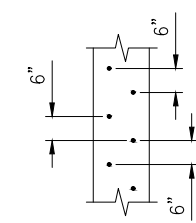
SCALE	AS SHOWN
SHEET	135 OF 196
Vault No.	



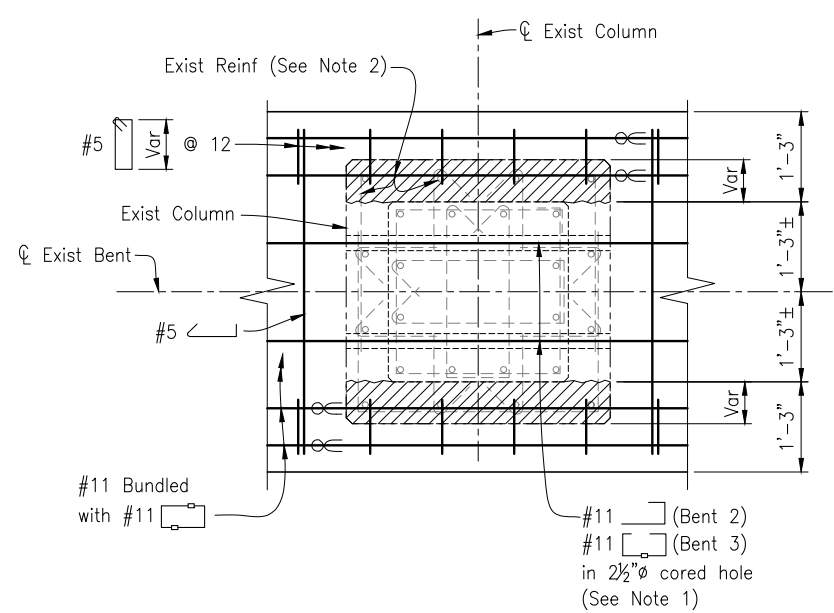
**SECTION E-E**  
3/4"=1'-0"



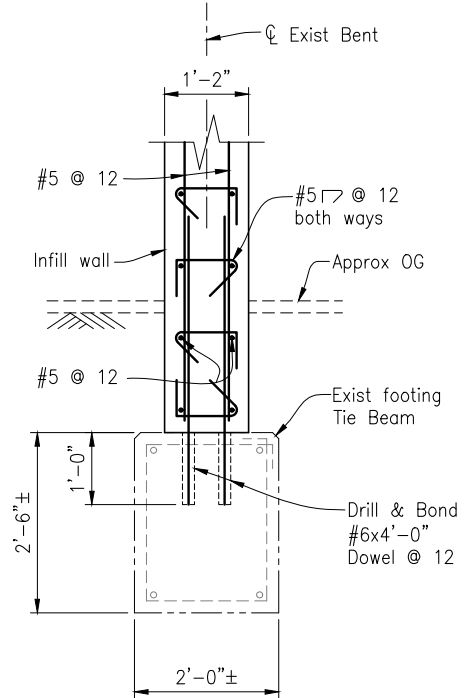
**ISOLATION CASING DETAIL**  
1/2"=1'-0"



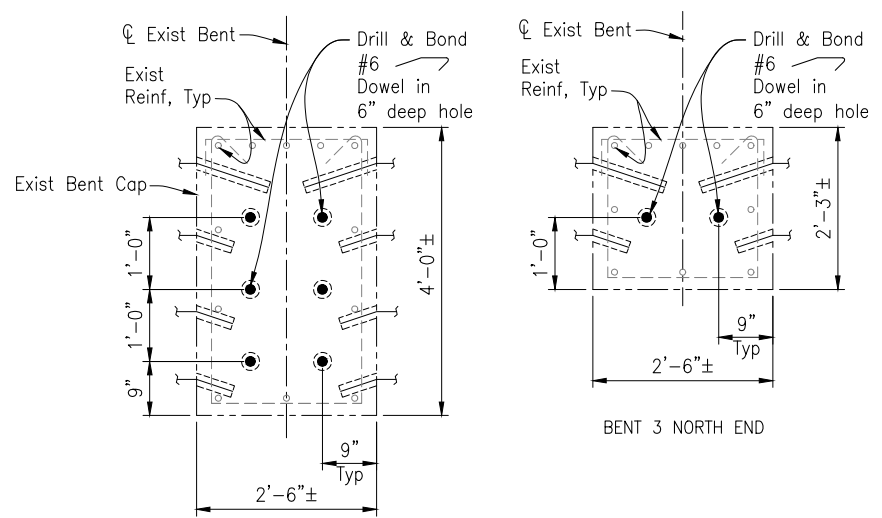
**DRILL & BOND STAGGER DETAIL**  
1/2"=1'-0"



**SECTION F-F**  
3/4"=1'-0"



**SECTION G-G**  
3/4"=1'-0"



**DRILL & BOND DOWELS AT BENT CAP ENDS**  
3/4"=1'-0"

- NOTES:**
- Holes cored through existing column to miss existing reinforcement. Pressure grout bars in cored holes.
  - The Contractor must protect existing reinforcement.

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)
  - ⊗ Indicates bundled bars

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

REGISTERED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

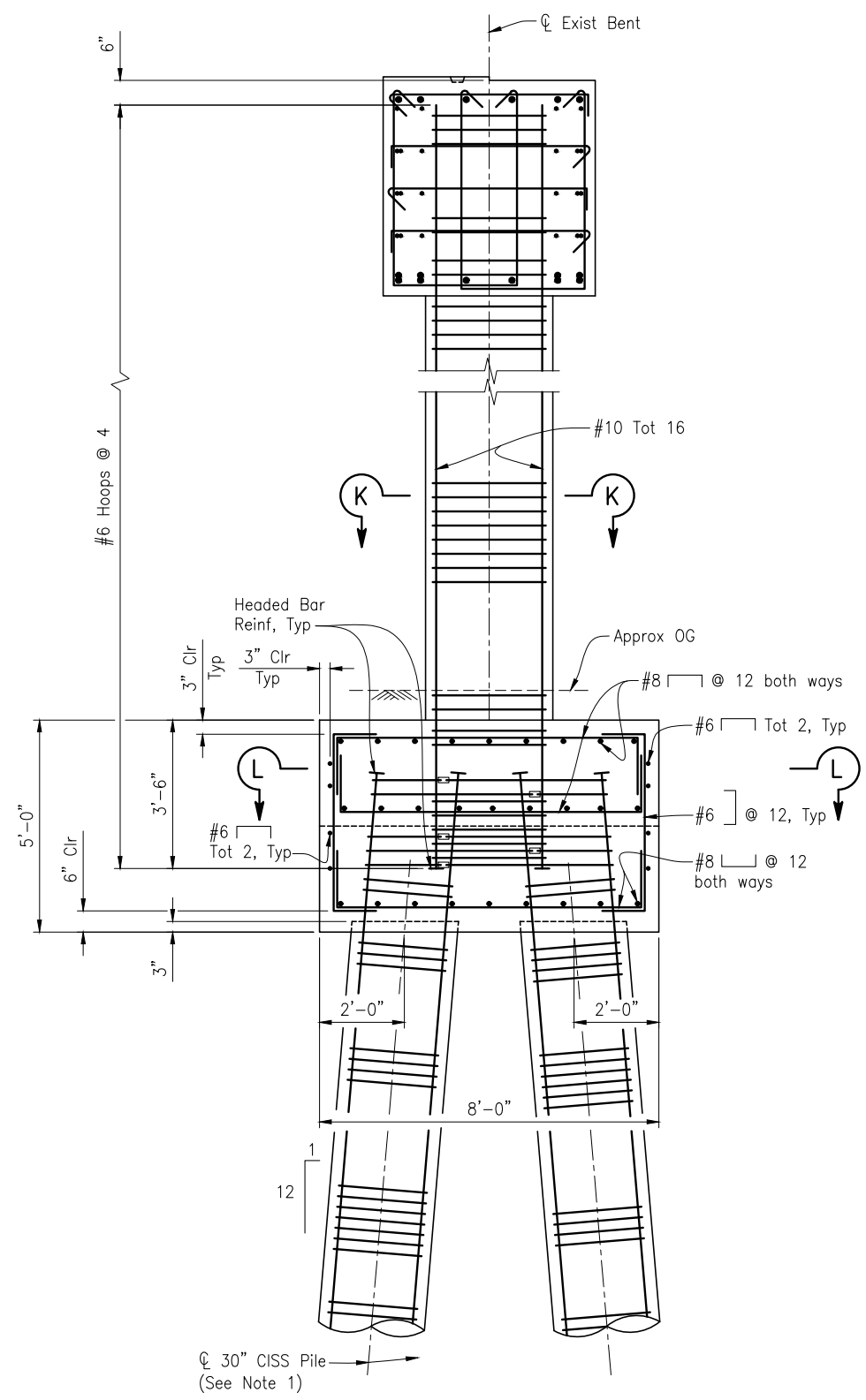
**MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT BENTS 2 & 3 DETAILS NO. 2**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

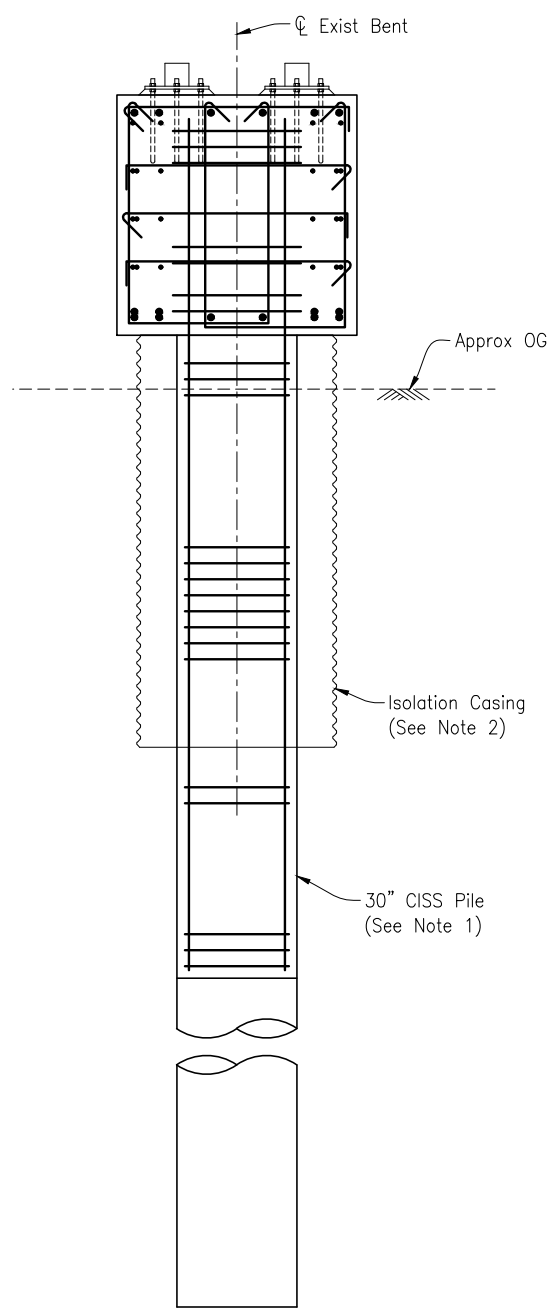
REVISION DATES (PRELIMINARY STAGE ONLY)
03-22-11 05-26-13 09-18-13 07-20-15 03-18-20 07-28-21 12-08-22 03-28-23 04-21-23

SCALE	AS SHOWN
SHEET	136 OF 196
Vault No.	

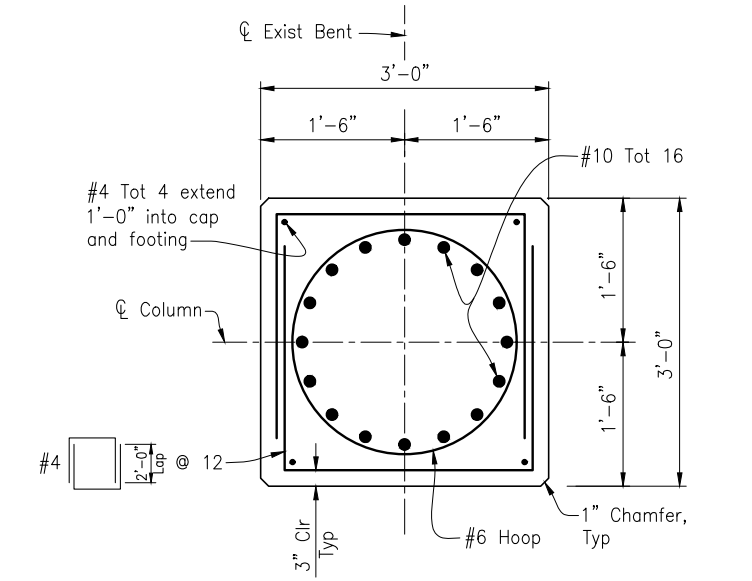
Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\012-Bent 2-3-Det-3.dwg Layout Tab: Layout1 May 03, 2024 - 5:03pm jgmisen



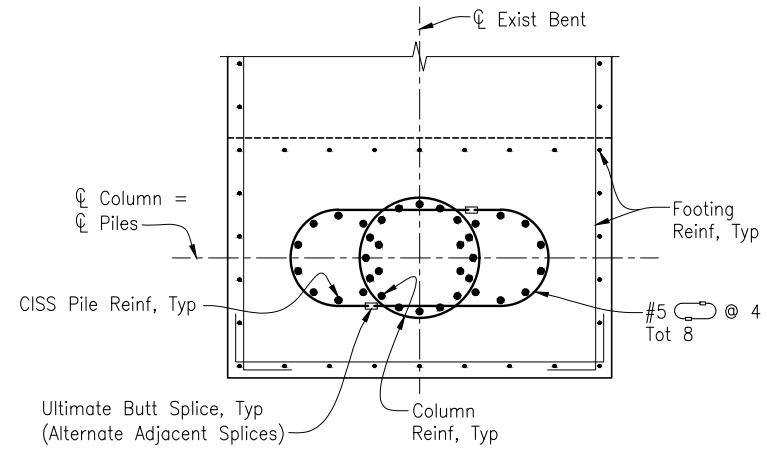
**ELEVATION J-J**  
1/2"=1'-0"



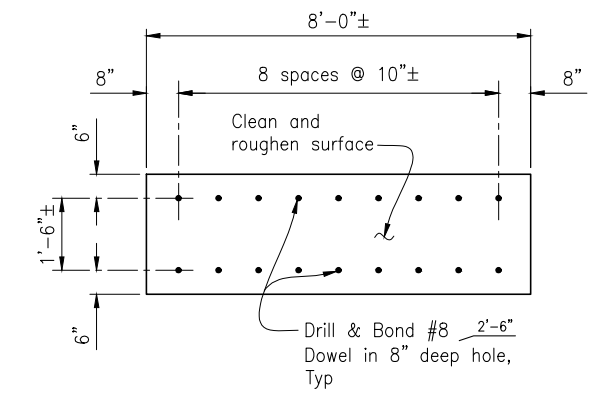
**ELEVATION Z-Z**  
1/2"=1'-0"



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



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



**DOWEL LAYOUT**  
1/2"=1'-0"

- NOTES:**
1. For 30" CISS PILING details, see "PILE DETAILS" sheet.
  2. For ISOLATION CASING DETAILS, see "BENTS 2 & 3 DETAILS NO. 2" sheet.
  3. The Contractor must protect existing reinforcement.

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

CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

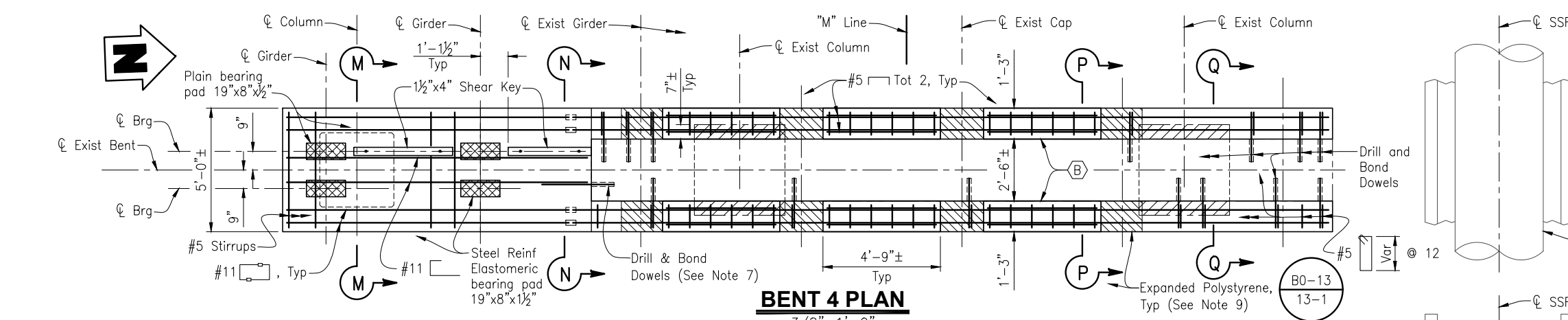
MARK IMBRIANI  
 PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

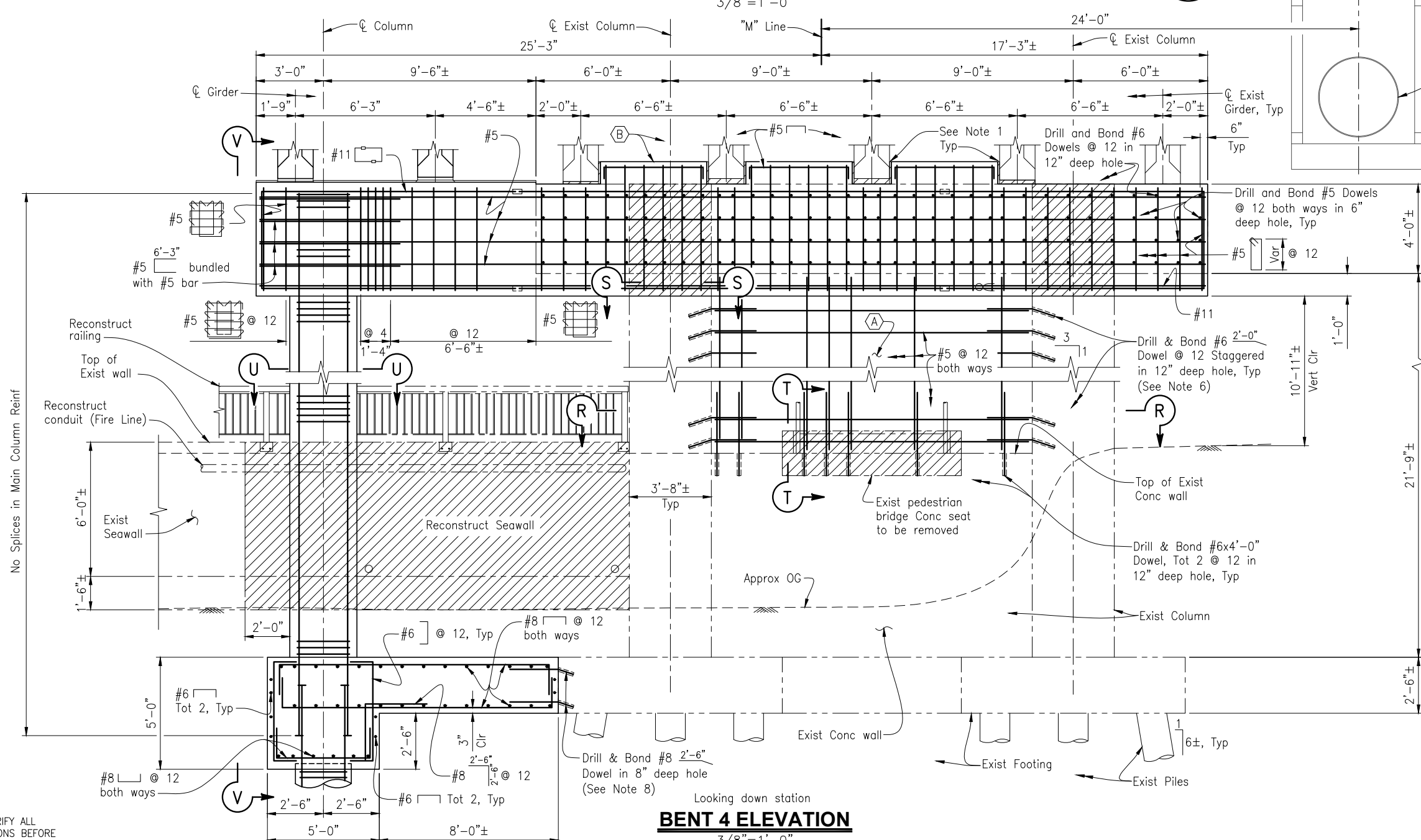
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENTS 2 & 3 DETAILS NO. 3**

DISREGARD PRINTS BEARING EARLIER REVISION DATES	05-28-13	09-13-13	07-01-15	03-10-20	07-28-21	12-08-22	03-28-23	04-21-23
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SCALE	AS SHOWN
SHEET	137 OF 196
VAULT NO.	



**BENT 4 PLAN**  
3/8"=1'-0"



**BENT 4 ELEVATION**  
3/8"=1'-0"

- NOTES:**
- 1" Expanded Polystyrene (B0-13 13-2)
  - For SECTION M-M thru U-U, see "BENT 4 DETAILS No. 2" sheet.
  - For ELEVATION V-V, see "BENT 4 DETAILS No. 3" SHEET.
  - Structure Excavation Type D at Bent 4.
  - For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
  - See DRILL & BOND STAGGER DETAIL on "BENT 4 DETAILS NO. 3" sheet.
  - See DRILL & BOND DOWELS AT BENT CAP ENDS on "BENT 4 DETAILS NO. 3" sheet.
  - See DOWEL LAYOUT on "BENT 4 DETAILS NO. 3" sheet.
  - Polystyrene thickness varies, field verify.
  - The Contractor must protect existing reinforcement.

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)
  - ⊗ Indicates bundled bars
  - ⊕ Indicates Ultimate Butt Splice (Alternate Adjacent Splices)
- RETROFIT LEGEND:**
- (A) Concrete Infill Wall
  - (B) Shear Key and Seat Extension

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, State of California. TRC Engineers logo and contact information.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 4 LAYOUT**

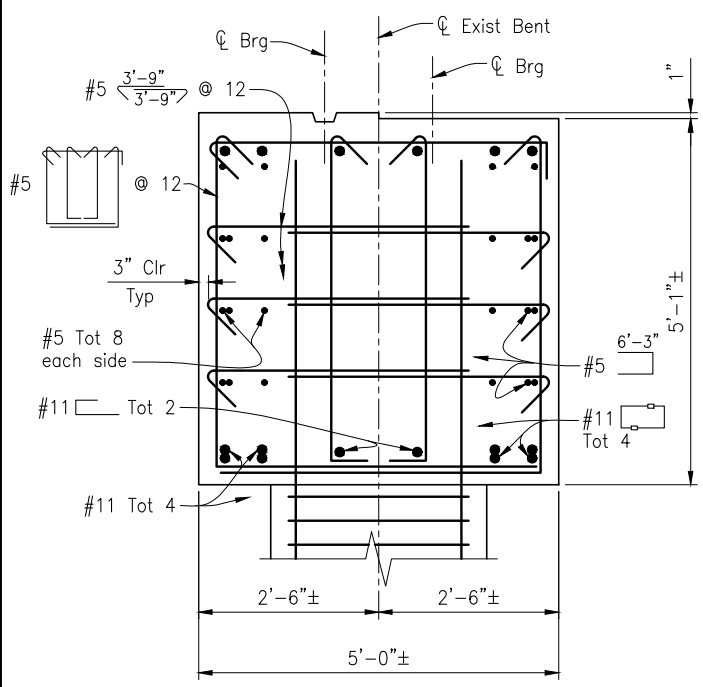
REVISION DATES (PRELIMINARY STAGE ONLY)

03-27-11	09-13-13	07-01-15	07-23-21	12-09-22	03-28-23	04-21-23
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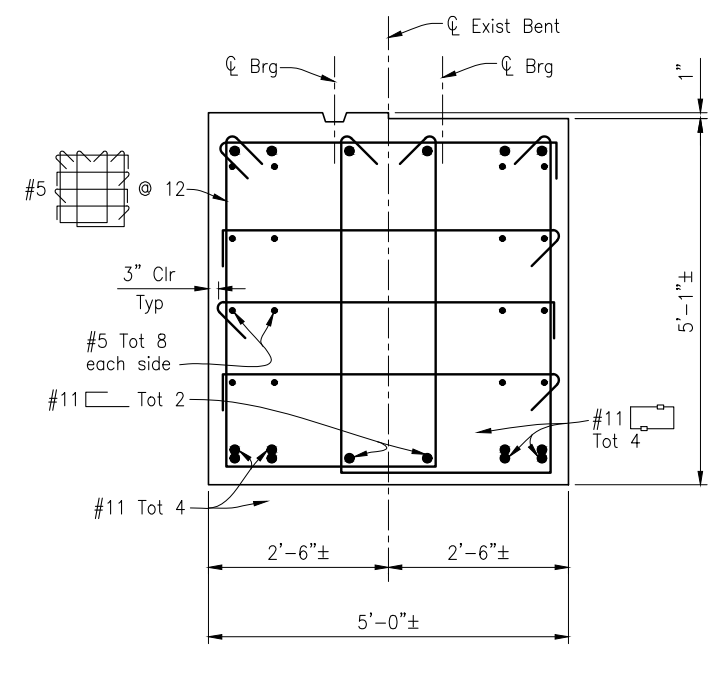
SCALE	AS SHOWN
SHEET	138 OF 196
Vault No.	



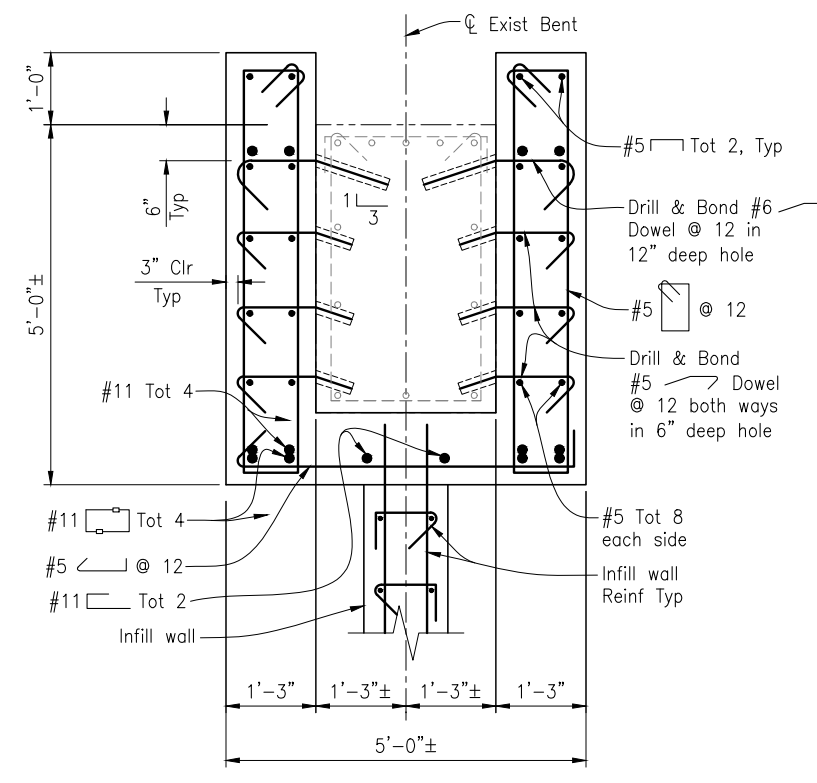
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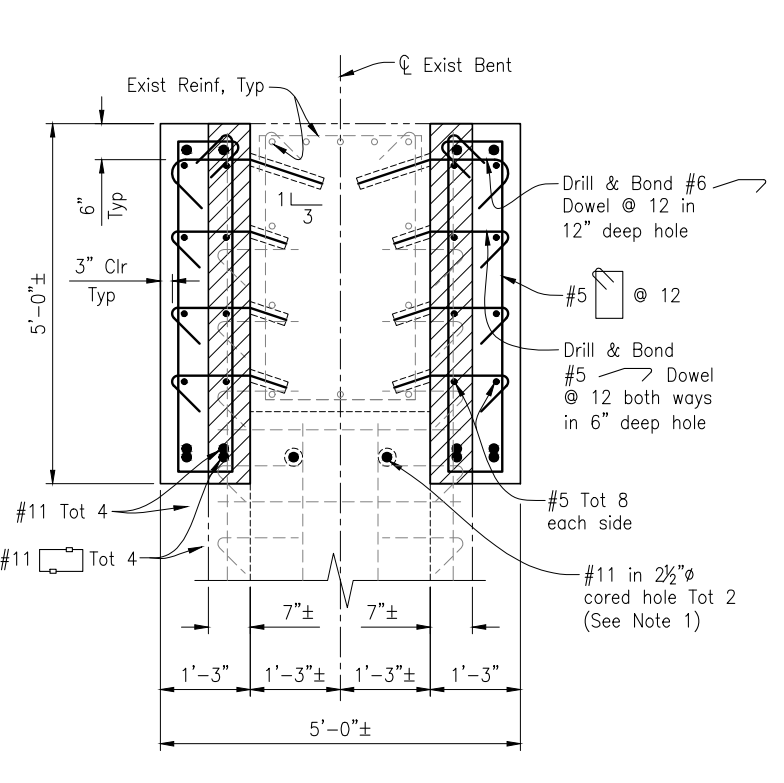
**SECTION M-M**  
3/4"=1'-0"



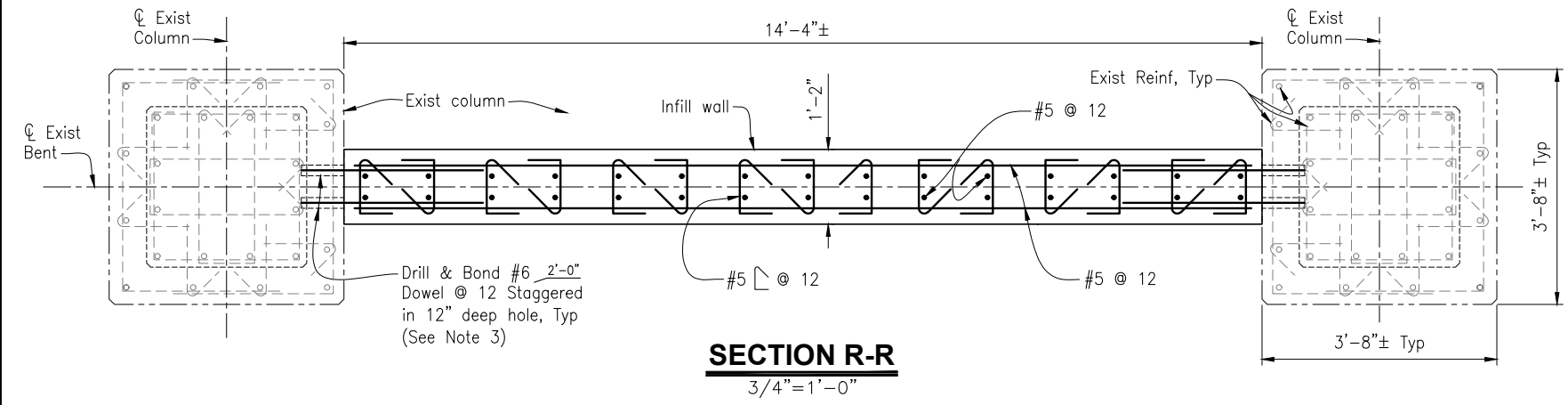
**SECTION N-N**  
3/4"=1'-0"



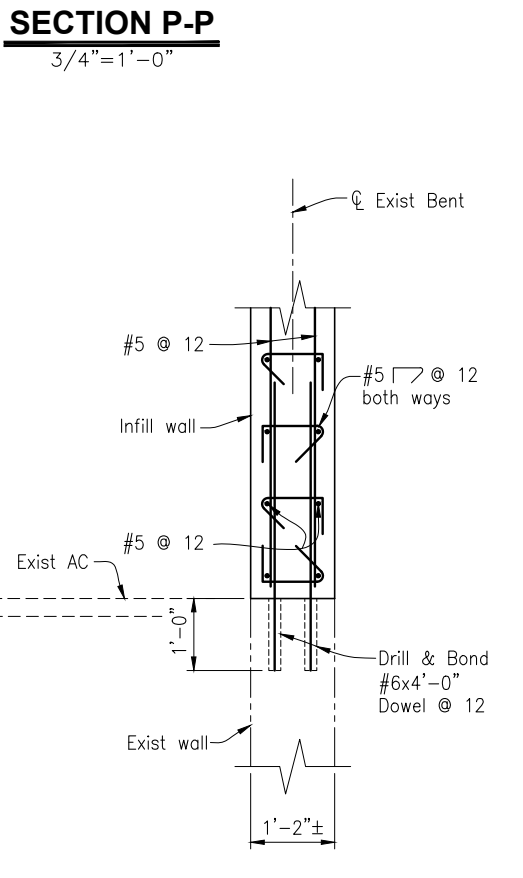
**SECTION P-P**  
3/4"=1'-0"



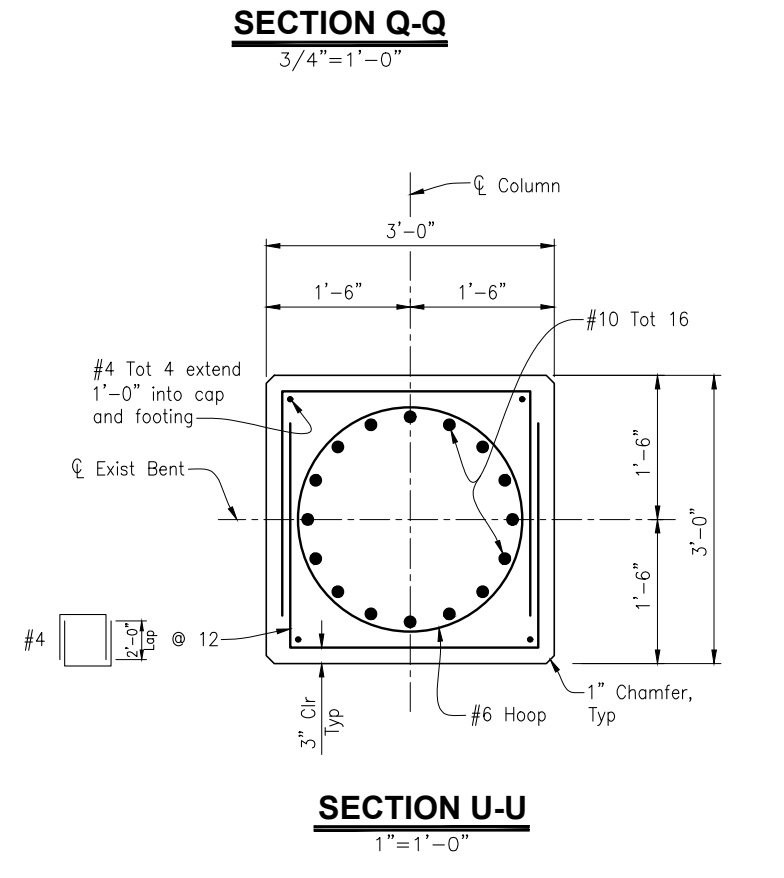
**SECTION Q-Q**  
3/4"=1'-0"



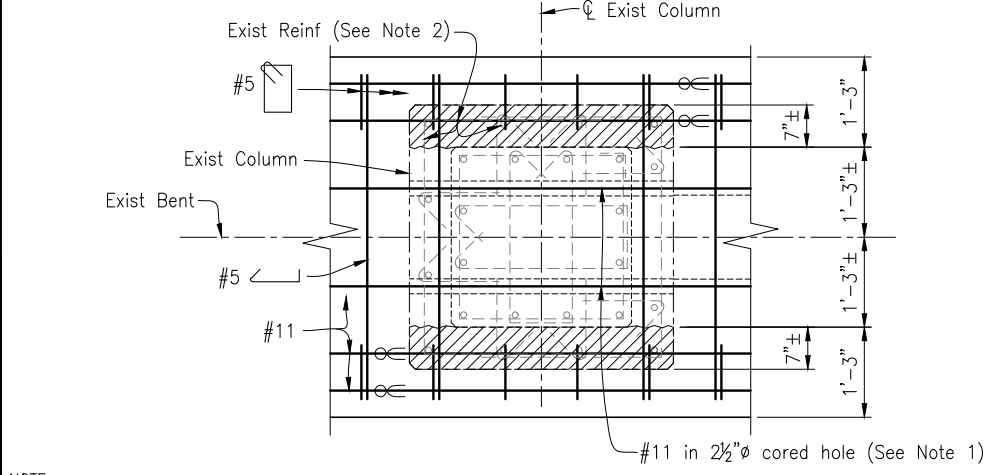
**SECTION R-R**  
3/4"=1'-0"



**SECTION T-T**  
3/4"=1'-0"



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



**SECTION S-S**  
3/4"=1'-0"

- NOTES:**
- Holes cored through existing column to miss existing reinforcement. Pressure grout bars in cored holes.
  - The Contractor must protect existing reinforcement.
  - See DRILL & BOND STAGGER DETAIL on "BENT 4 DETAILS NO. 3" sheet.
- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)
  - ⊙ Indicates bundled bars

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

CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

MARK IMBRIANI  
 PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

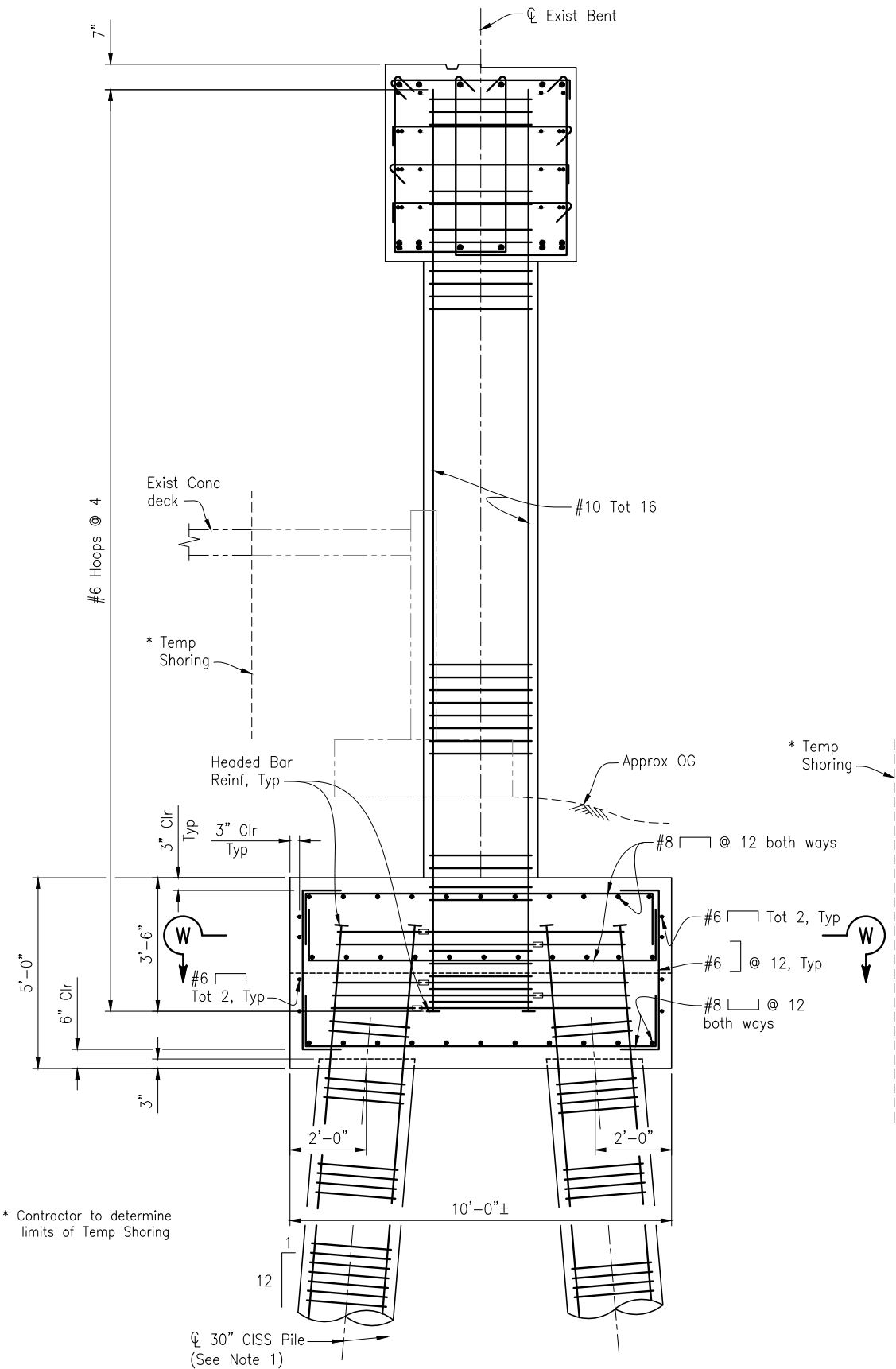
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 4 DETAILS NO. 2**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

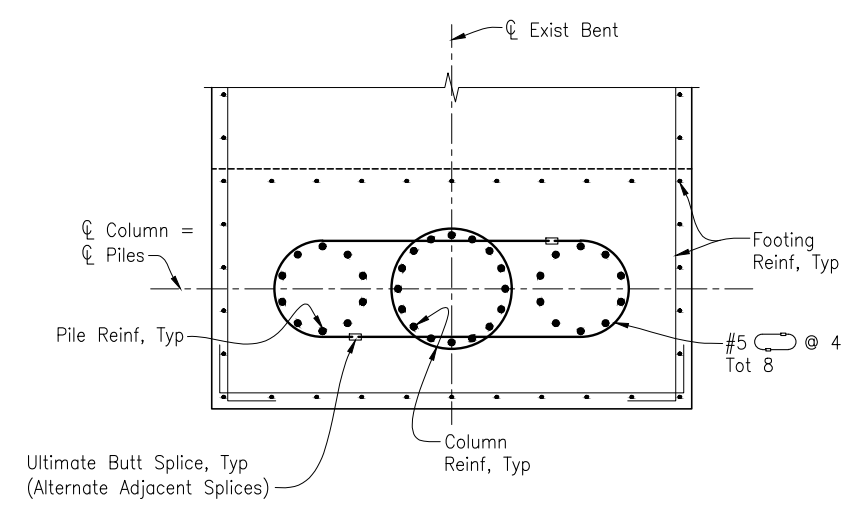
REVISION DATES (PRELIMINARY STAGE ONLY)
03-22-11 05-28-13 09-18-13 07-20-15 12-22-15 03-28-20 04-21-20

SCALE	AS SHOWN
SHEET	140 OF 196
Vault No.	

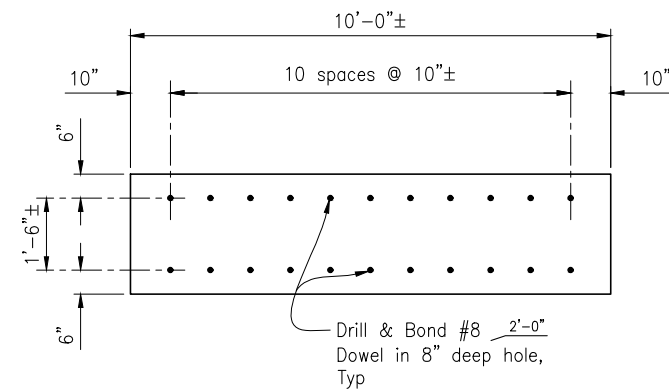
Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\016-Bent 4-Det-3.dwg Layout Tab: Layout1 May 05, 2024 - 8:02pm gphhsen



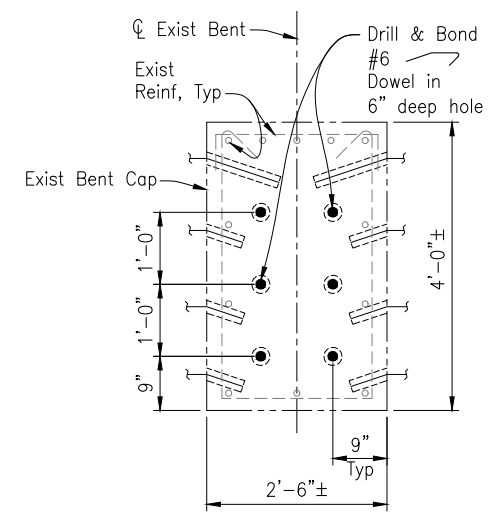
**ELEVATION V-V**  
1/2" = 1'-0"



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



**DOWEL LAYOUT**  
1/2" = 1'-0"



**DRILL & BOND STAGGER DETAIL**  
1/2" = 1'-0"

**BENT 4 SOUTH END**  
**DRILL & BOND DOWELS AT BENT CAP ENDS**  
3/4" = 1'-0"

- NOTES:**
- For 30" CISS PILING details, see "PILE DETAILS" sheet.
  - The Contractor must protect existing reinforcement.

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

CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

MARK IMBRIANI  
 PROJECT MANAGER

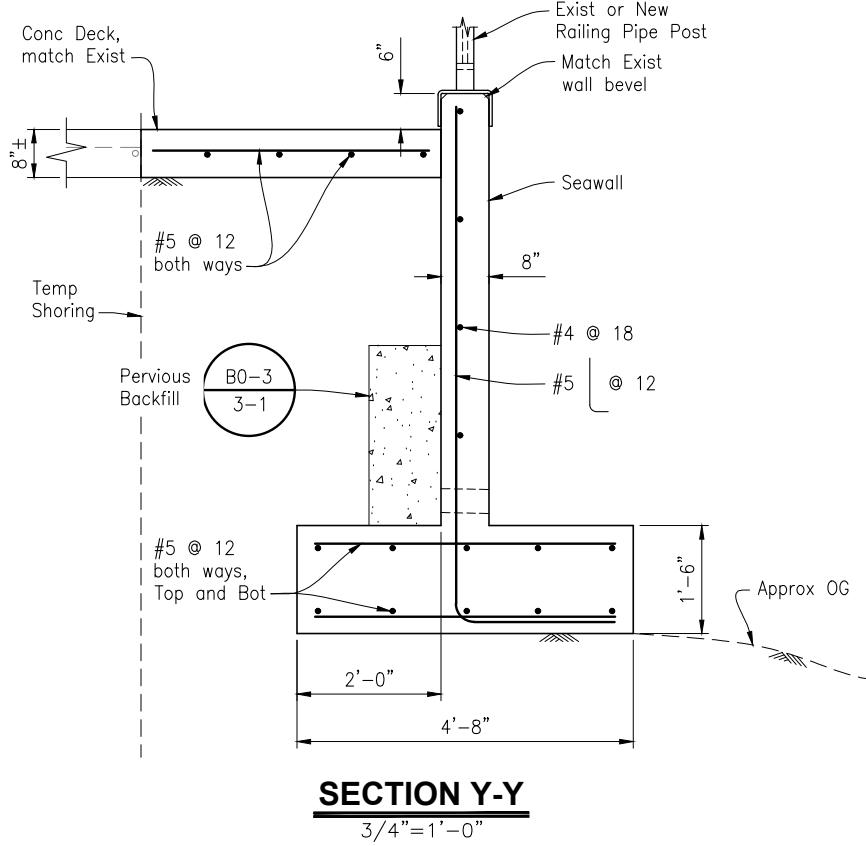
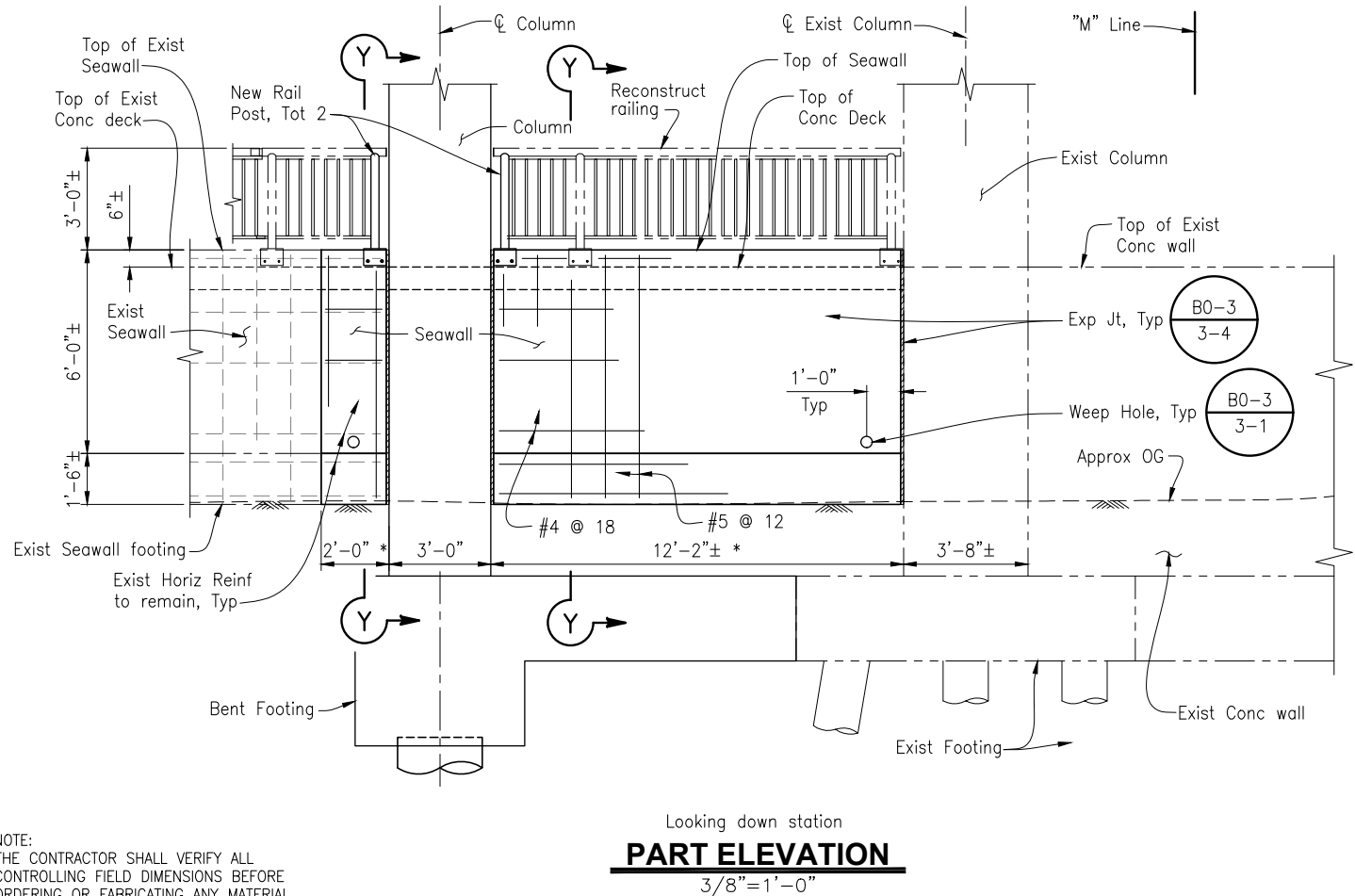
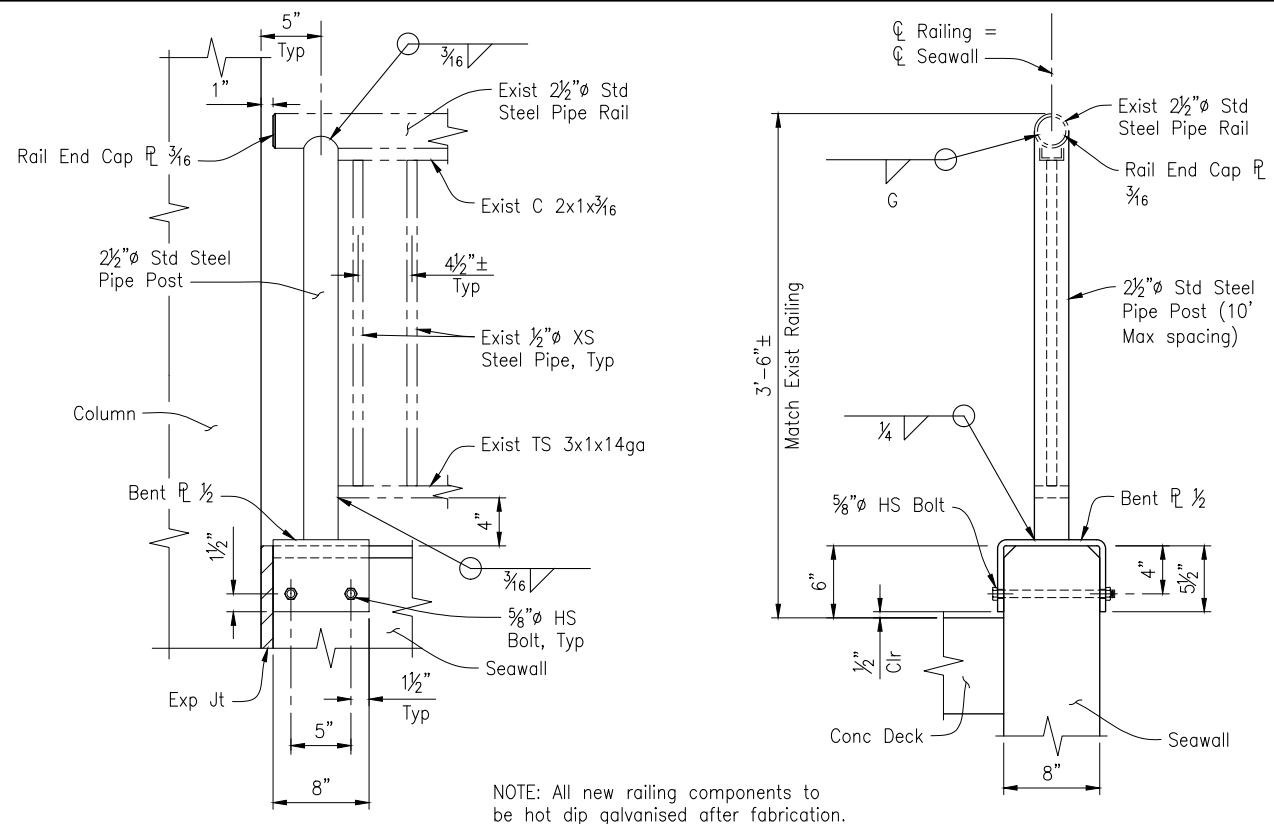
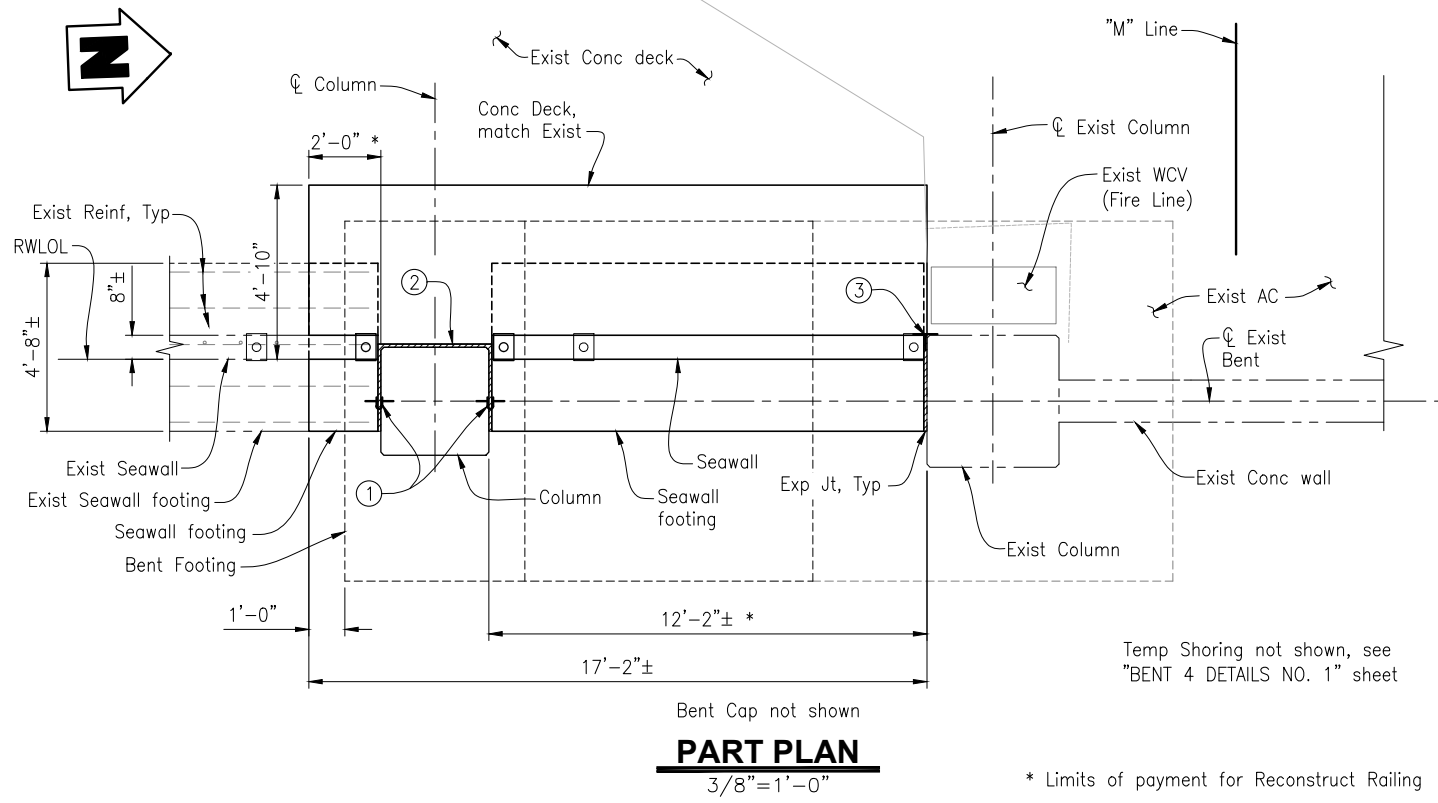
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 4 DETAILS NO. 3**

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)					
05-28-13	09-13-13	07-01-15	12-09-22	03-23-23	04-21-23

SCALE	AS SHOWN
SHEET	141 OF 196
Vault No.	



- NOTES:**
- ① Waterstop (B0-3 3-6)
  - ② 1" Expanded Polystyrene (B0-13 13-2)
  - ③ Strip Waterstop (B0-1 1-4)
- LEGEND:**
- - - - - Indicates Existing Structure
  - Indicates New Structure

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

REG. NO. 73288  
CIVIL  
CIVIL ENGINEER - CIVIL  
CIVIL ENGINEER - CIVIL  
CIVIL ENGINEER - CIVIL

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED M. CHRISTENSEN
DETAILS	BY G. IMBSEN	CHECKED M. CHRISTENSEN
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

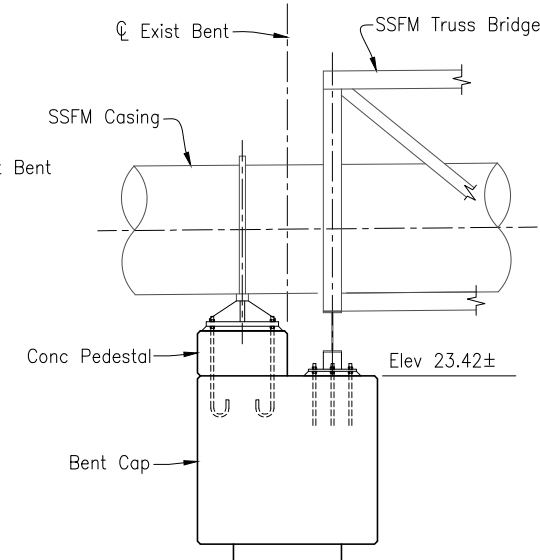
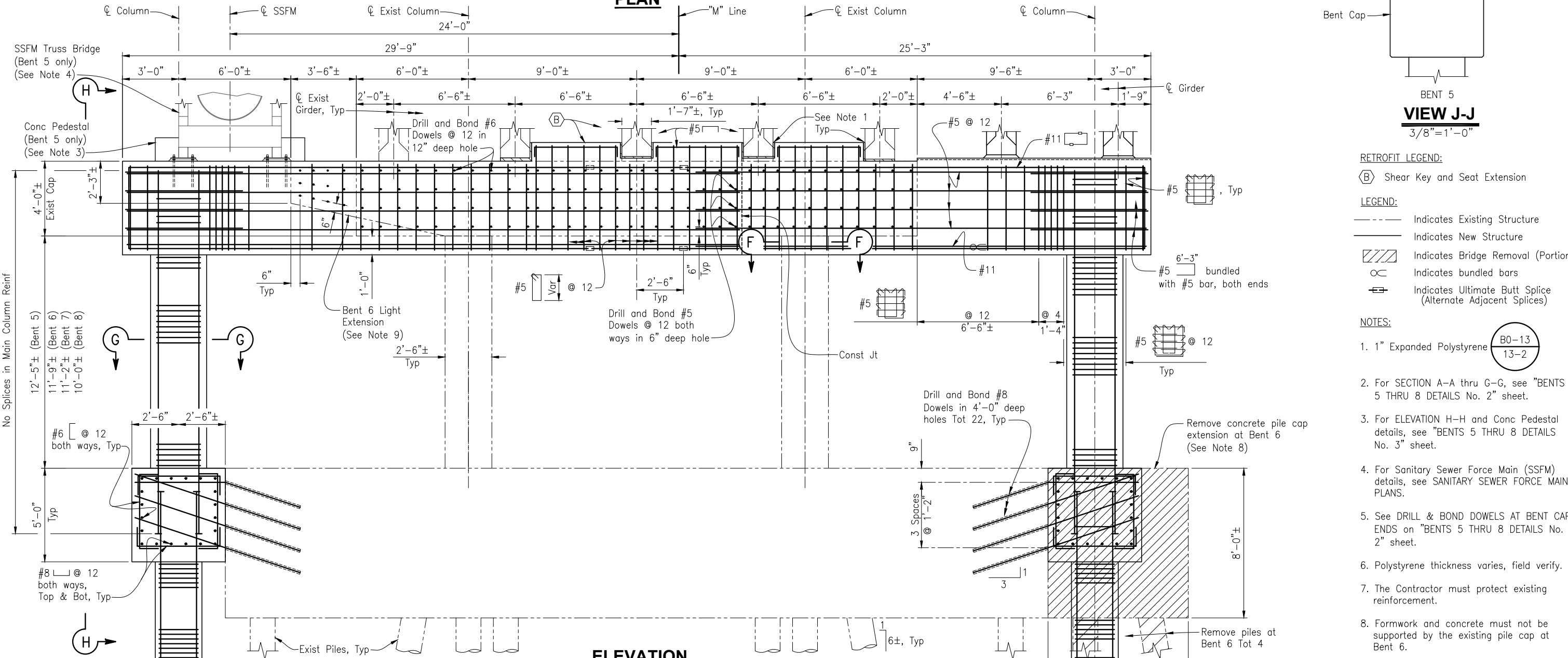
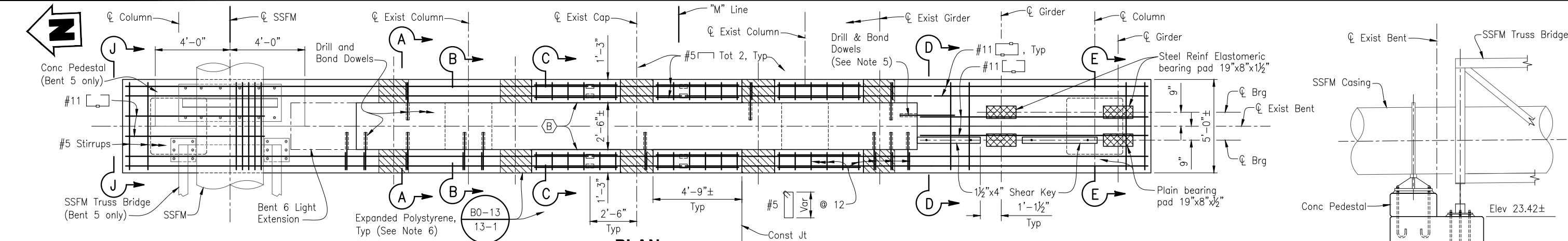
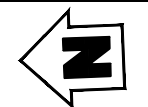
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 4 DETAILS NO. 4**

REVISION DATES (PRELIMINARY STAGE ONLY)

03-22-11	09-13-13	07-01-15	04-01-20	07-28-21	08-18-21	12-08-22	03-28-23	04-21-23
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SCALE	AS SHOWN
SHEET	142 OF 196
Vault No.	



**VIEW J-J**  
3/8"=1'-0"

- RETROFIT LEGEND:**
- (B) Shear Key and Seat Extension
- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)
  - ⊖ Indicates bundled bars
  - ⊕ Indicates Ultimate Butt Splice (Alternate Adjacent Splices)

- NOTES:**
1. 1" Expanded Polystyrene (B0-13 13-2)
  2. For SECTION A-A thru G-G, see "BENTS 5 THRU 8 DETAILS No. 2" sheet.
  3. For ELEVATION H-H and Conc Pedestal details, see "BENTS 5 THRU 8 DETAILS No. 3" sheet.
  4. For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
  5. See DRILL & BOND DOWELS AT BENT CAP ENDS on "BENTS 5 THRU 8 DETAILS No. 2" sheet.
  6. Polystyrene thickness varies, field verify.
  7. The Contractor must protect existing reinforcement.
  8. Formwork and concrete must not be supported by the existing pile cap at Bent 6.
  9. Reset Electrolier, Bent 6 only. See "BENTS 5 THRU 8 DETAILS NO. 1" sheet.

**ELEVATION**  
**BENT 5 (BENTS 6, 7, & 8 SIMILAR)**  
3/8"=1'-0"

NOTE: Fender system not shown for clarity, see "FENDER DETAILS" sheet.

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

REGISTERS PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

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DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

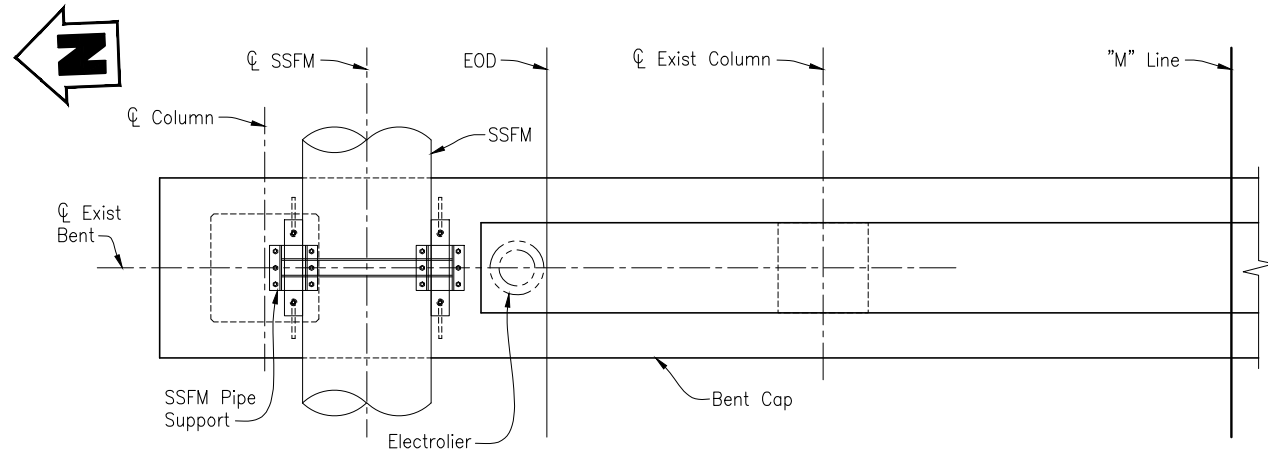
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENTS 5 THRU 8 LAYOUT**

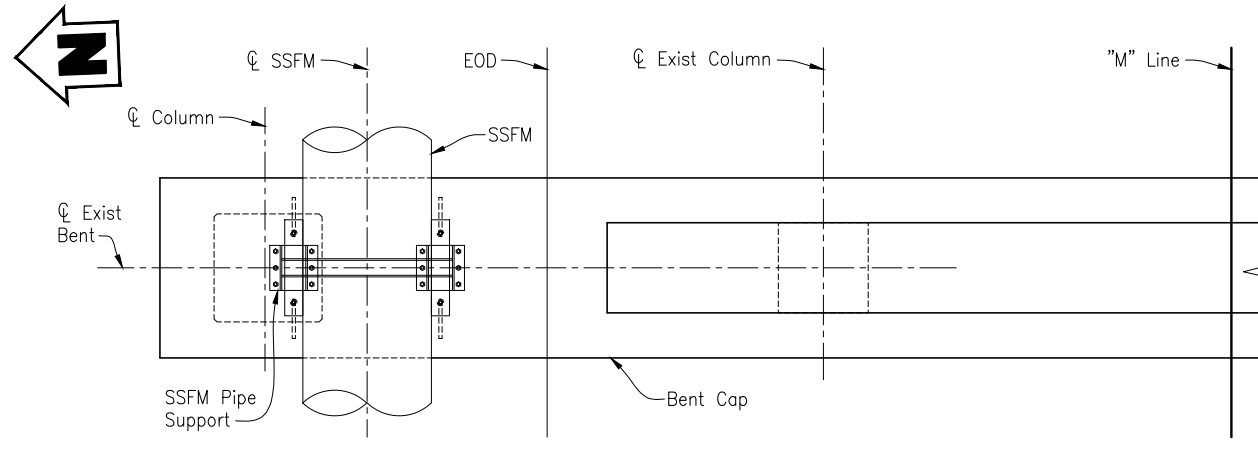
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03-22-11	05-26-13	09-18-13	07-20-15	07-28-21	12-07-22	03-28-23	04-21-23
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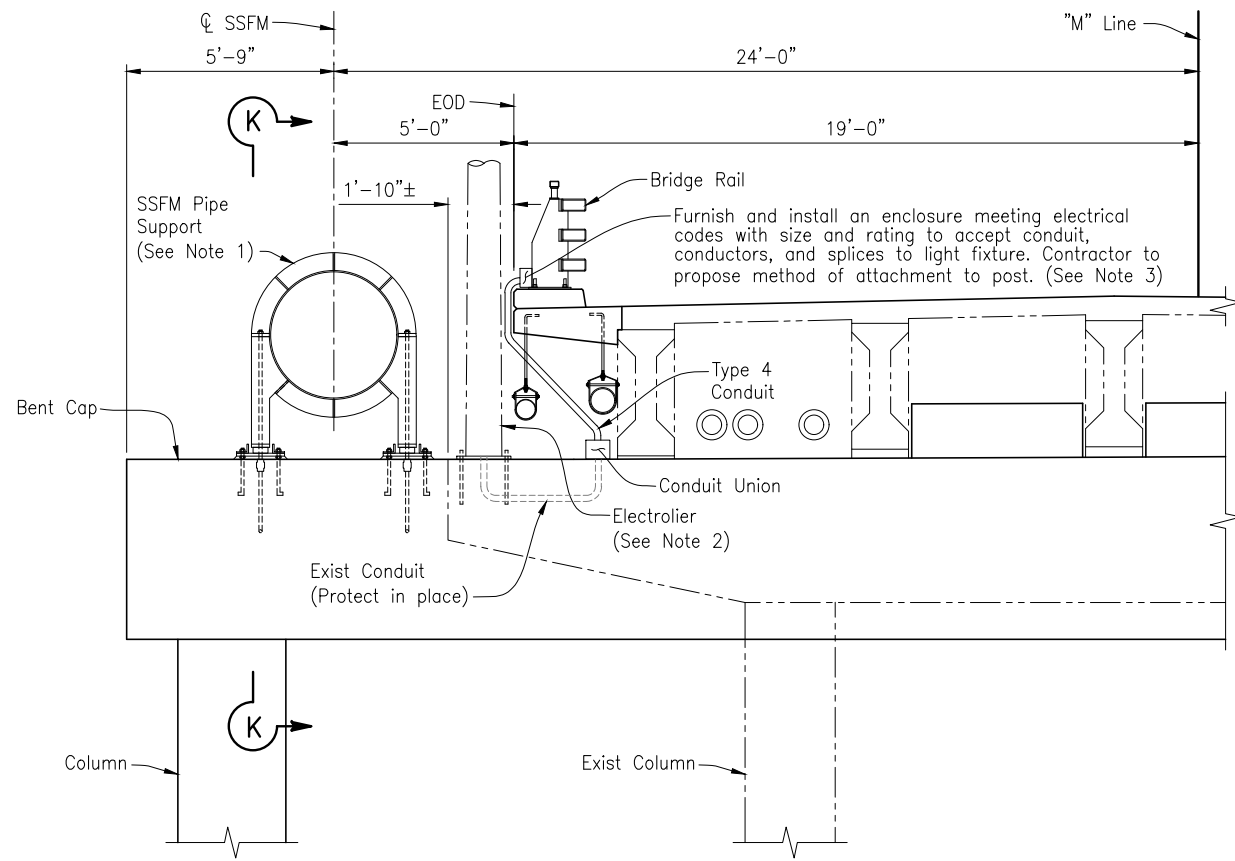
SCALE	AS SHOWN
SHEET	143 OF 196
Vault No.	



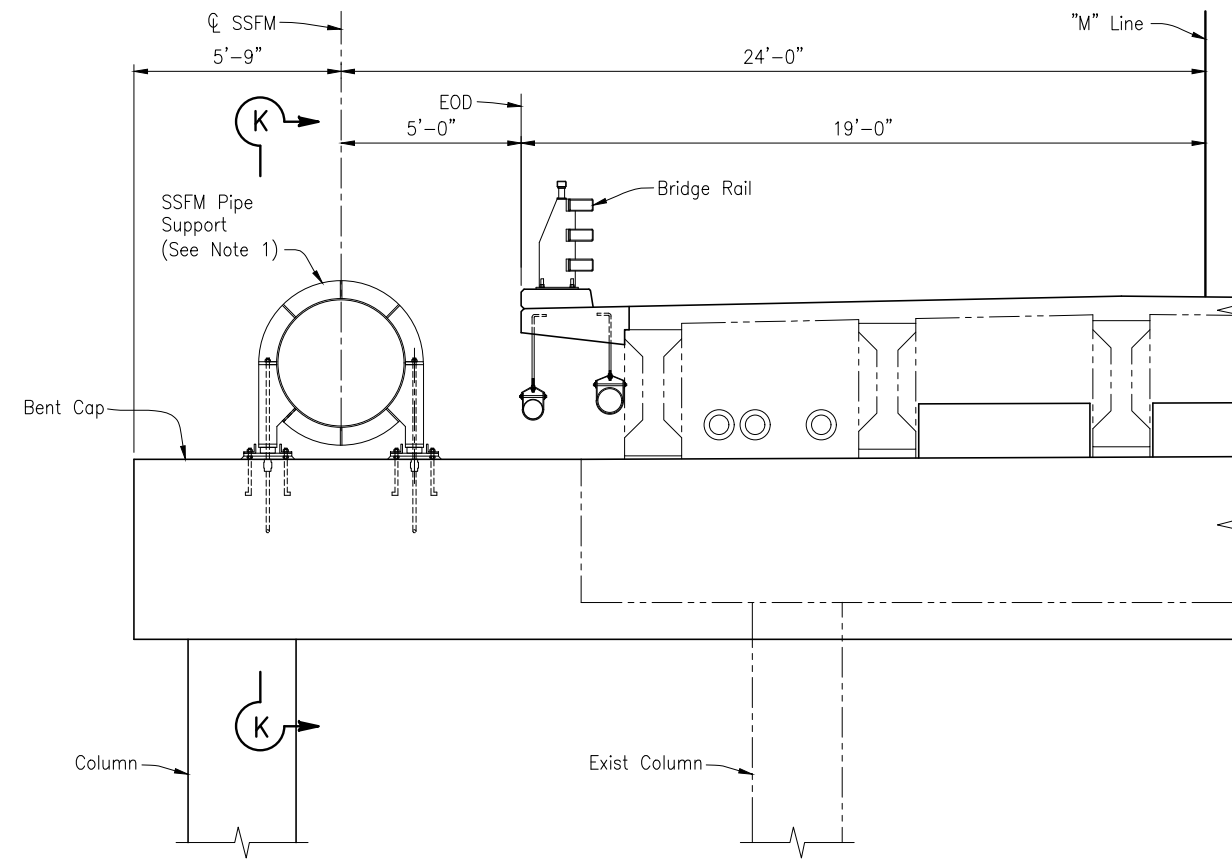
**PART PLAN**



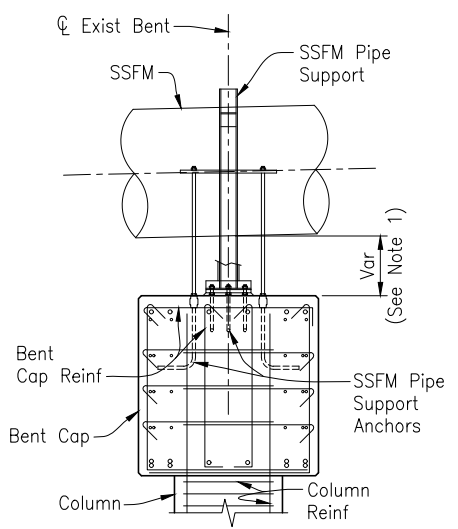
**PART PLAN**



**PART ELEVATION**  
**BENT 6**  
3/8" = 1'-0"



**PART ELEVATION**  
**BENTS 7 & 8**  
3/8" = 1'-0"



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

**LEGEND:**  
 - - - - - Indicates Existing Structure  
 \_\_\_\_\_ Indicates New Structure

- NOTE:**
1. For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
  2. Reset Structure Mounted Electrolier.
  3. See "CALIFORNIA ST-75 BRIDGE RAIL DETAILS No. 4" sheet.

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, Exp. 12-31-24, CIVIL, STATE OF CALIFORNIA.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

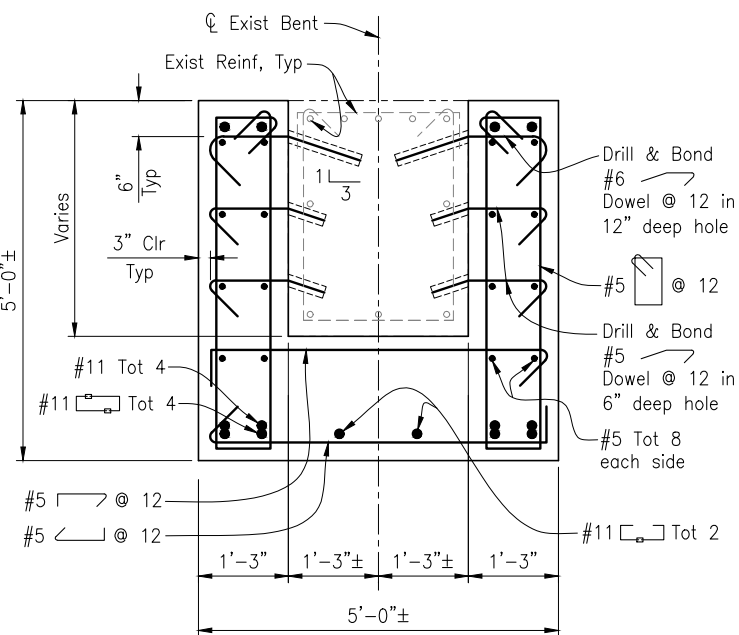
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENTS 5 THRU 8 DETAILS NO. 1**

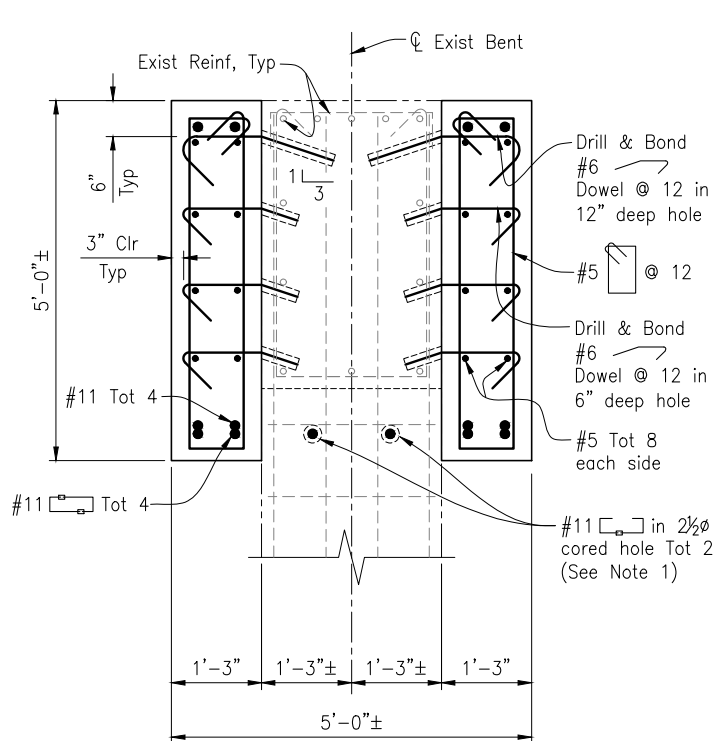
DISREGARD PRINTS BEARING EARLIER REVISION DATES

05-16-20	04-26-20	07-23-21	12-07-22	03-23-23	04-21-23
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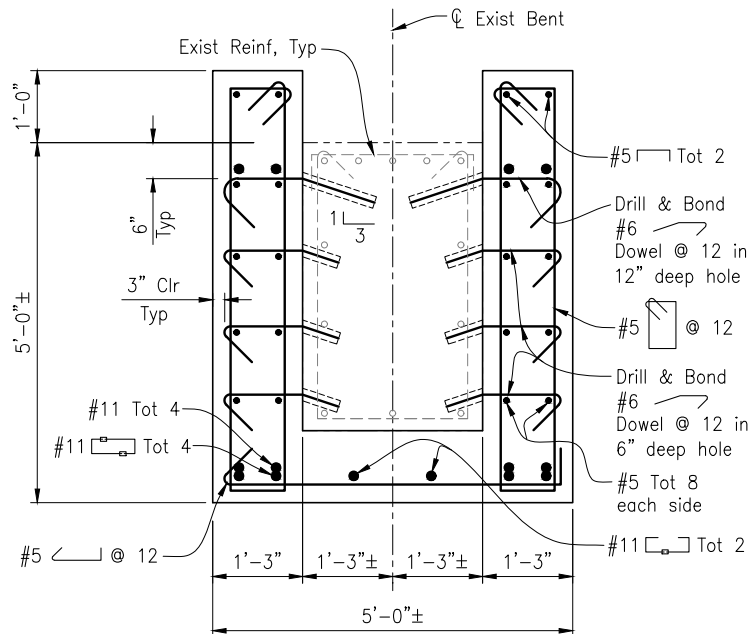
SCALE	AS SHOWN
SHEET	144 OF 196
Vault No.	



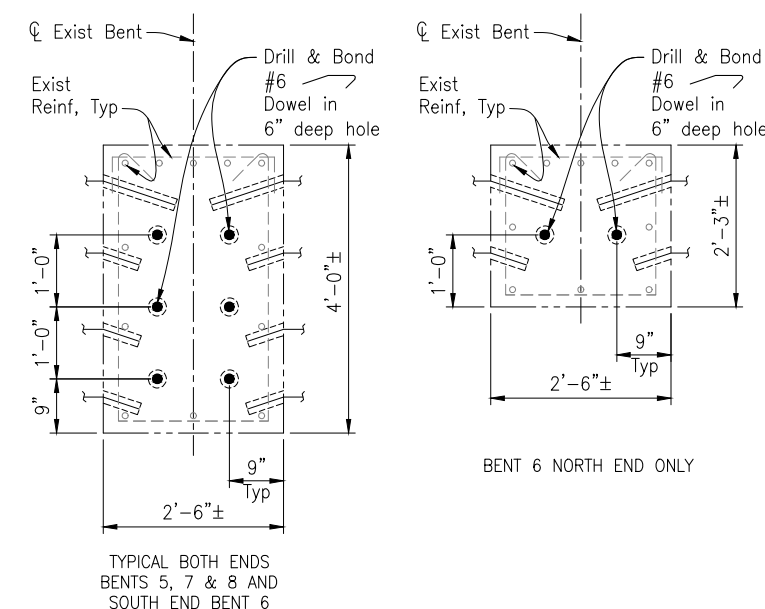
BENT 6 ONLY  
**SECTION A-A**  
3/4"=1'-0"



**SECTION B-B**  
3/4"=1'-0"



**SECTION C-C**  
3/4"=1'-0"



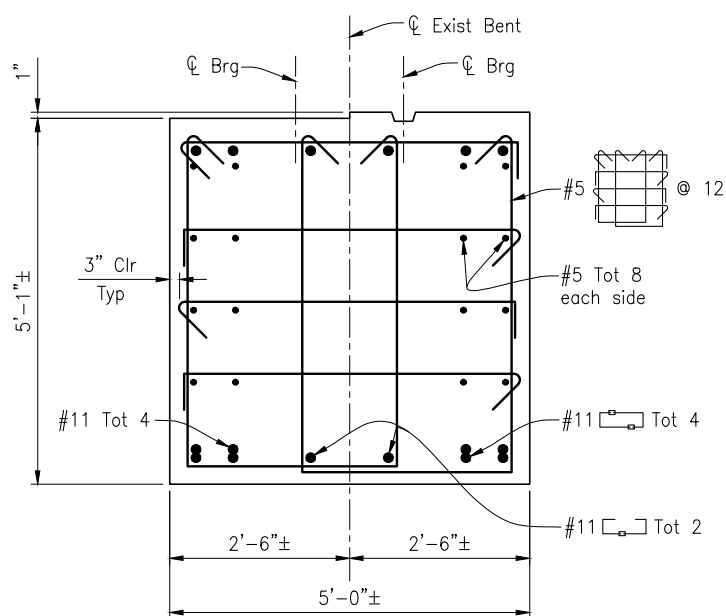
**DRILL & BOND DOWELS AT BENT CAP ENDS**  
3/4"=1'-0"

**NOTE:**

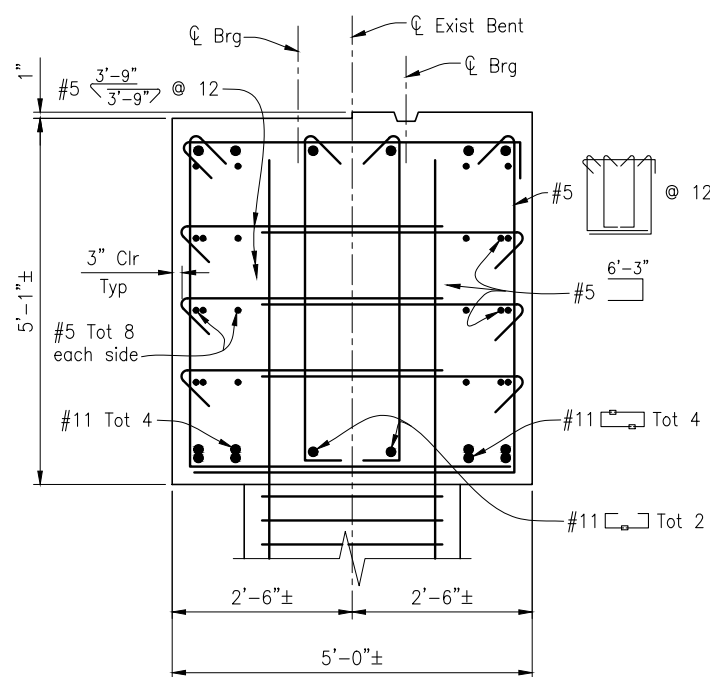
- Holes cored through existing column to miss existing reinforcement. Pressure grout bars in cored holes.
- The Contractor must protect existing reinforcement.

**LEGEND:**

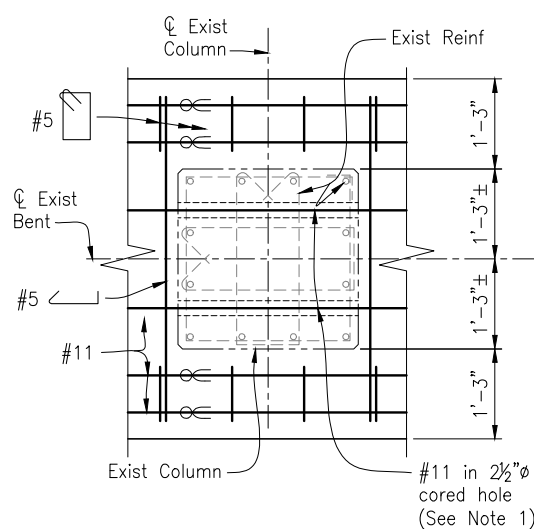
- Indicates Existing Structure
- Indicates New Structure
- ⊗ Indicates bundled bars



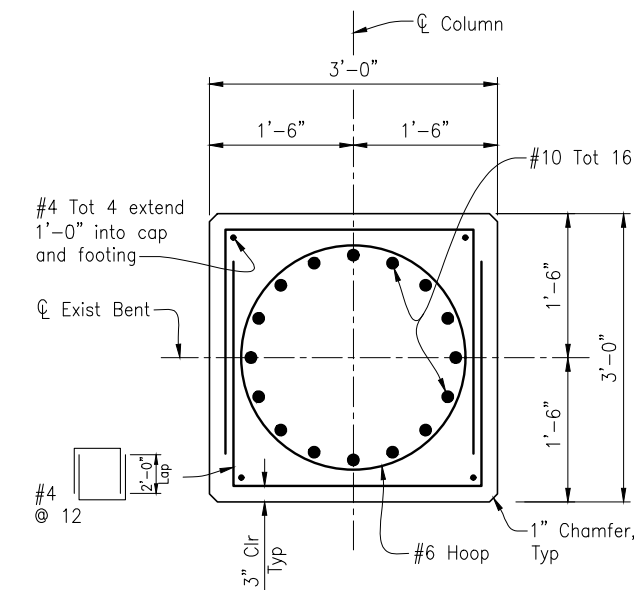
**SECTION D-D**  
3/4"=1'-0"



**SECTION E-E**  
3/4"=1'-0"

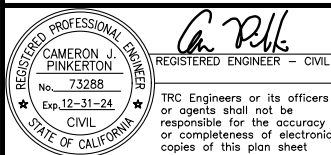


**SECTION F-F**  
3/4"=1'-0"



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

NOTE:  
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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO. 36C0108  
CONTRACT NO.  
EA NO.

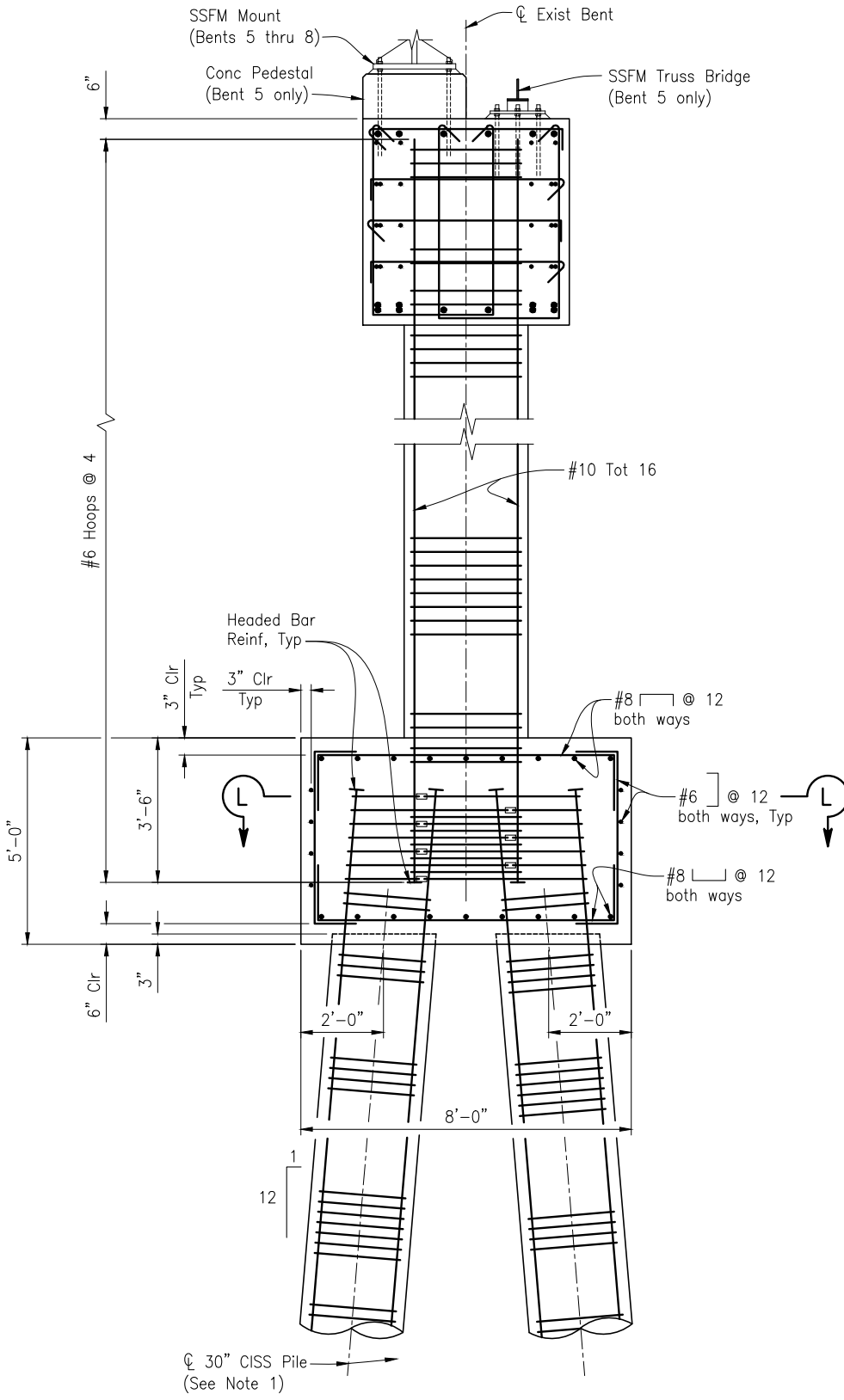
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENTS 5 THRU 8 DETAILS NO. 2**

REVISION DATES (PRELIMINARY STAGE ONLY)

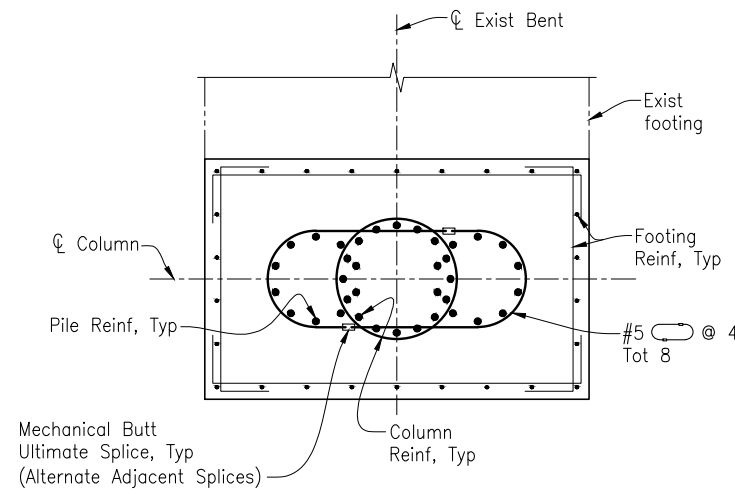
03-27-11	05-26-13	09-18-13	07-23-21	12-07-22	03-28-23	04-21-23
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SCALE AS SHOWN  
SHEET 145 OF 196  
VAULT NO.

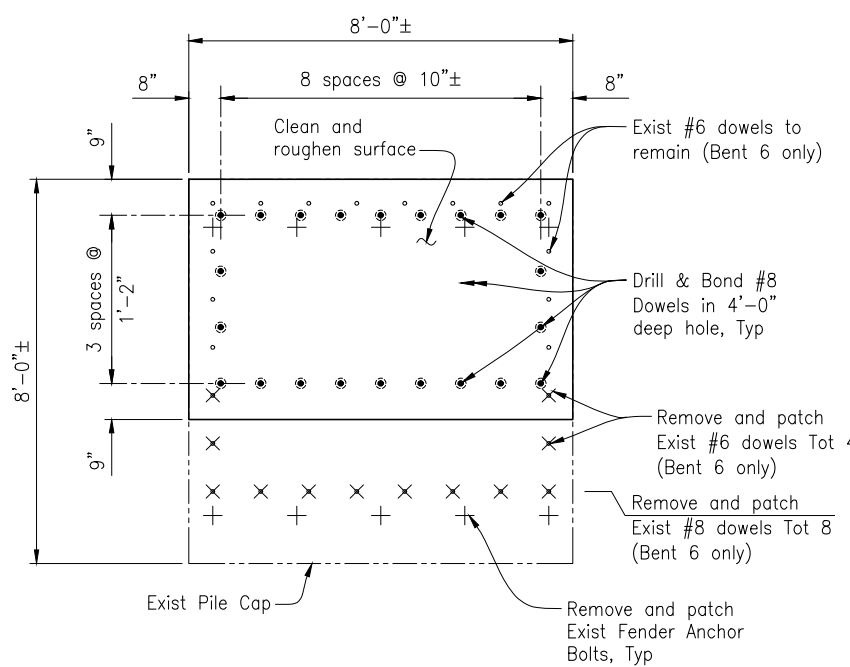
Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\021-Bent 5-8-Det-3.dwg Layout Tab: Layout1 May 03, 2024 - 5:50pm jgibsen



**ELEVATION H-H**  
1/2" = 1'-0"

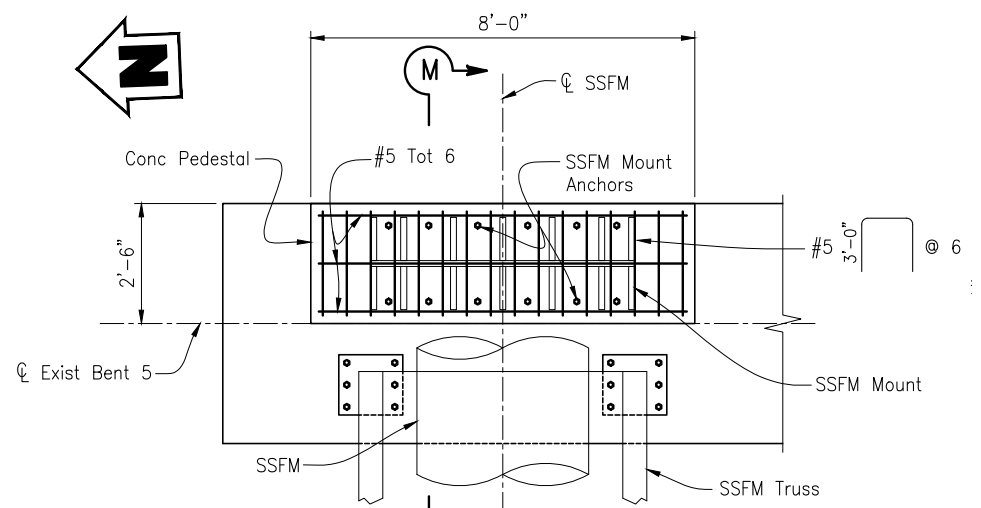


**SECTION L-L**  
1/2" = 1'-0"

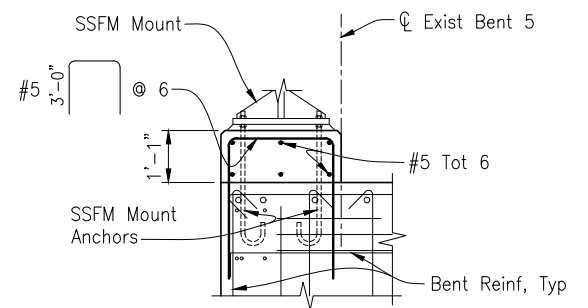


**DOWEL LAYOUT**  
1/2" = 1'-0"

- LEGEND:**
- Indicates Exist dowels (to remain)
  - Indicates New Dowels (drill and pressure grout)
  - × Indicates Exist Dowels (remove and patch)
  - + Indicates Fender Anchor Bolts (remove and patch)



**PLAN**



**SECTION M-M**

BENT 5 ONLY  
**CONCRETE PEDESTAL DETAILS**  
1/2" = 1'-0"

- NOTES:**
1. For 30" CISS PILING details, see "PILE DETAILS" sheet.
  2. The Contractor must protect existing reinforcement.
  3. For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.

NOTE:  
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CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

MARK IMBRIANI  
 PROJECT MANAGER

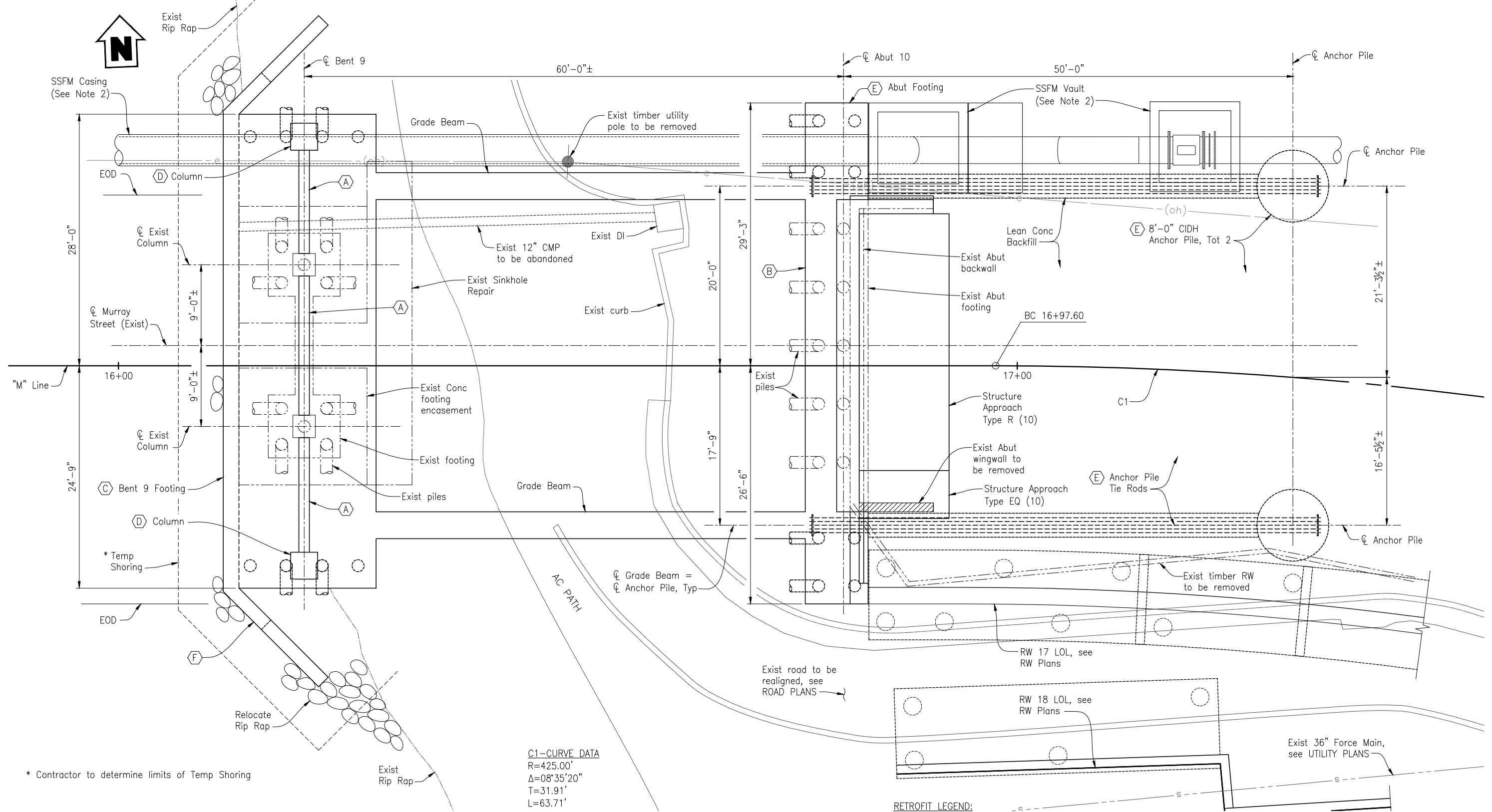
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENTS 5 THRU 8 DETAILS NO. 3**

DISREGARD PRINTS BEARING EARLIER REVISION DATES	05-28-13	09-13-13	07-01-15	07-23-21	12-07-22	03-28-23	04-21-23
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SCALE	AS SHOWN
SHEET	146 OF 196
Vault No.	

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\022-Bent 9 - Abut 10 Layout.dwg Layout Tab: Layout1 May 03, 2024 5:52pm gimbsen



**C1-CURVE DATA**  
 R=425.00'  
 $\Delta=08^{\circ}35'20''$   
 T=31.91'  
 L=63.71'

**BENT 9 AND ABUT 10 PLAN**  
 3/16"=1'-0"

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)
  - Indicates 16"Ø CISS Pile
  - ⊗ Indicates battered 16"Ø CISS Pile
  - Indicates 24"Ø CISS Pile

- RETROFIT LEGEND:**
- (A) Concrete Infill Wall
  - (B) Shear Key and Seat Extension
  - (C) Foundation Retrofit with CISS Piles
  - (D) Bent Retrofit with CISS Piles
  - (E) Abutment Retrofit with Tie Rods and Anchor Piles
  - (F) Curtain Wall

- NOTES:**
- Structure Excavation Type D at Bent 9.
  - For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.

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

REGISTERED PROFESSIONAL ENGINEER  
**CAMERON J. PINKERTON**  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
 MARK IMBRIANI  
 PROJECT MANAGER

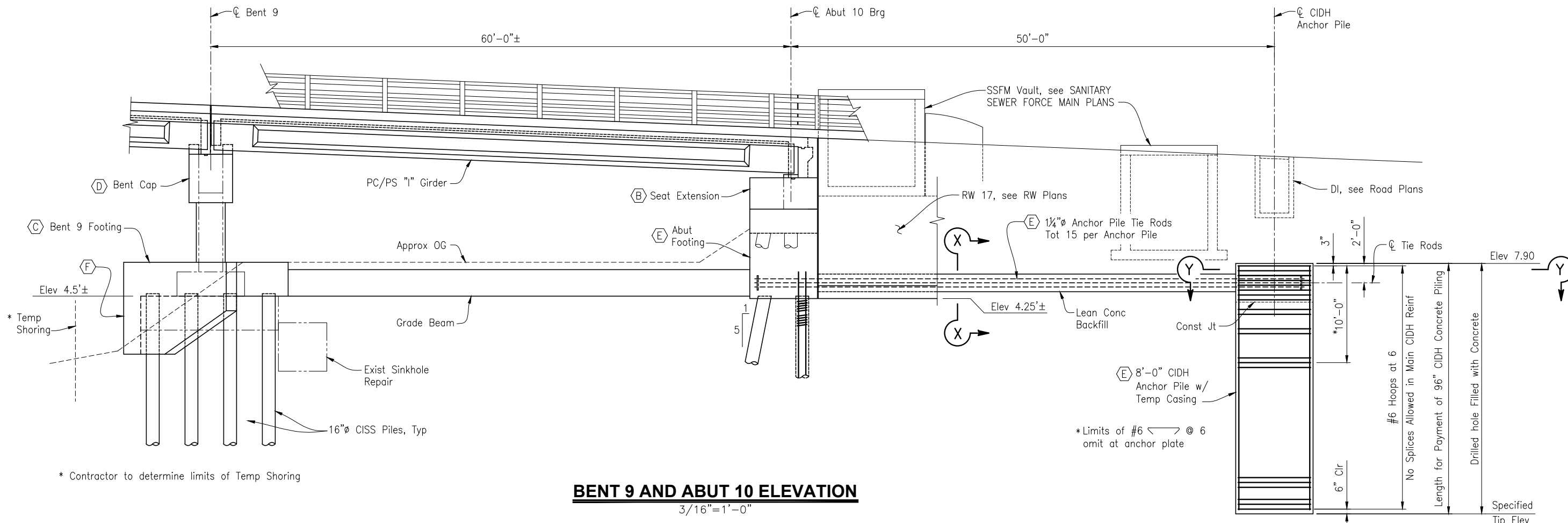
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 9 AND ABUTMENT 10 PLAN**

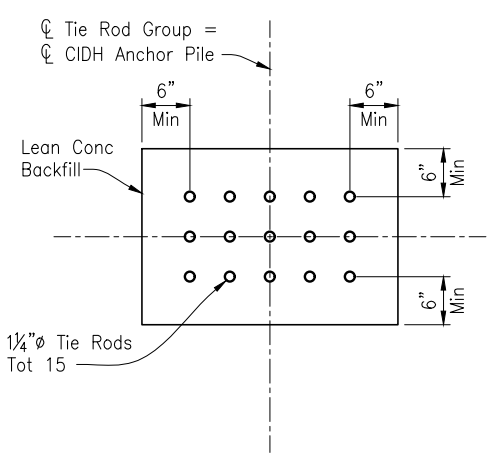
DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)	
09-18-13	01-01-15
07-23-21	12-07-22
03-28-23	04-21-23

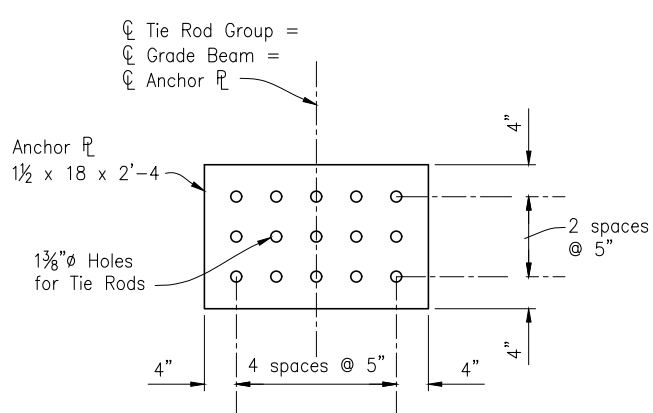
SCALE	AS SHOWN
SHEET	147 OF 196
Vault No.	



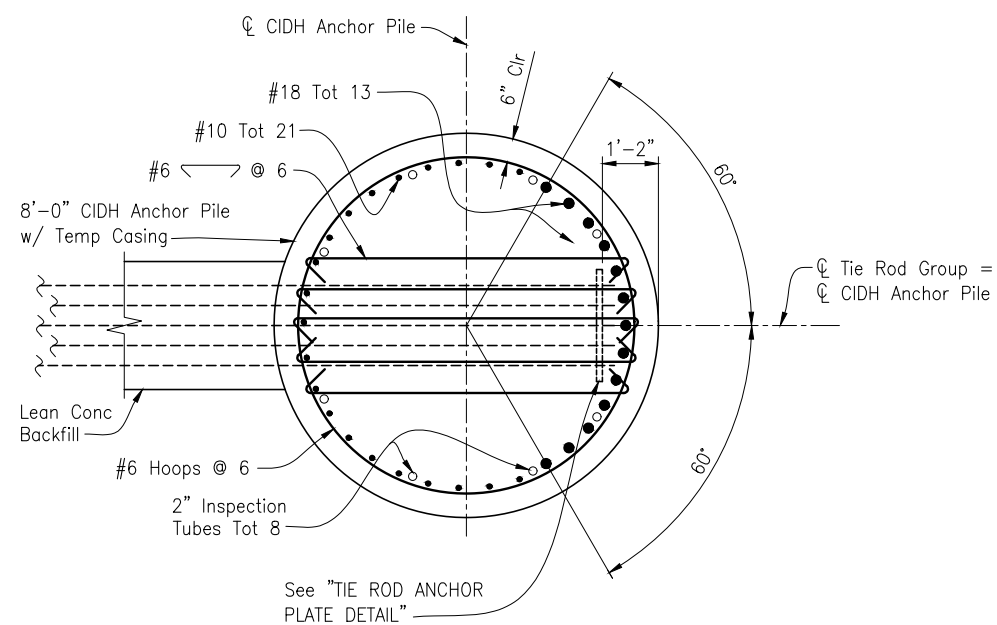
**BENT 9 AND ABUT 10 ELEVATION**  
3/16"=1'-0"



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



**TIE ROD ANCHOR PLATE DETAIL**  
1"=1'-0"



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

- RETROFIT LEGEND:**
- (B) Shear Key and Seat Extension
  - (C) Foundation Retrofit with CISS Piles
  - (D) Bent Retrofit with CISS Piles
  - (E) Abutment Retrofit with Tie Rods and Anchor Piles
  - (F) Curtain Wall

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, Exp. 12-31-24, State of California. TRC Engineers, Inc. is responsible for the accuracy or completeness of electronic copies of this plan sheet.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

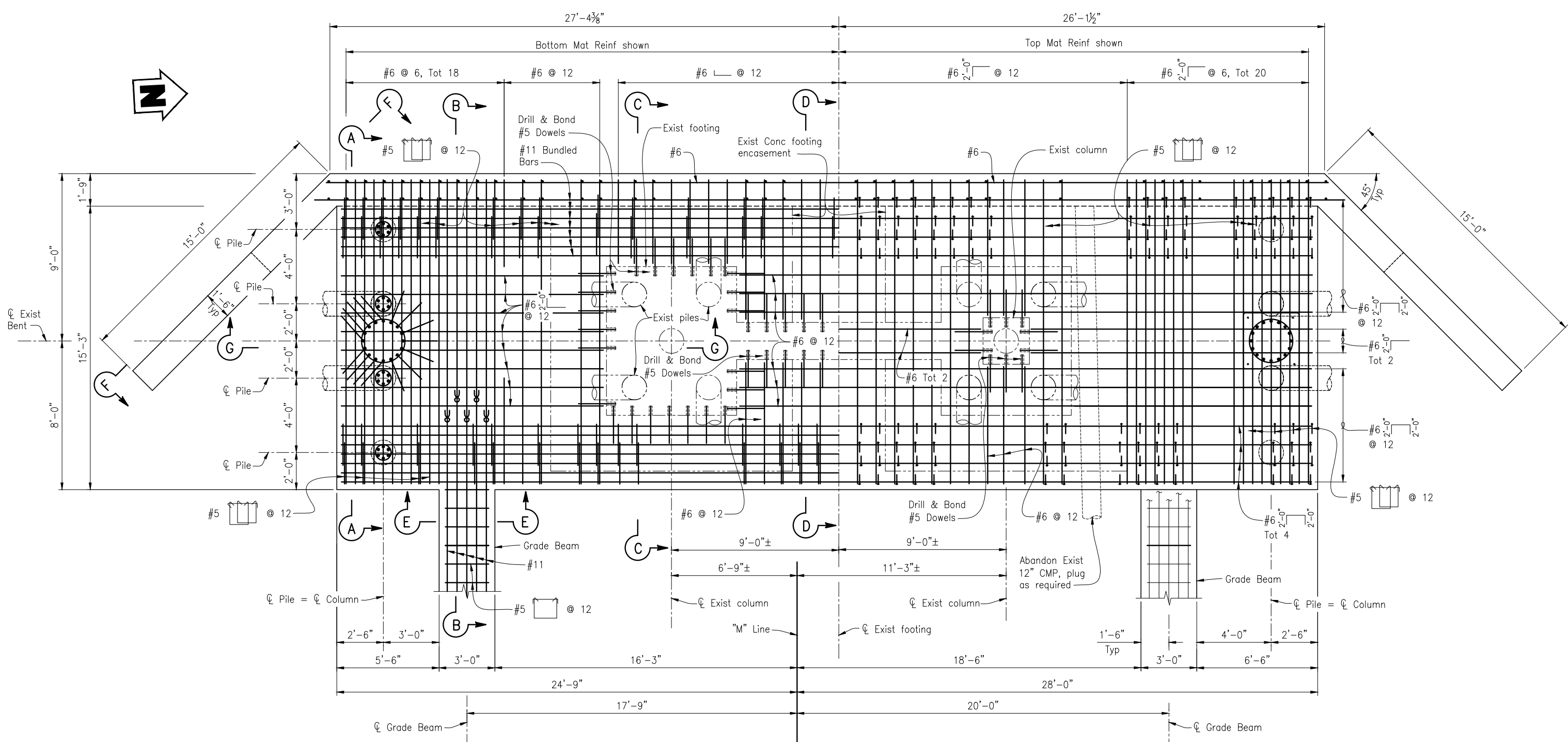
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 9 AND ABUTMENT 10 ELEVATION**

REVISION DATES (PRELIMINARY STAGE ONLY)

09-18-13	01-04-15	07-23-21	12-07-22	03-23-23	04-21-23
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SCALE	AS SHOWN
SHEET	148 OF 196
VAULT NO.	



NOTES: Exist Sinkhole Repair not shown.  
Not all bars shown for clarity.

**BENT 9 FOOTING PLAN**  
3/8" = 1'-0"

**LEGEND:**

- Indicates Existing Structure
- Indicates New Structure
- ⌘ Indicates Bundled Bars

- NOTES:**
- For SECTION A-A thru E-E, see "BENT 9 DETAILS NO. 1" sheet.
  - For ELEVATION F-F and SECTION G-G, see "BENT 9 DETAILS NO. 2" sheet.
  - The Contractor must protect existing reinforcement.

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

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\024-Bent 9 Plan.dwg Layout Tab: Layout1 May 23, 2024 - 8:45am gimbisen

**REGISTERED PROFESSIONAL ENGINEER**  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**

MARK IMBRIANI  
PROJECT MANAGER

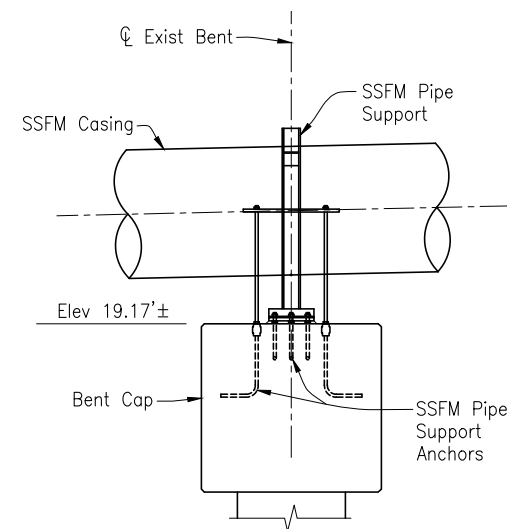
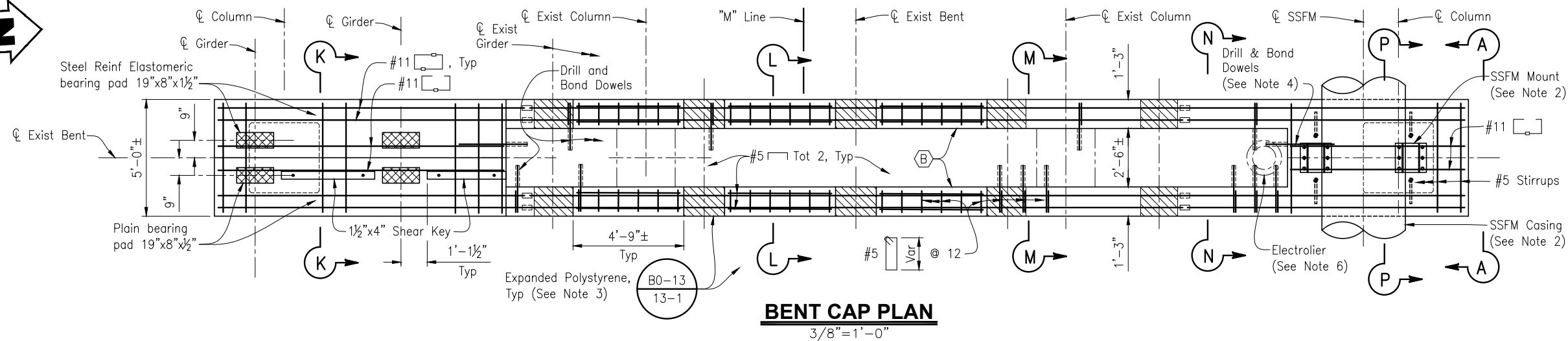
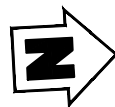
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 9 LAYOUT NO. 1**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	
09-18-13	07-01-15
07-28-21	12-07-22
03-28-23	04-21-23

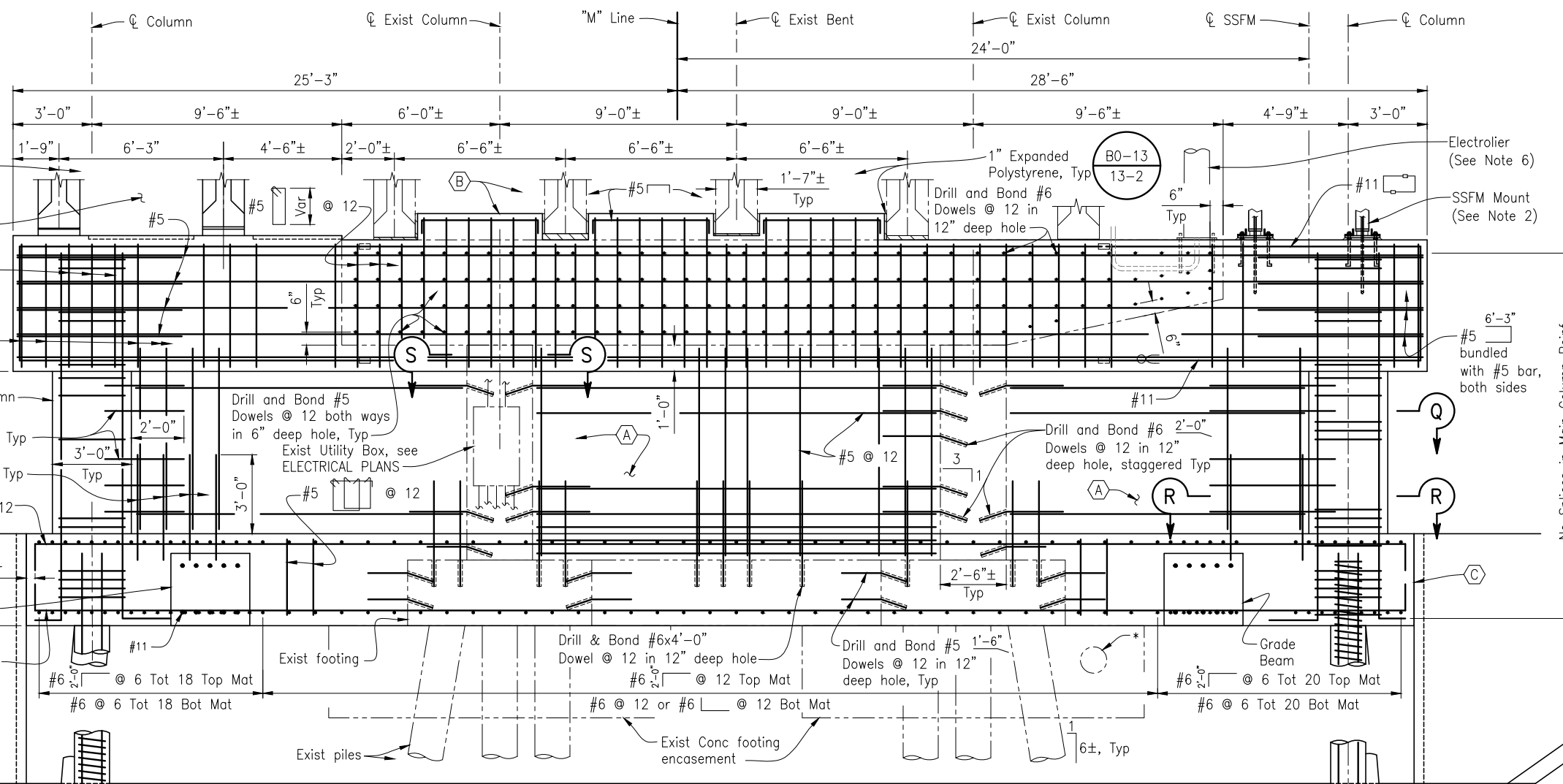
SCALE	AS SHOWN
SHEET	149 OF 196
Vault No.	



- RETROFIT LEGEND:**
- (A) Concrete Infill Wall
  - (B) Shear Key and Seat Extension
  - (C) Foundation Retrofit with CISS Piles
  - (D) Bent Retrofit with CISS Piles
  - (E) Curtain Wall

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)
  - ∞ Indicates bundled bars
  - ⊕ Indicates Ultimate Butt Splice (Alternate Adjacent Splices)

- NOTES:**
1. For SECTION K-K thru S-S, see "BENT 9 DETAILS NO. 3" sheet.
  2. For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
  3. Polystyrene thickness varies, field verify.
  4. See DRILL & BOND DOWELS AT BENT CAP ENDS on "BENT 9 DETAILS No. 3" sheet.
  5. The Contractor must protect existing reinforcement.
  6. Reset Structure Mounted Electrolier. See "BENTS 5 THRU 8 DETAILS No. 1" sheet.



NOTES: Sinkhole Repair not shown.  
Not all bars shown for clarity. For callouts and dimensions not shown, see "BENT 9 FOOTING PLAN" on "BENT 9 LAYOUT NO. 1" sheet.

**BENT 9 ELEVATION**  
3/8"=1'-0"

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

REGISTRED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

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DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

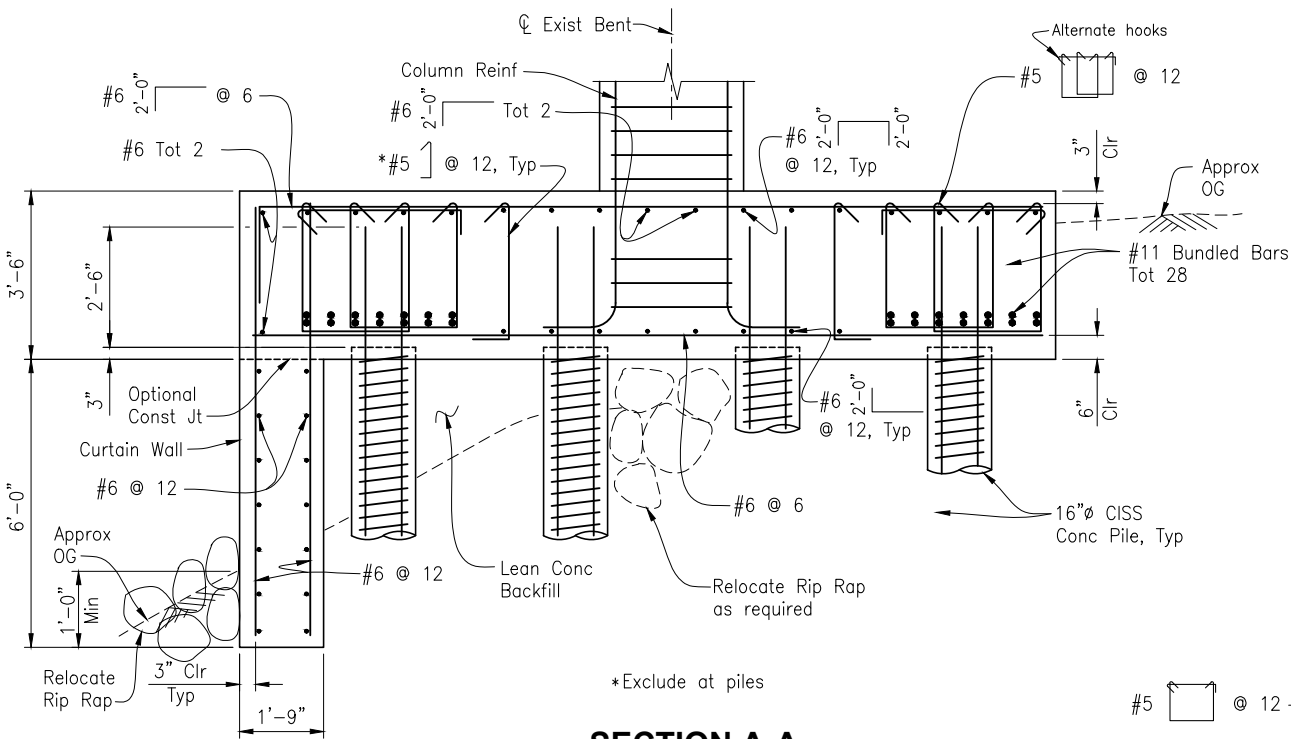
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 9 LAYOUT NO. 2**

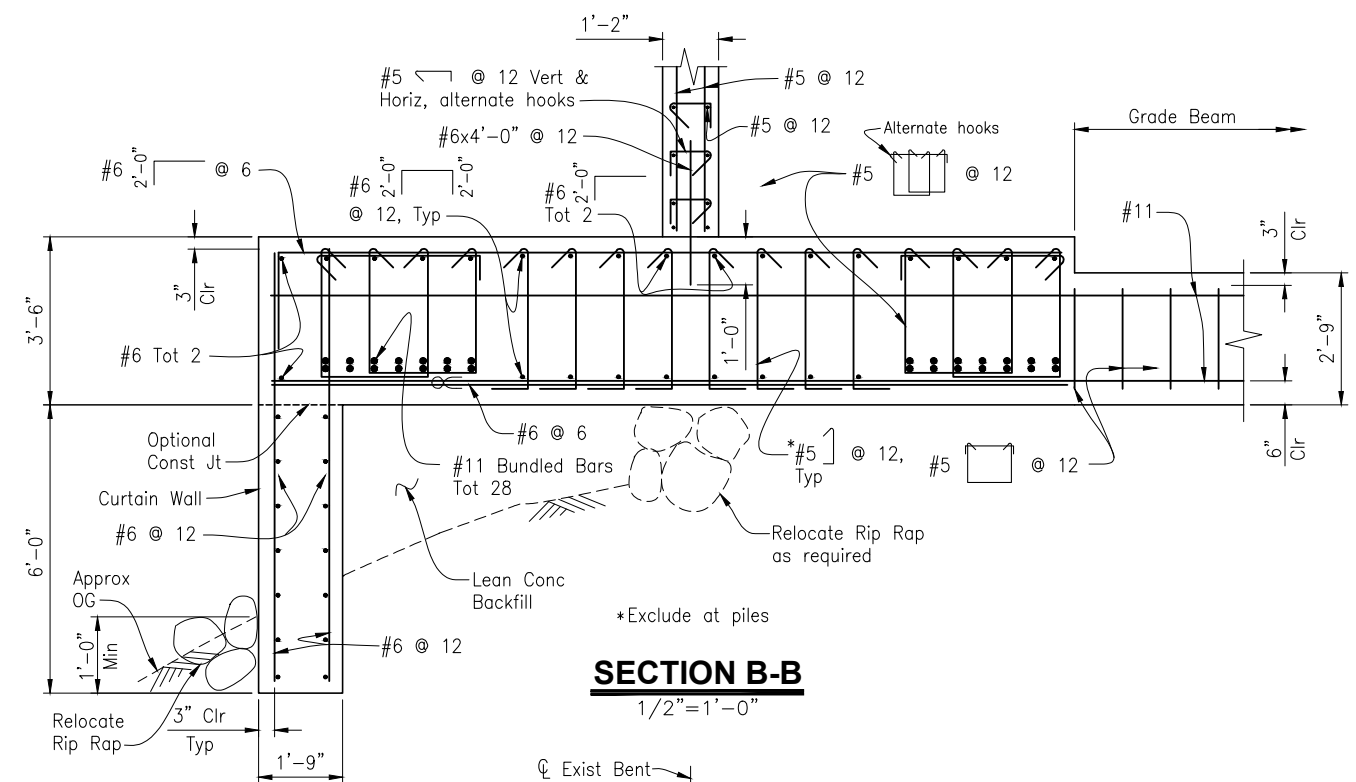
REVISION DATES (PRELIMINARY STAGE ONLY)

09-18-13	07-01-15	07-28-21	12-07-22	03-28-23	04-21-23
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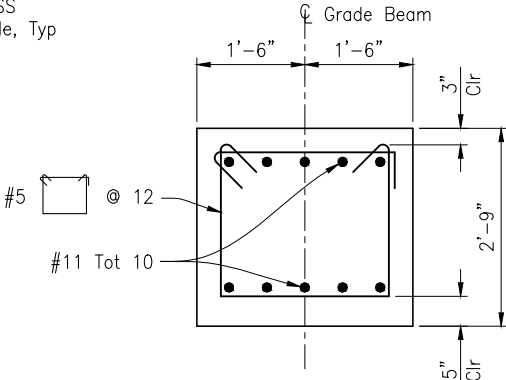
SCALE	AS SHOWN
SHEET	150 OF 196
Vault No.	



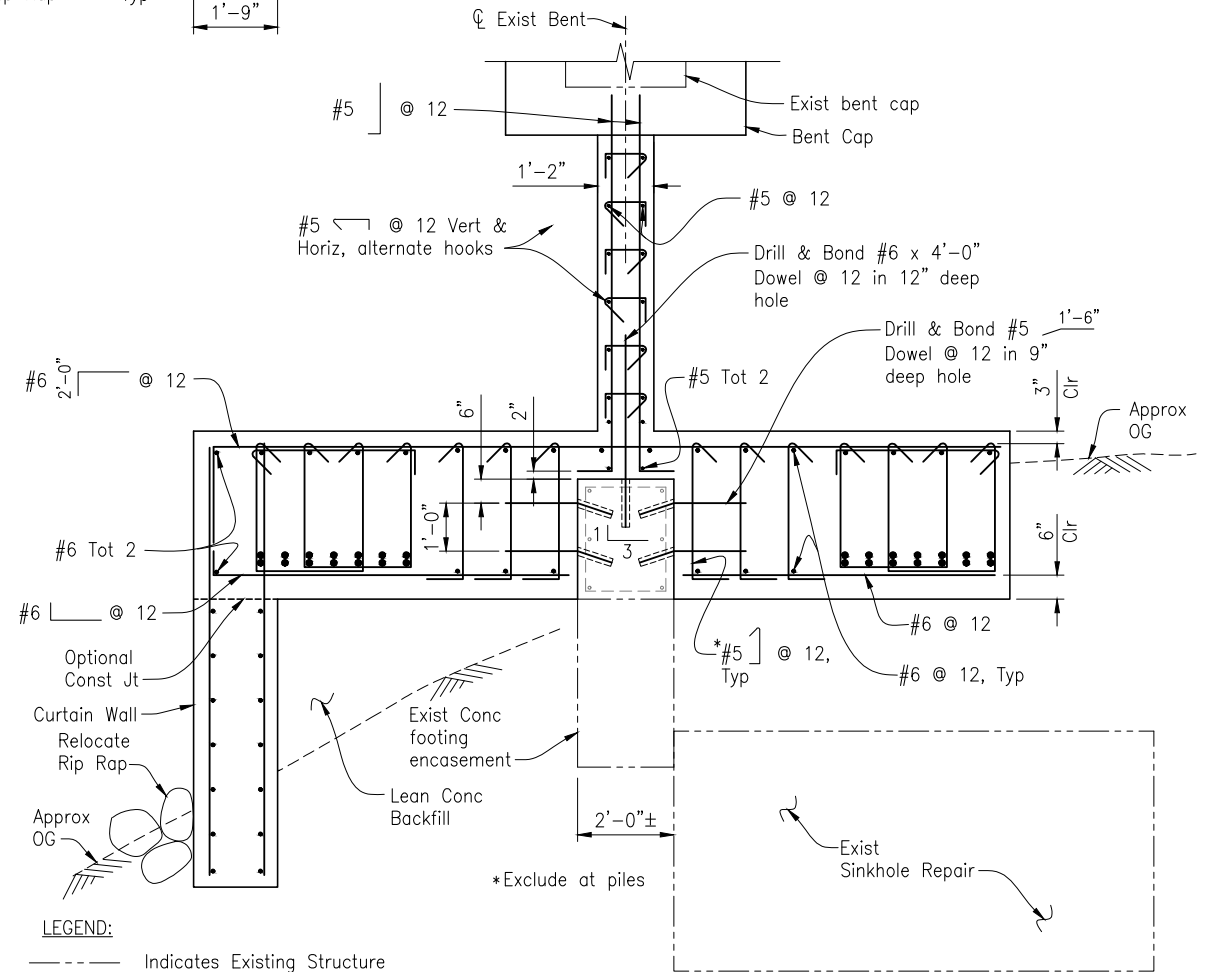
**SECTION A-A**  
1/2"=1'-0"



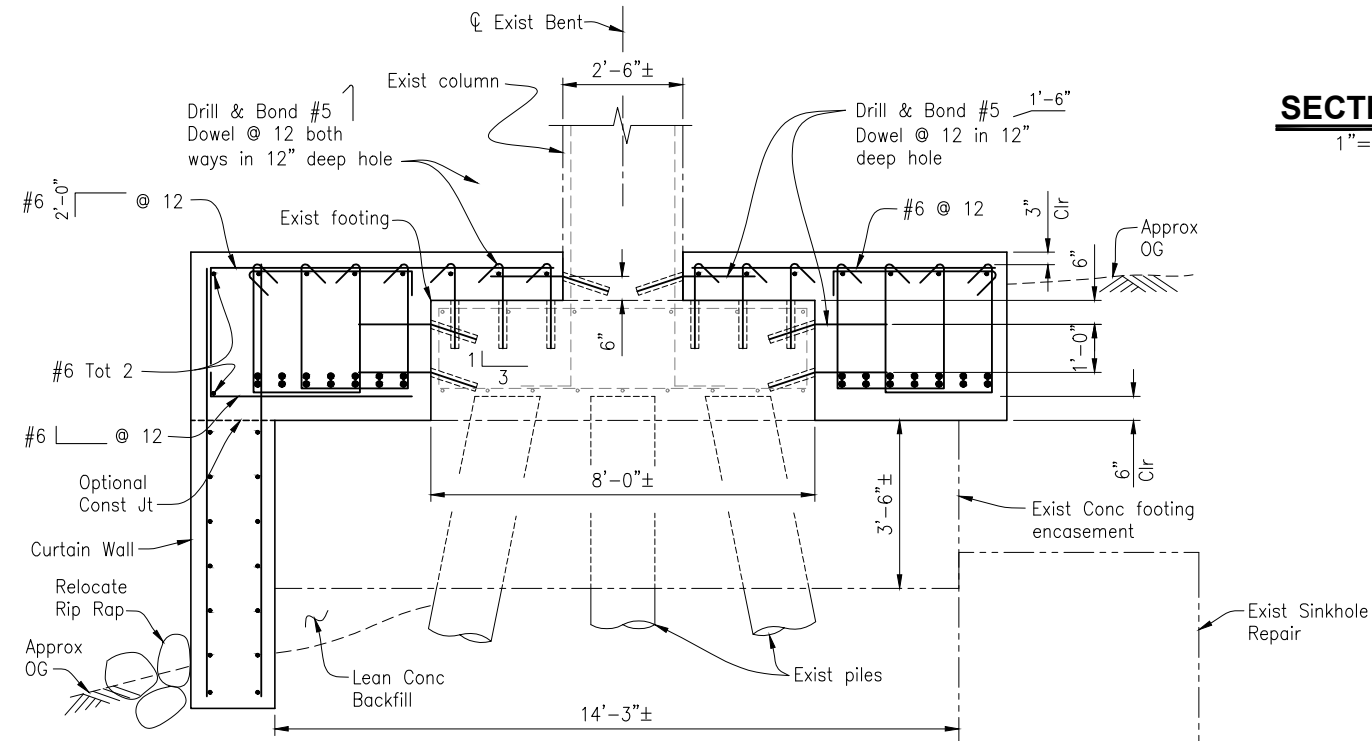
**SECTION B-B**  
1/2"=1'-0"



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



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



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

**NOTES:**

1. Temporary Shoring not shown, Contractor to determine limits of Temporary Shoring.
2. The Contractor must protect existing reinforcement.

**LEGEND:**

- Indicates Existing Structure
- Indicates New Structure
- ⊗ Indicates bundled bars

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\026-Bent 9 Details.dwg Layout Tab: Layout1 May 21, 2024 - 7:56am Adarboza

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

CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

MARK IMBRIANI  
 PROJECT MANAGER

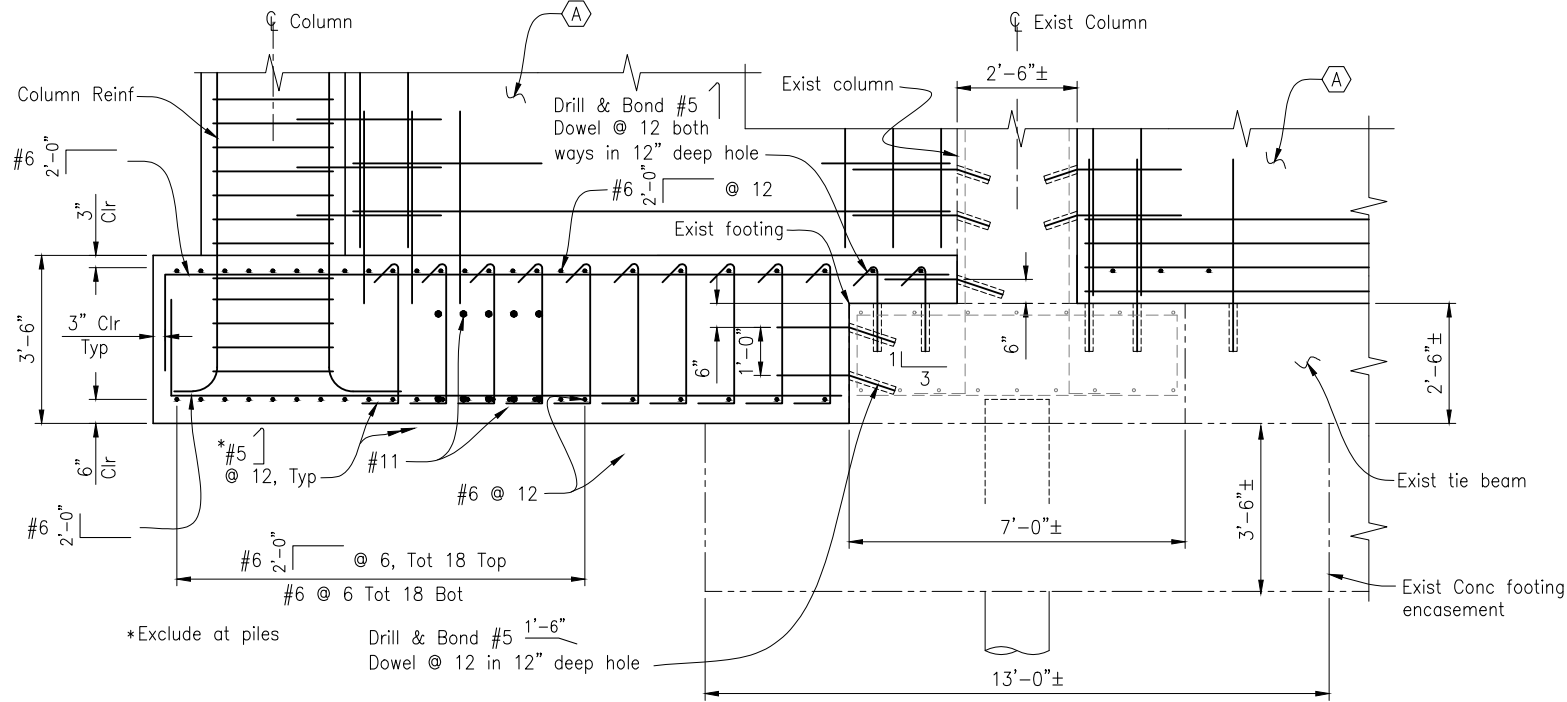
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 9 DETAILS NO. 1**

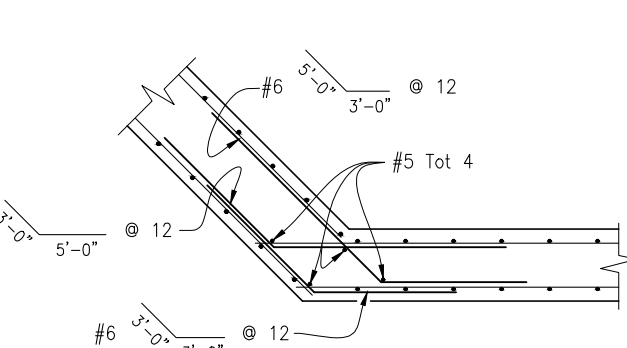
DISREGARD PRINTS BEARING EARLIER REVISION DATES →
 

09-18-13	07-01-15	07-23-21	12-07-22	03-28-23	04-21-23
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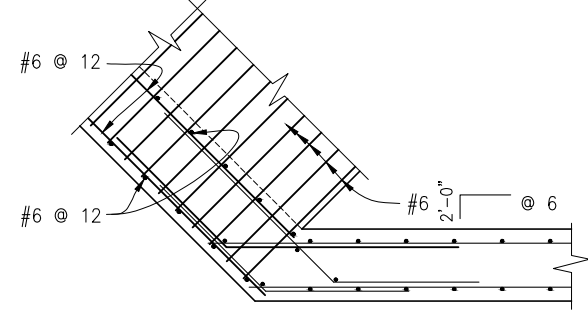
SCALE	AS SHOWN
SHEET	151 OF 196
Vault No.	



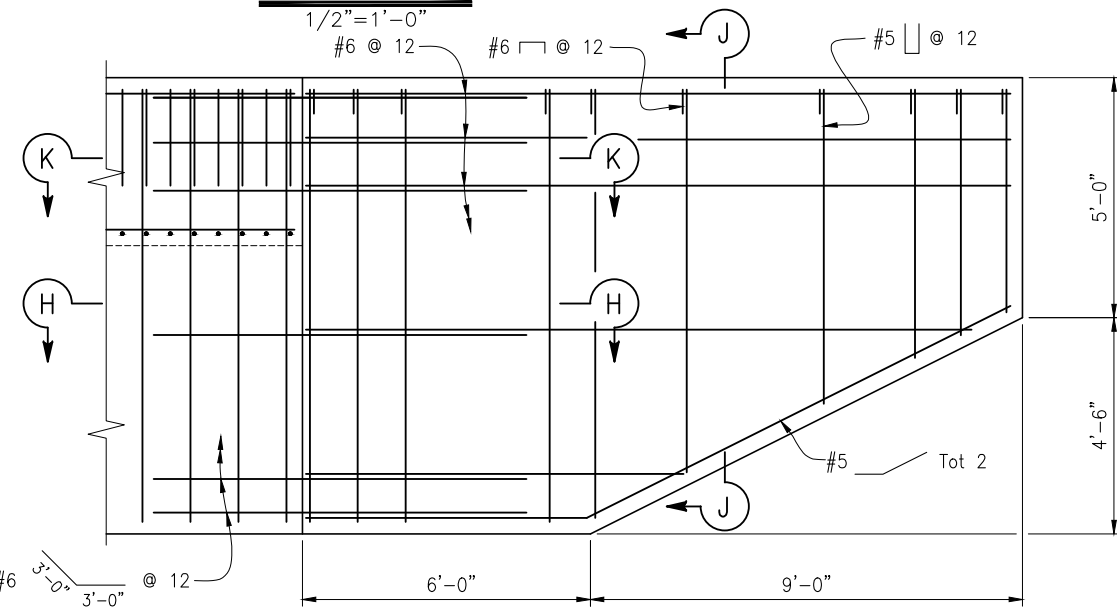
**SECTION G-G**  
1/2"=1'-0"



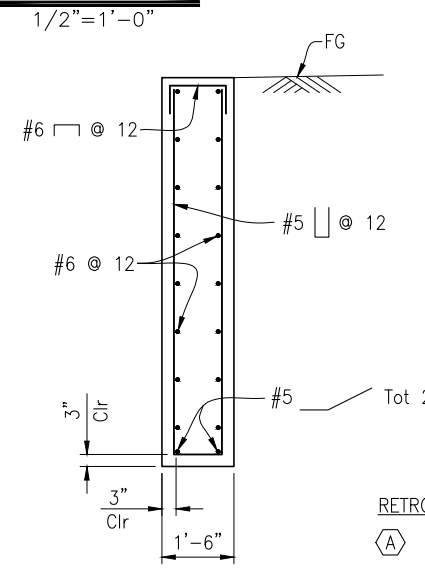
**SECTION H-H**  
1/2"=1'-0"



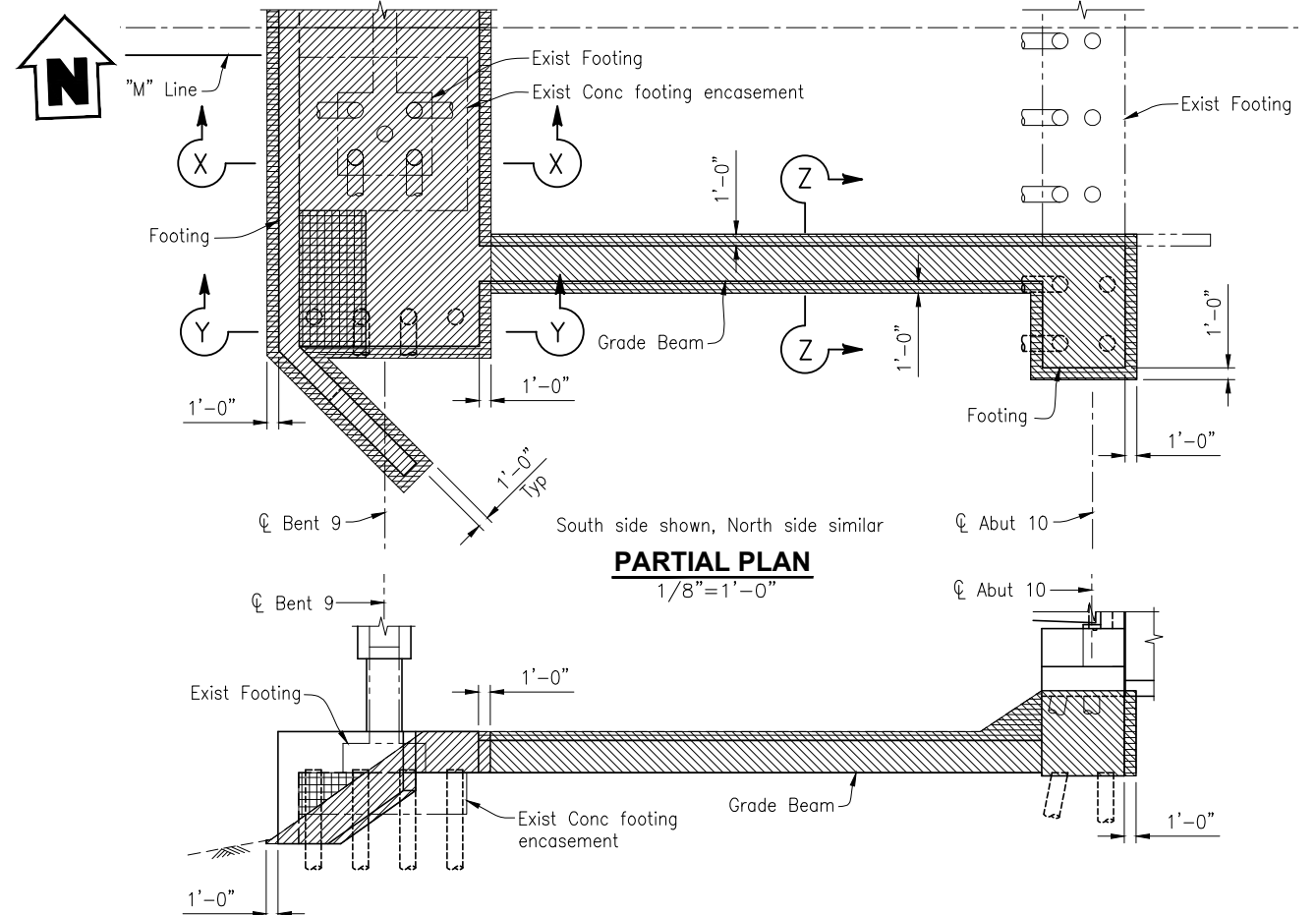
**SECTION K-K**  
1/2"=1'-0"



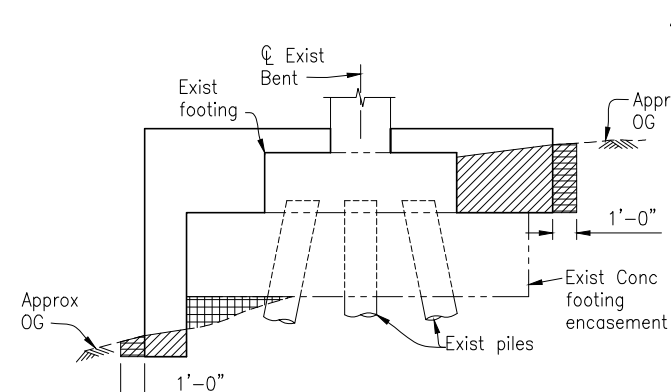
**ELEVATION F-F**  
1/2"=1'-0"



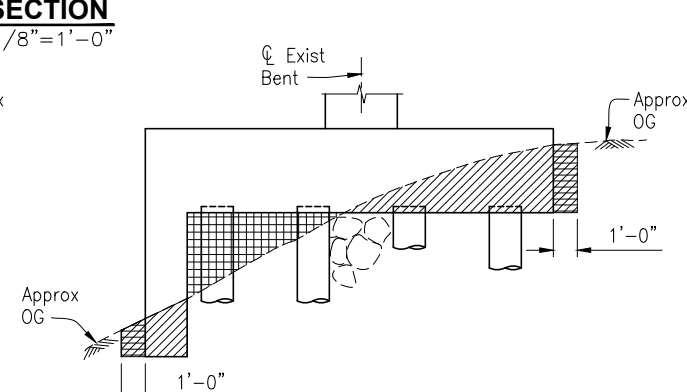
**SECTION J-J**  
1/2"=1'-0"



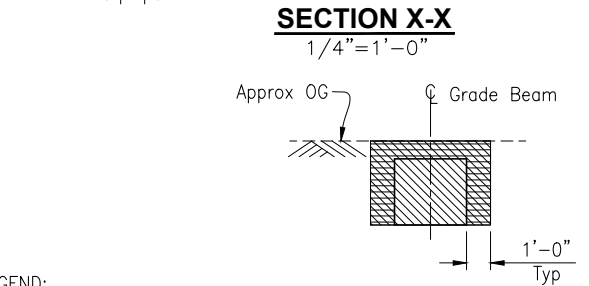
**PARTIAL PLAN**  
1/8"=1'-0"



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



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



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

- LEGEND:**
- Indicates Structure Excavation (Type D)
  - Indicates Structure Excavation (Bridge)
  - Indicates Structure Backfill (Bridge)
  - Indicates Lean Concrete Backfill

- RETROFIT LEGEND:**
- (A) Concrete Infill Wall
- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure

**LIMITS OF PAYMENT FOR EXCAVATION & BACKFILL**

NOTE: The Contractor must protect existing reinforcement.

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, Exp. 12-31-24, State of California.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

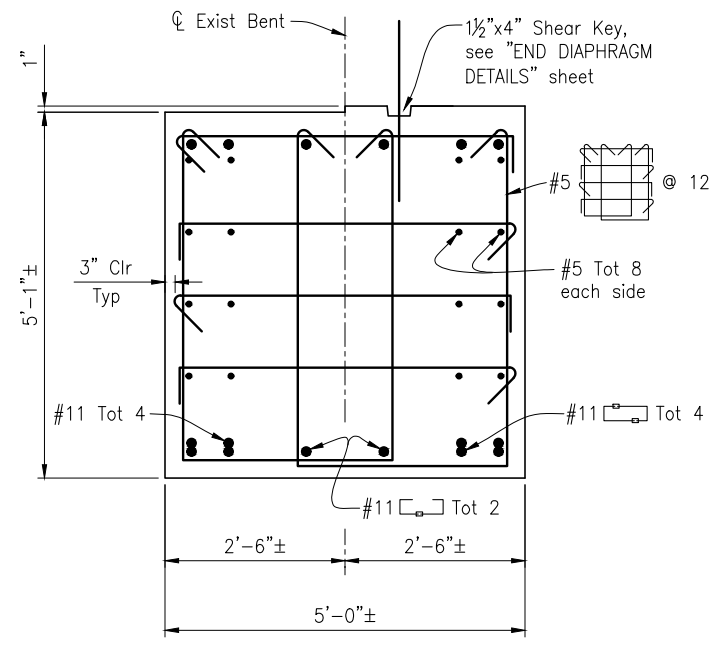
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 9 DETAILS NO. 2**

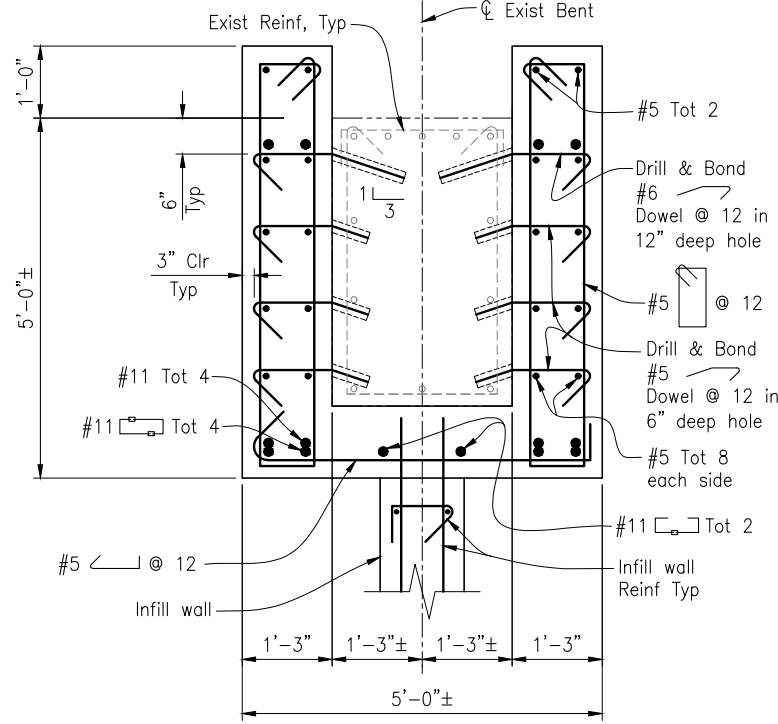
REVISION DATES (PRELIMINARY STAGE ONLY)

09-18-13	01-01-15	07-28-21	12-07-22	03-28-23	04-21-23
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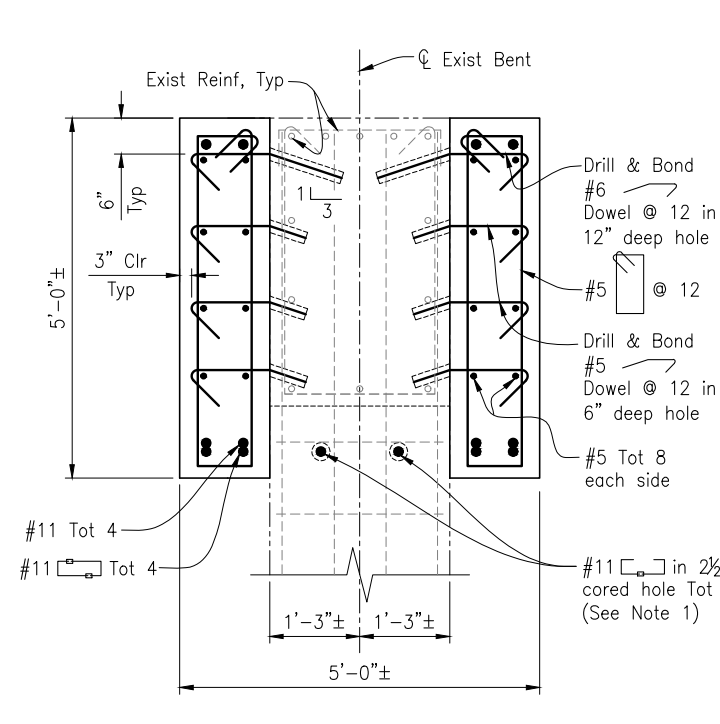
SCALE	AS SHOWN
SHEET	152 OF 196
Vault No.	



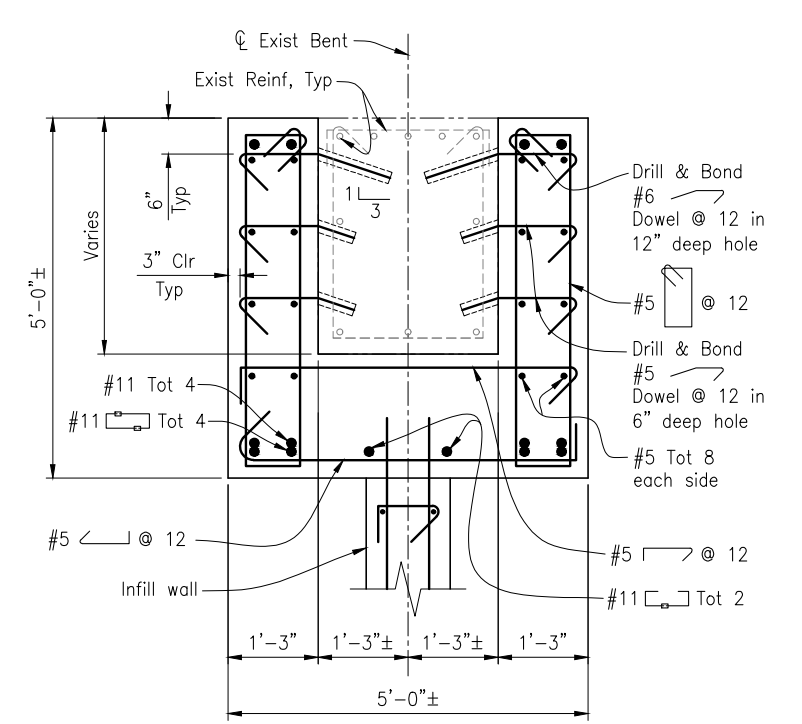
**SECTION K-K**  
3/4"=1'-0"



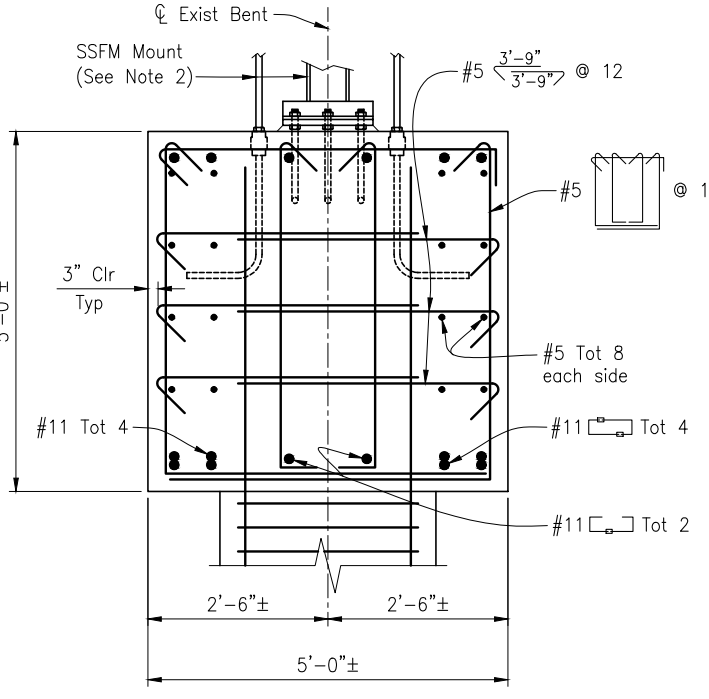
**SECTION L-L**  
3/4"=1'-0"



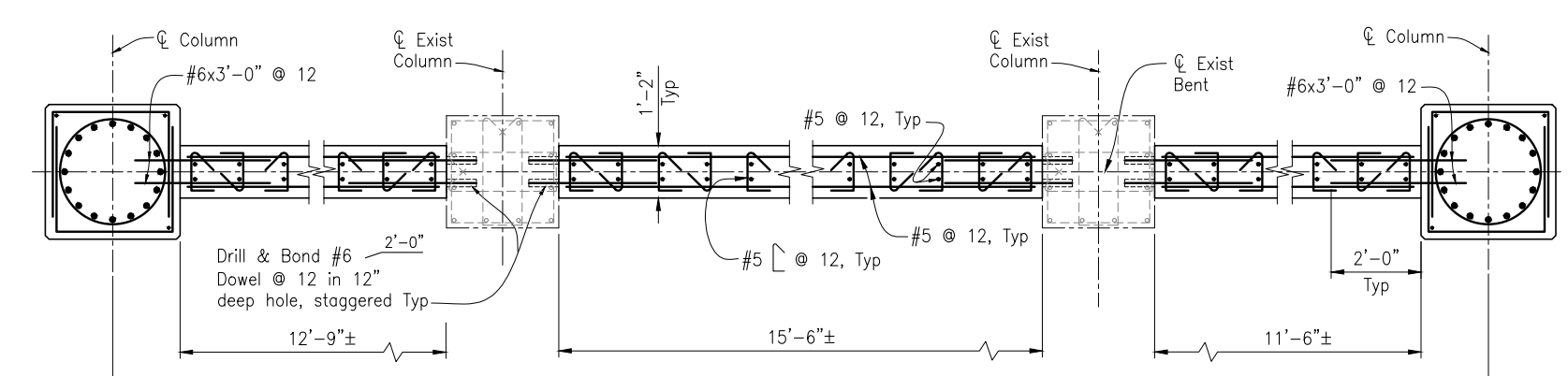
**SECTION M-M**  
3/4"=1'-0"



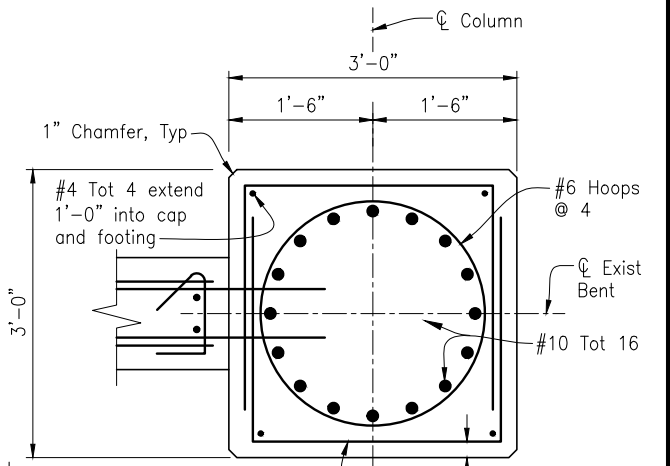
**SECTION N-N**  
3/4"=1'-0"



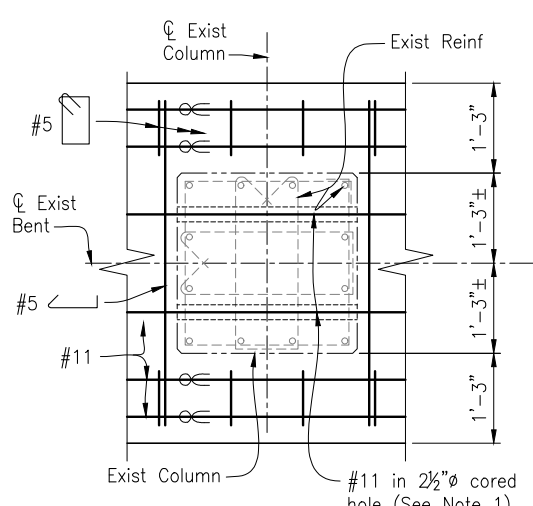
**SECTION P-P**  
3/4"=1'-0"



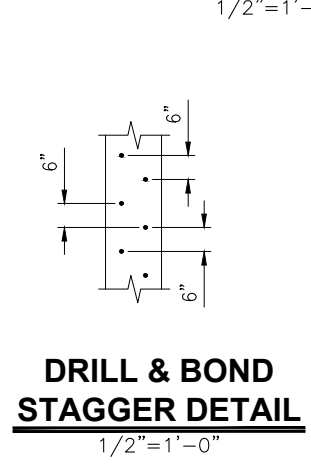
**SECTION Q-Q**  
1/2"=1'-0"



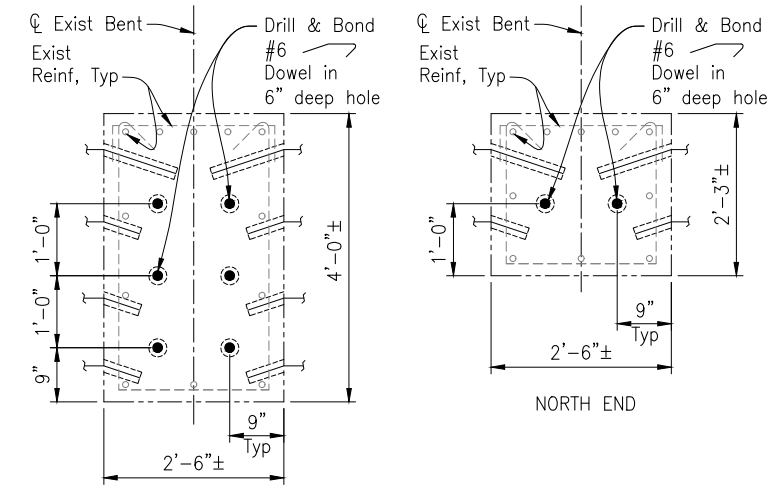
**SECTION R-R**  
1"=1'-0"



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



**DRILL & BOND STAGGER DETAIL**  
1/2"=1'-0"



**DRILL & BOND DOWELS AT BENT CAP ENDS**  
3/4"=1'-0"

- NOTES:**
- Holes cored through existing column to miss existing reinforcement. Pressure grout bars in cored holes.
  - For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
  - The Contractor must protect existing reinforcement.
- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ⊗ Indicates bundled bars

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

REGISTERED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

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DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

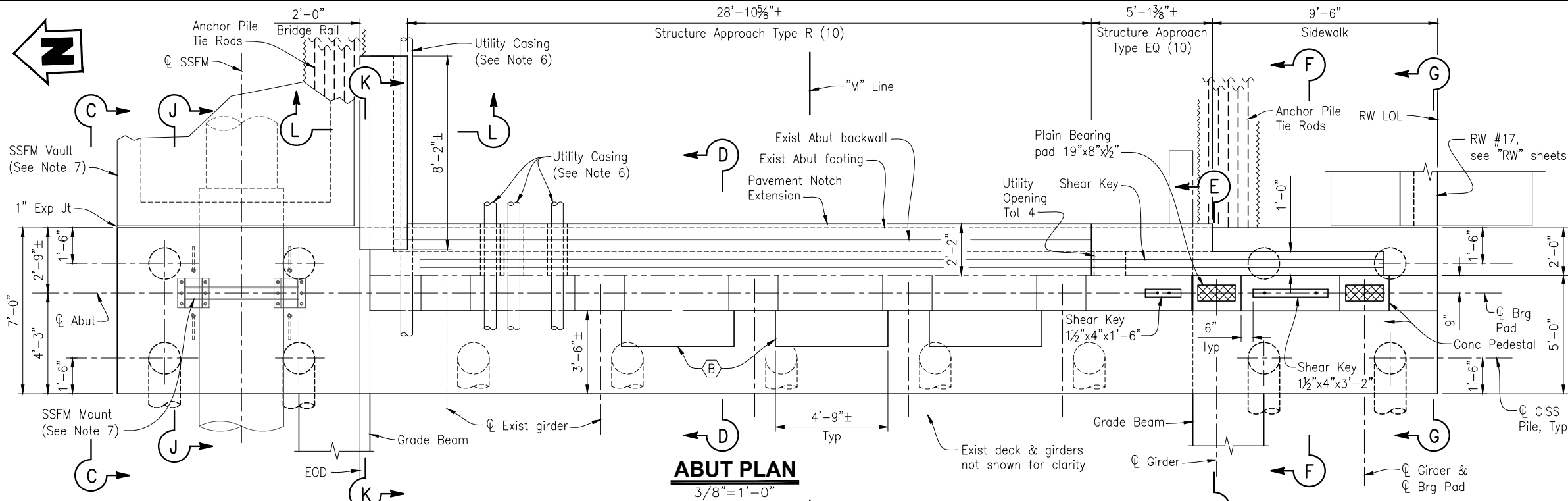
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**BENT 9 DETAILS NO. 3**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

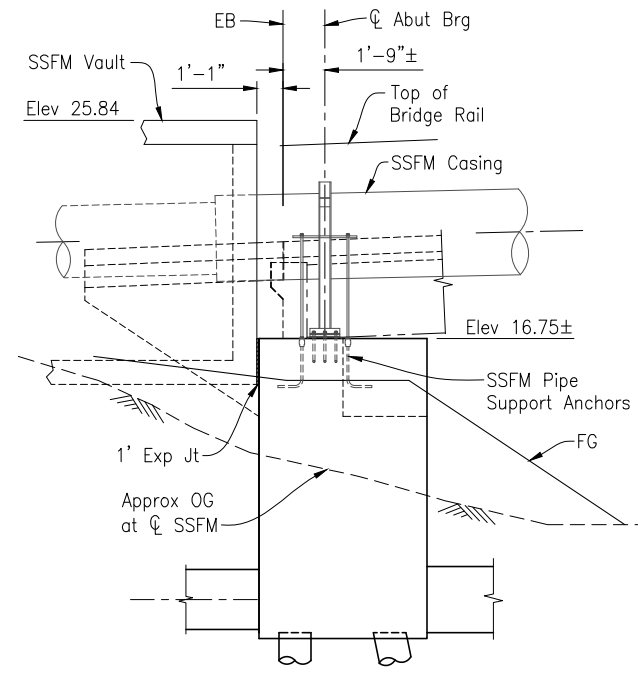
REVISION DATES (PRELIMINARY STAGE ONLY)	09-18-13	07-01-15	07-28-21	12-07-22	03-28-23	04-21-23
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SCALE	AS SHOWN
SHEET	153 OF 196
Vault No.	

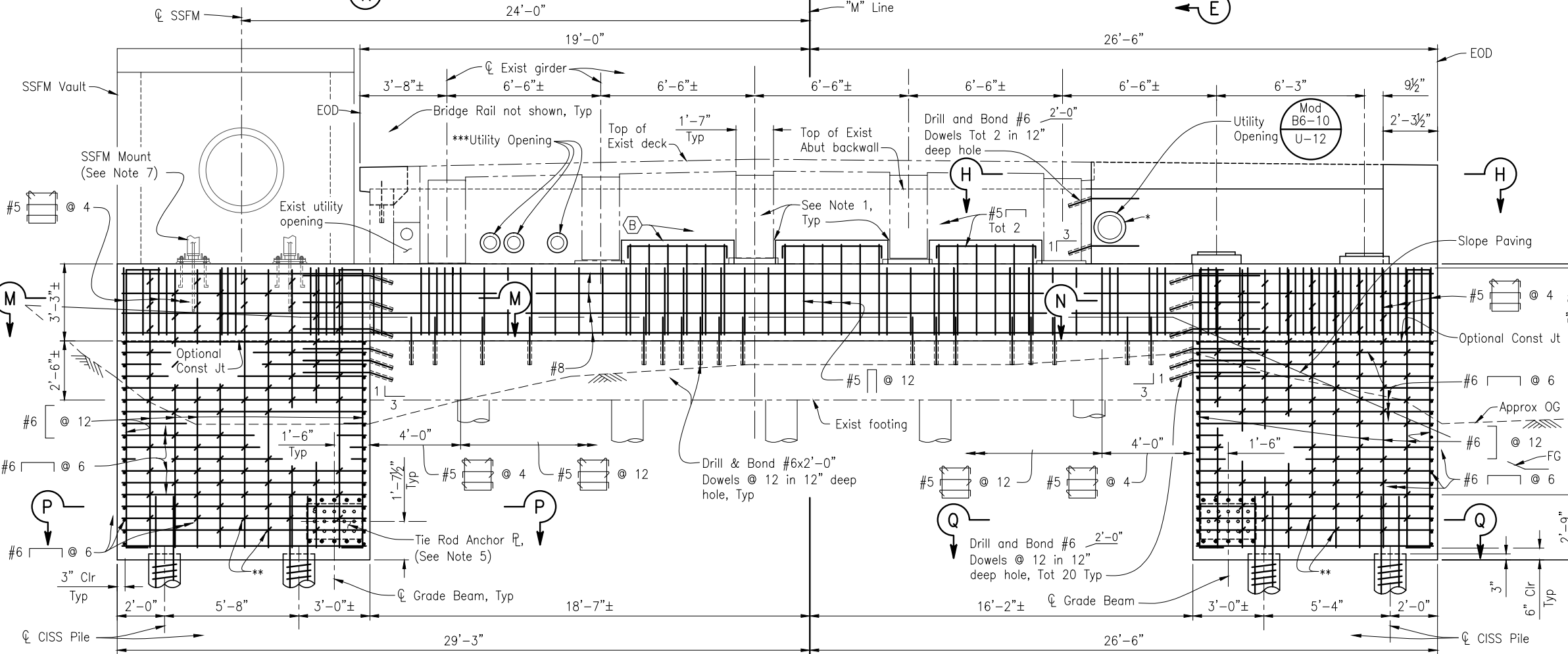




**ABUT PLAN**  
3/8" = 1'-0"



**VIEW C-C**  
1/4" = 1'-0"



**ABUT 10 ELEVATION**  
3/8" = 1'-0"

**RETROFIT LEGEND:**  
 (B) Shear Key and Seat Extension

**LEGEND:**  
 - - - - - Indicates Existing Structure  
 ———— Indicates New Structure

- NOTES:**
- 1" Expanded Polystyrene (B0-13 13-2)
  - For SECTION D-D thru H-H, see "ABUTMENT 10 DETAILS NO. 1" sheet.
  - For SECTION J-J thru L-L, see "ABUTMENT 10 DETAILS NO. 2" sheet.
  - For SECTION M-M thru Q-Q, see "ABUTMENT 10 DETAILS NO. 3" sheet.
  - See "TIE ROD ANCHOR PLATE DETAIL" on "BENT 9 AND ABUTMENT 10 ELEVATION" sheet.
  - Casings for PG&E electrical, PG&E gas, and Comcast to extend 5' beyond approach slabs. For sizes, see "TYPICAL SECTION" sheet. For 10"Ø CORED HOLE DETAIL, see "ABUTMENT 10 DETAILS NO. 2" sheet.
  - For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.
  - The Contractor must protect existing reinforcement.

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

\*16"Ø formed hole for 12"Ø waterline

\*\* #5 @ 12 both ways, alternate hooks

\*\*\* Core 10"Ø hole through Exist diaphragm and Abut backwall for utility casing (See Note 6)

Professional Engineer  
 CAMERON J. PINKERTON  
 No. 73288  
 Exp. 12-31-24  
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 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

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DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
 MARK IMBRIANI  
 PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**ABUTMENT 10 PLAN & ELEVATION**

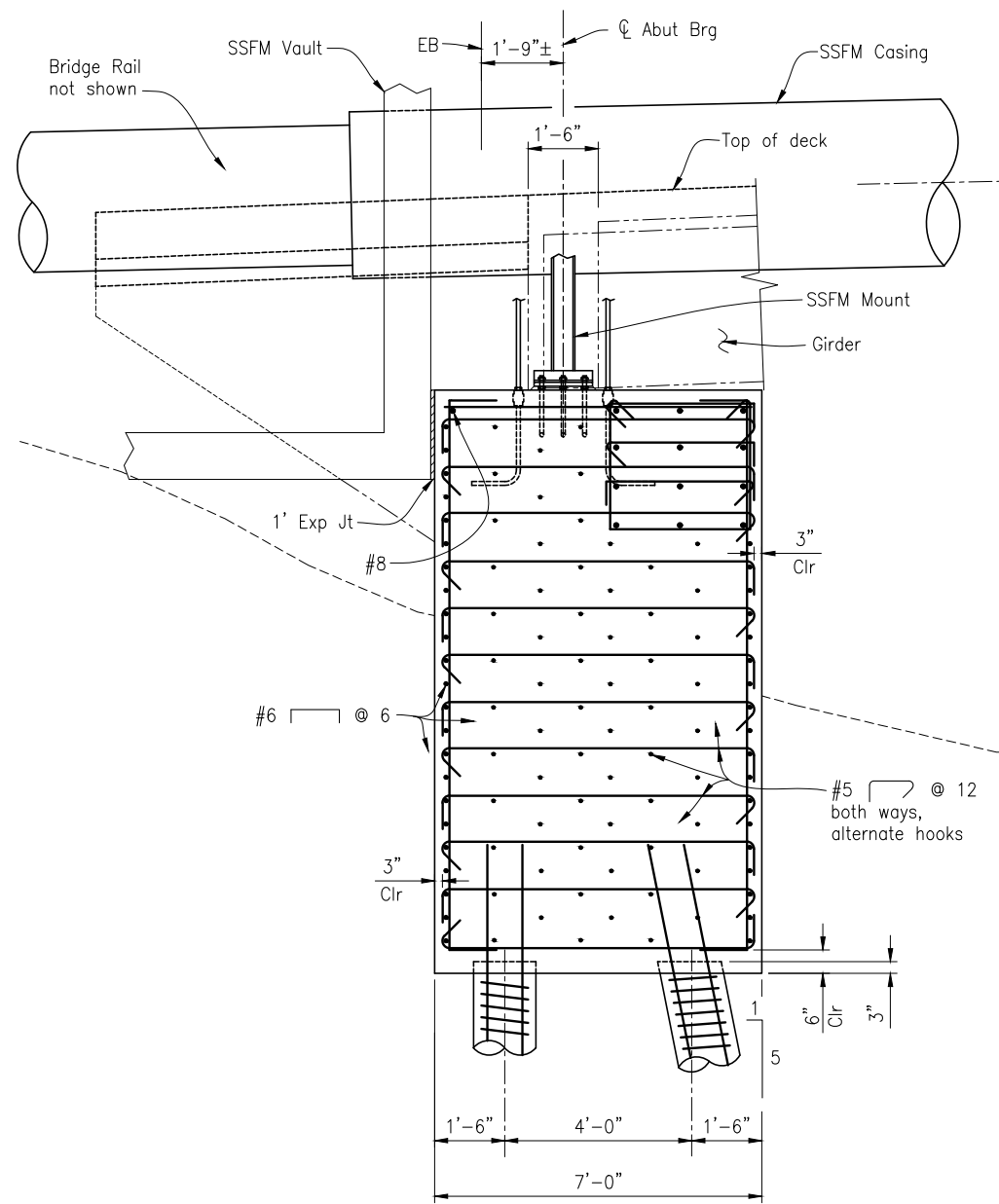
REVISION DATES (PRELIMINARY STAGE ONLY)

09-18-13	07-01-15	04-30-20	07-23-21	12-07-22	03-28-23	04-21-23
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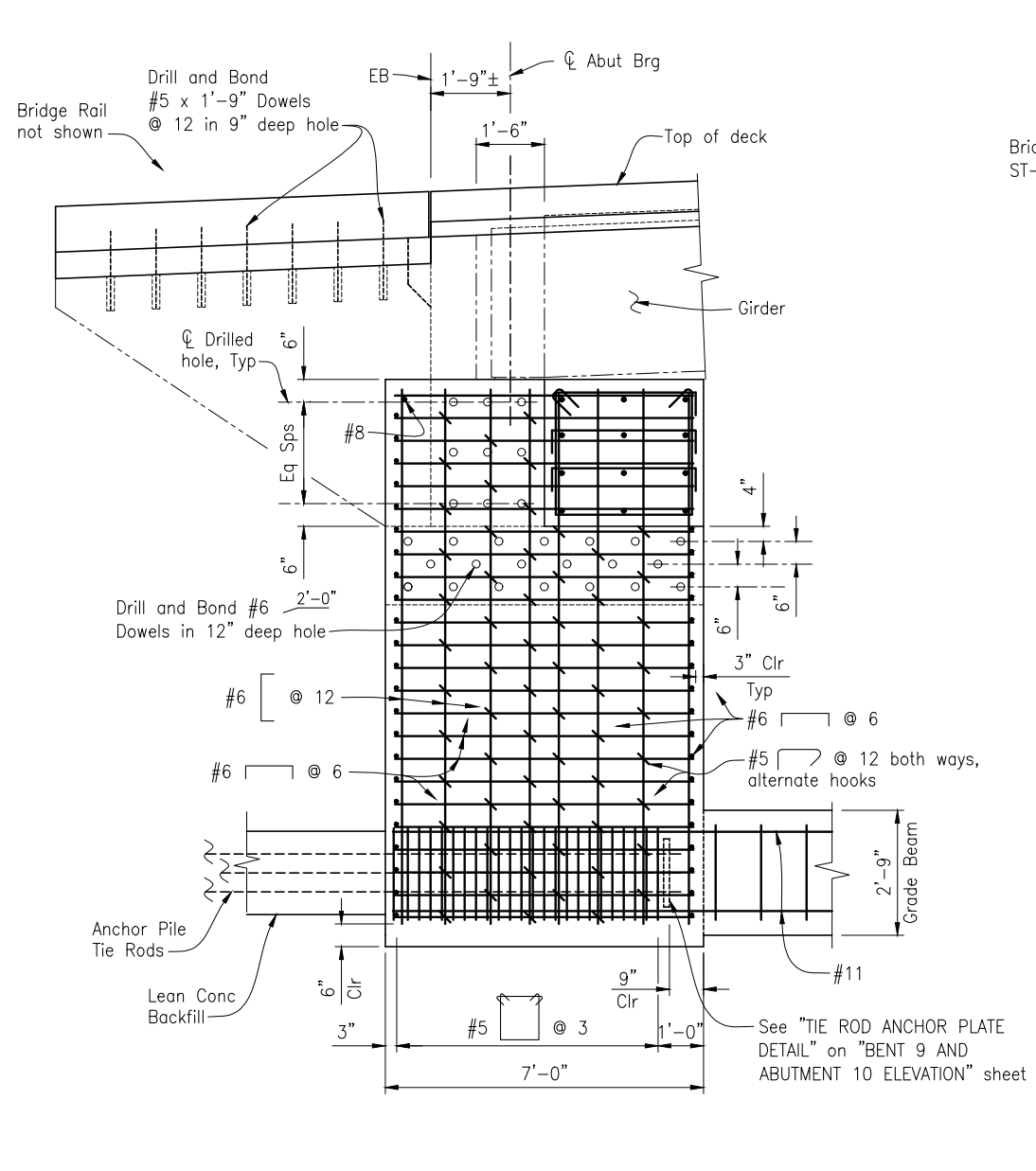
SCALE	AS SHOWN
SHEET	155 OF 196
VAULT NO.	



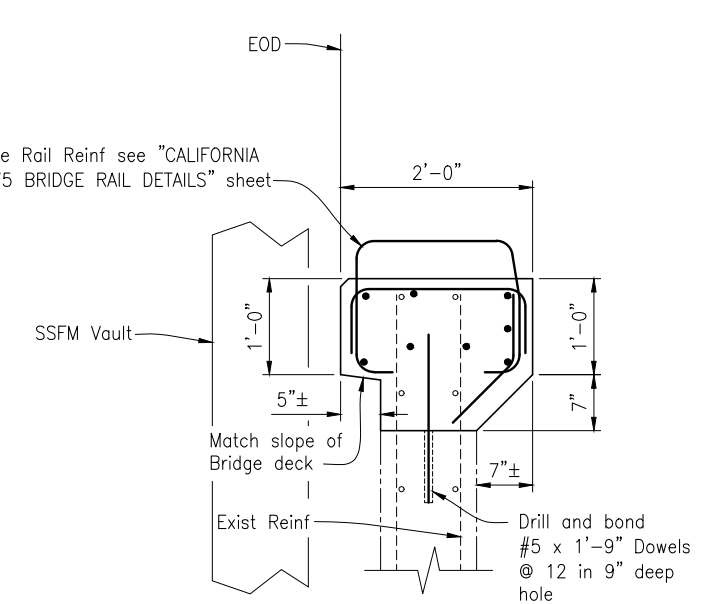
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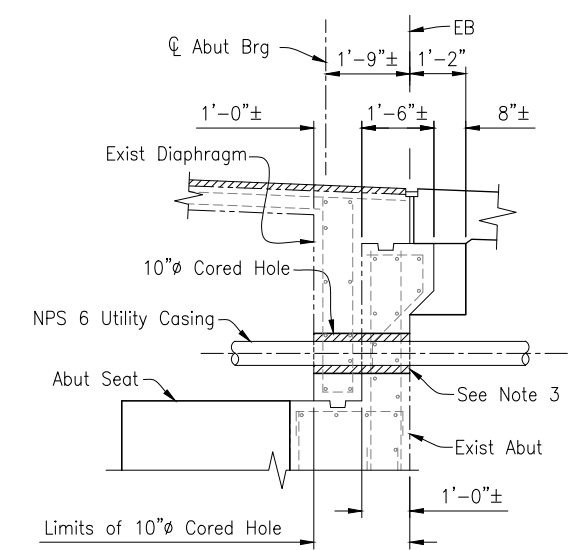
**SECTION J-J**  
1/2" = 1'-0"



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



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



**10"Ø CORED HOLE DETAIL**  
1/2" = 1'-0"

**LEGEND:**  
 - - - - - Indicates Existing Structure  
 ———— Indicates New Structure

**NOTES:**  
 1. For Sanitary Sewer Force Main (SSFM) details, see SANITARY SEWER FORCE MAIN PLANS.  
 2. The Contractor must protect existing reinforcement.  
 3. Seal utilities at abutments with concrete or mortar, after tightly wrapping utility casing with 2 layers of 15 LBS building paper.

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

CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

MARK IMBRIANI  
 PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

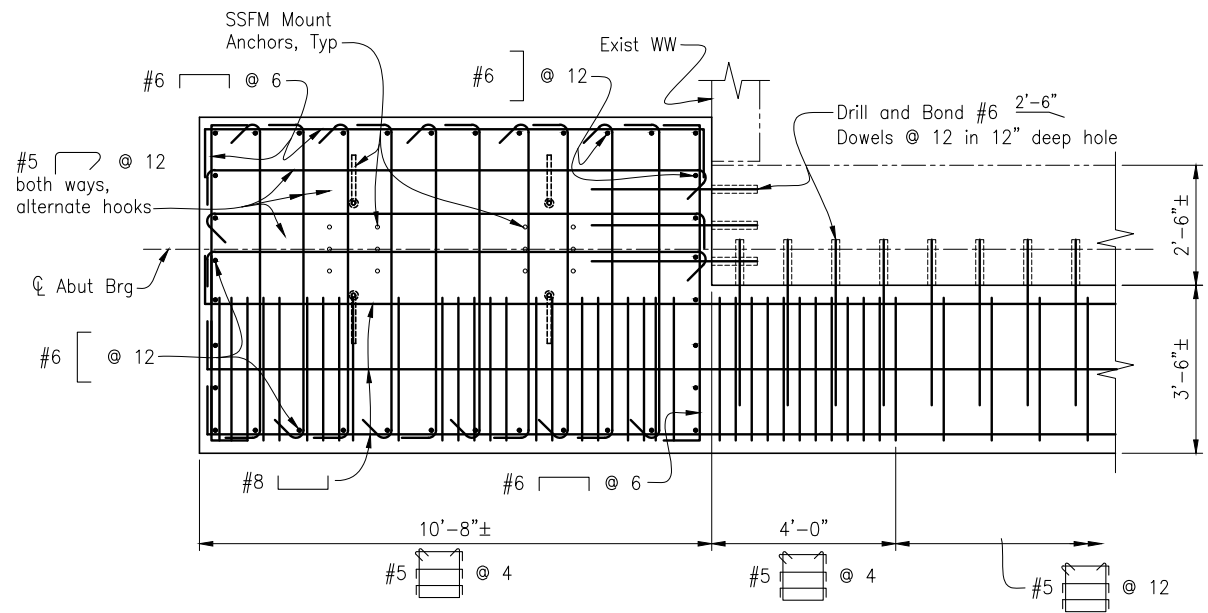
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**ABUTMENT 10 DETAILS NO. 2**

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

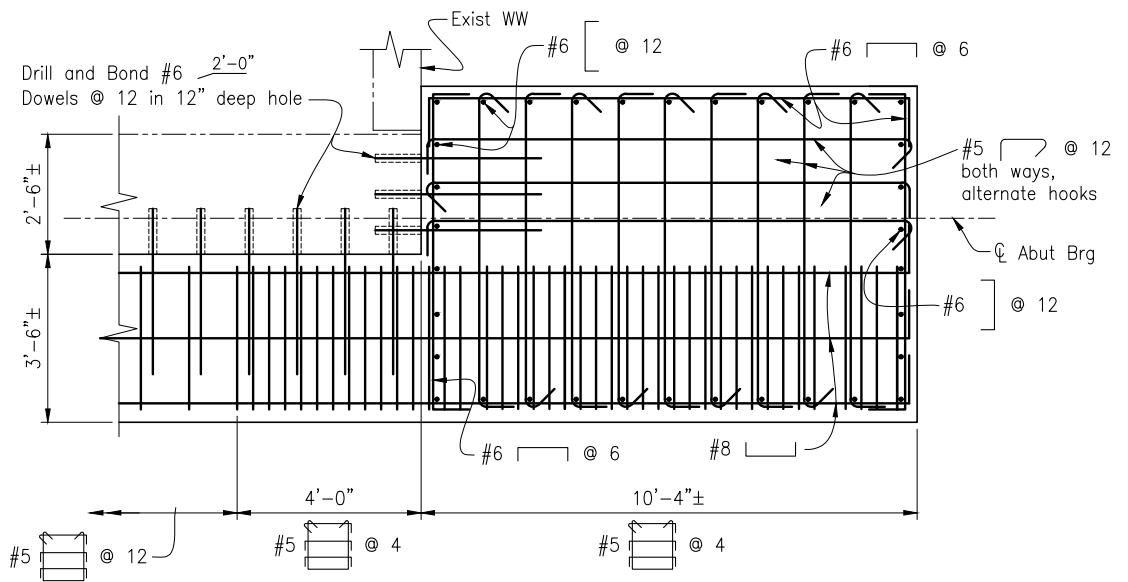
09-18-13	07-23-21	12-07-22	03-23-23	04-21-23
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REVISION DATES (PRELIMINARY STAGE ONLY)

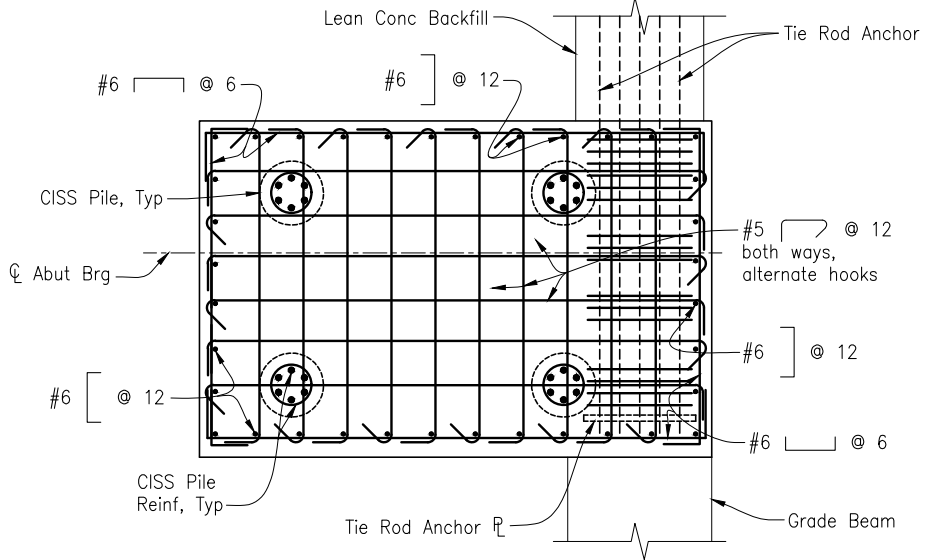
SCALE	AS SHOWN
SHEET	157 OF 196
Vault No.	



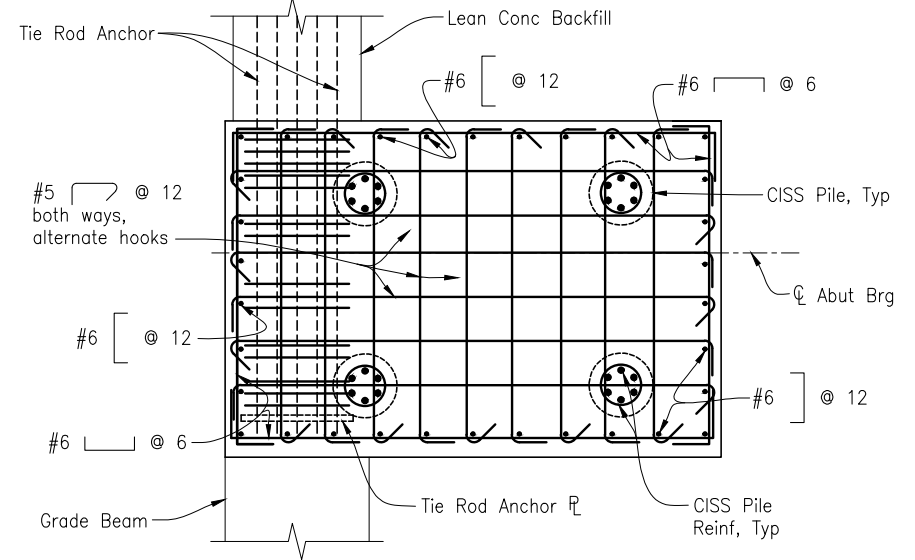
**SECTION M-M**  
1/2"=1'-0"



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



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



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

**NOTES:**

- The Contractor must protect existing reinforcement.

**LEGEND:**

- Indicates Existing Structure
- Indicates New Structure

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, Exp. 12-31-24, State of California.

PREPARED FOR THE CITY OF SANTA CRUZ PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

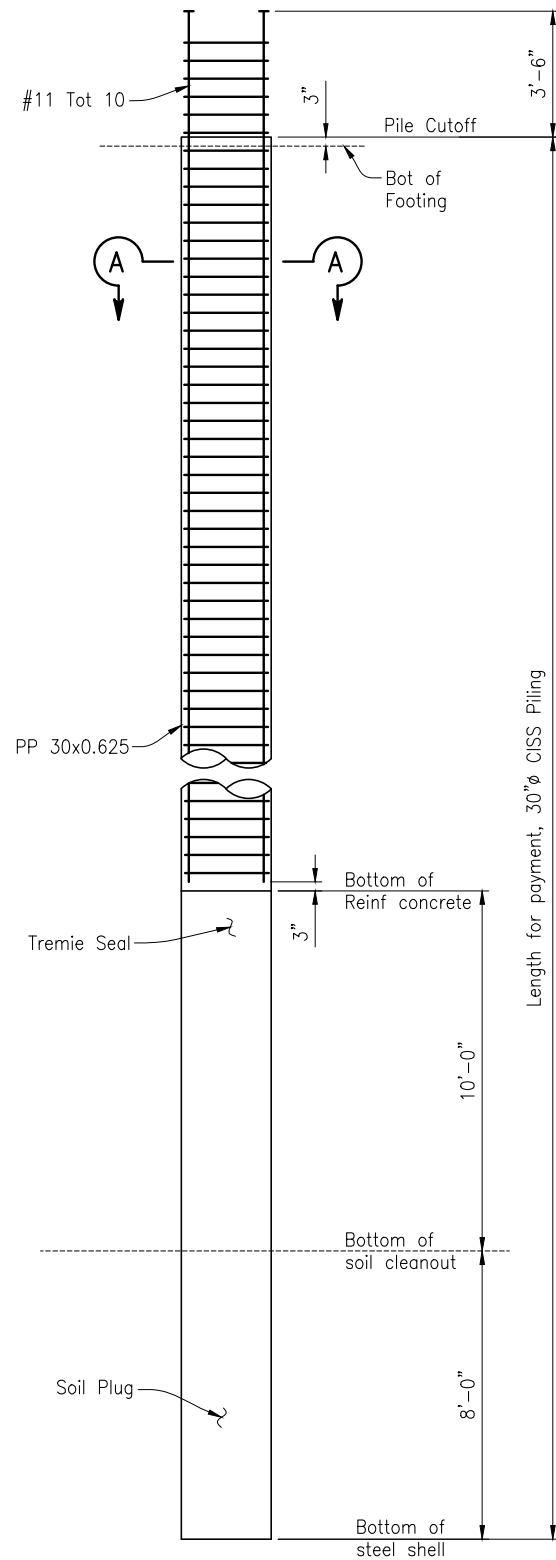
TRC MARK IMBRIANI PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

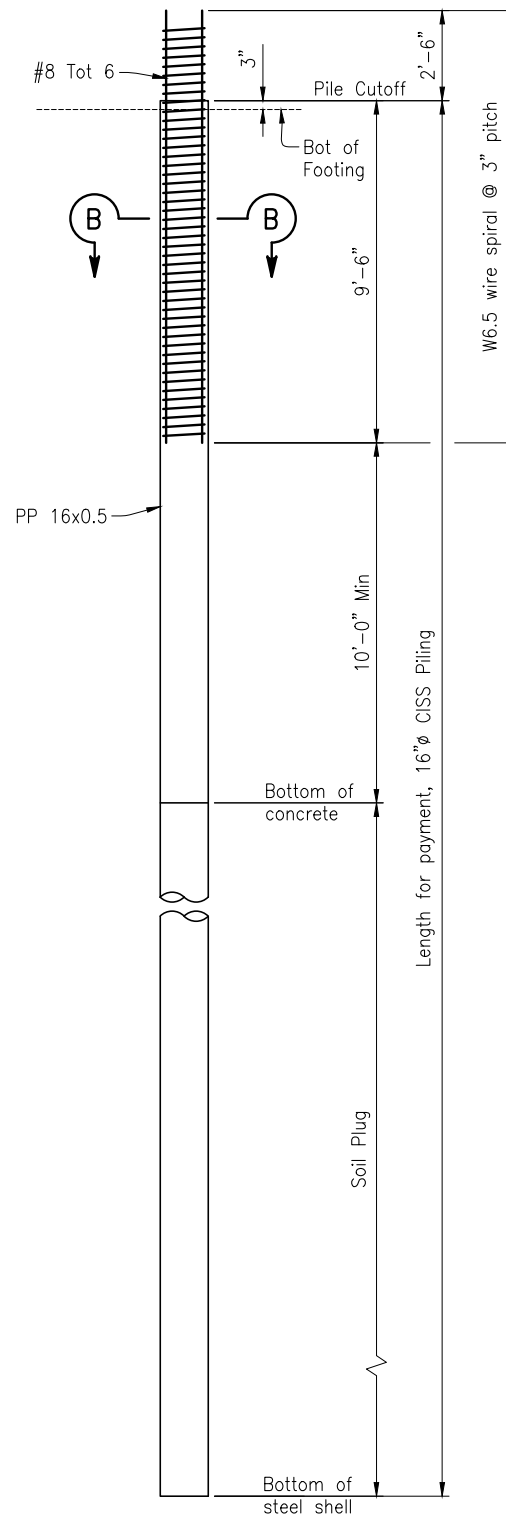
**MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT ABUTMENT 10 DETAILS NO. 3**

DISREGARD PRINTS BEARING EARLIER REVISION DATES	08-05-21	12-07-22	03-28-23	04-21-23
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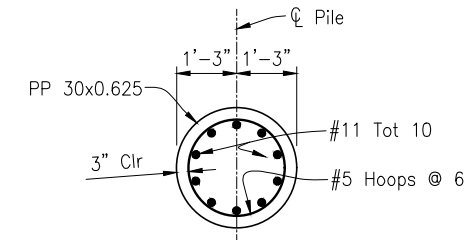
SCALE	AS SHOWN
SHEET	158 OF 196
Vault No.	



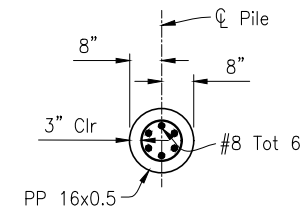
**30"Ø CISS PILING**  
3/8"=1'-0"



**16"Ø CISS PILING**  
3/8"=1'-0"



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



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

**NOTE:**

1. All hoops to be ultimate butt spliced continuous. No splices allowed in main pile reinforcement.

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, Exp. 12-31-24, State of California.

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

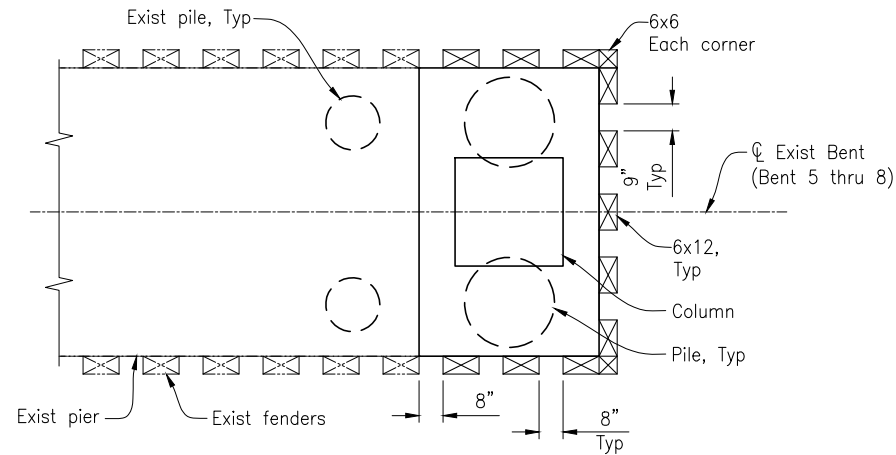
**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

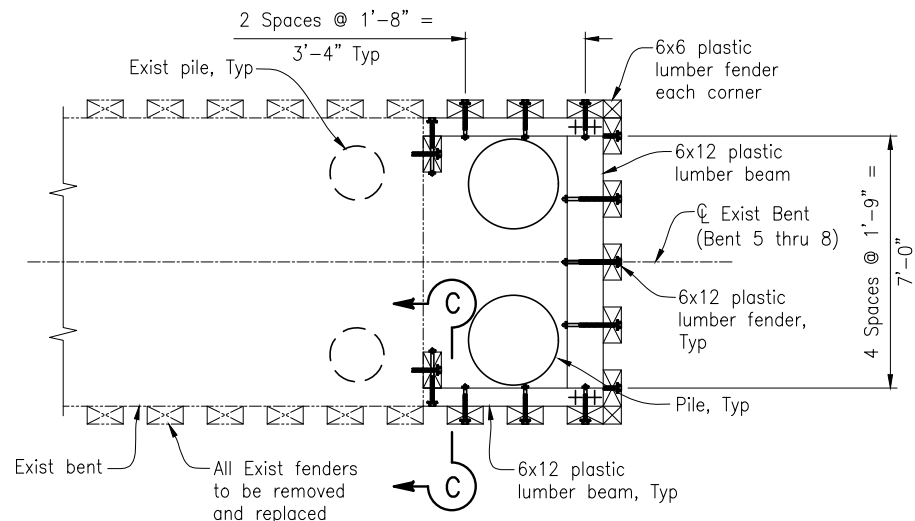
**MURRAY STREET BRIDGE  
SEISMIC RETROFIT AND BARRIER REPLACEMENT  
PILE DETAILS**

DISREGARD PRINTS BEARING EARLIER REVISION DATES	05-28-13	09-14-13	07-01-15	12-07-22	03-23-23	04-21-23
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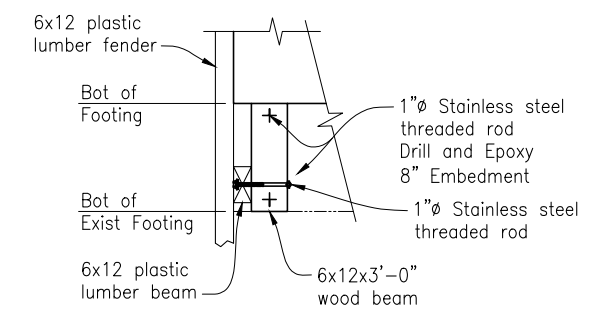
SCALE	AS SHOWN
SHEET	159 OF 196
VAULT NO.	



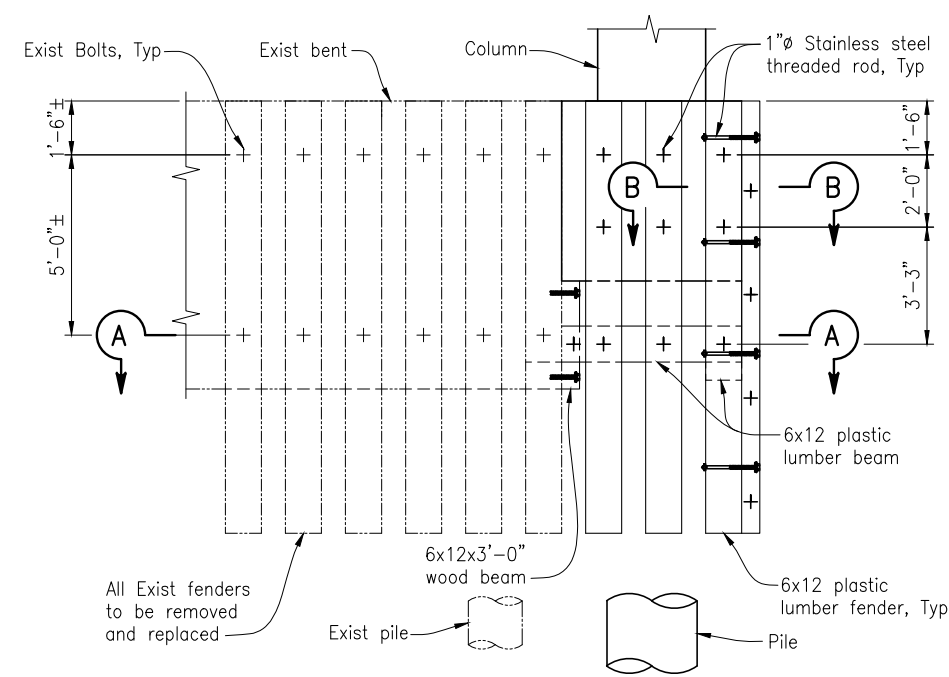
**PLAN**  
3/8"=1'-0"



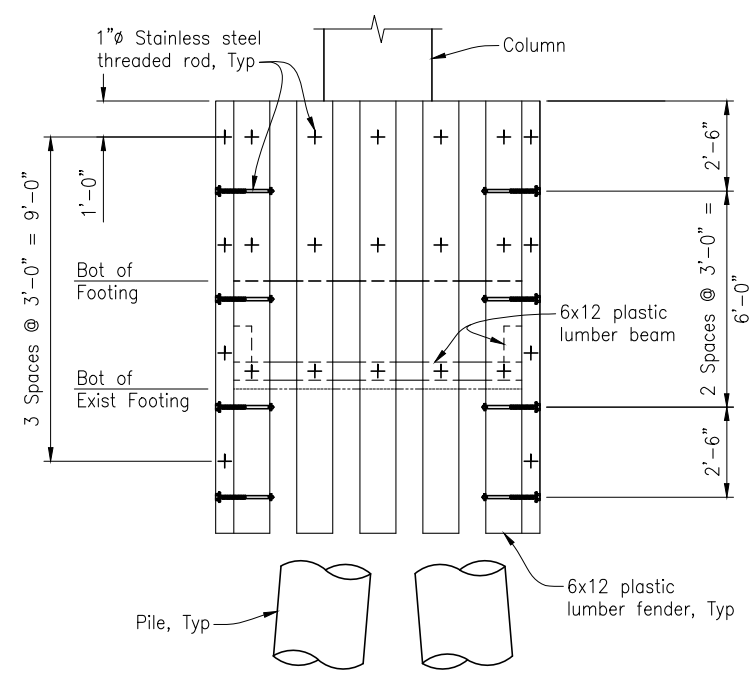
**SECTION A-A**  
3/8"=1'-0"



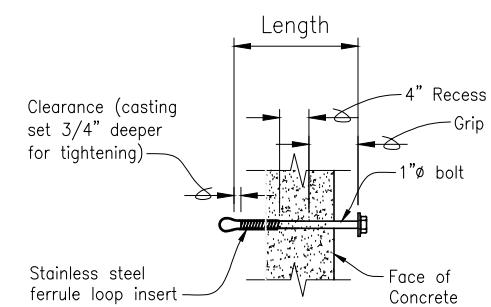
**SECTION C-C**  
3/8"=1'-0"



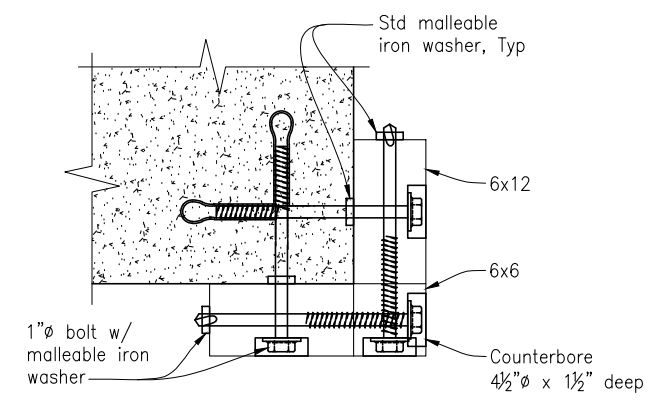
**ELEVATION**  
3/8"=1'-0"



**SIDE VIEW**  
3/8"=1'-0"



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



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

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

CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

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DETAILS	BY A. CARDOZA	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

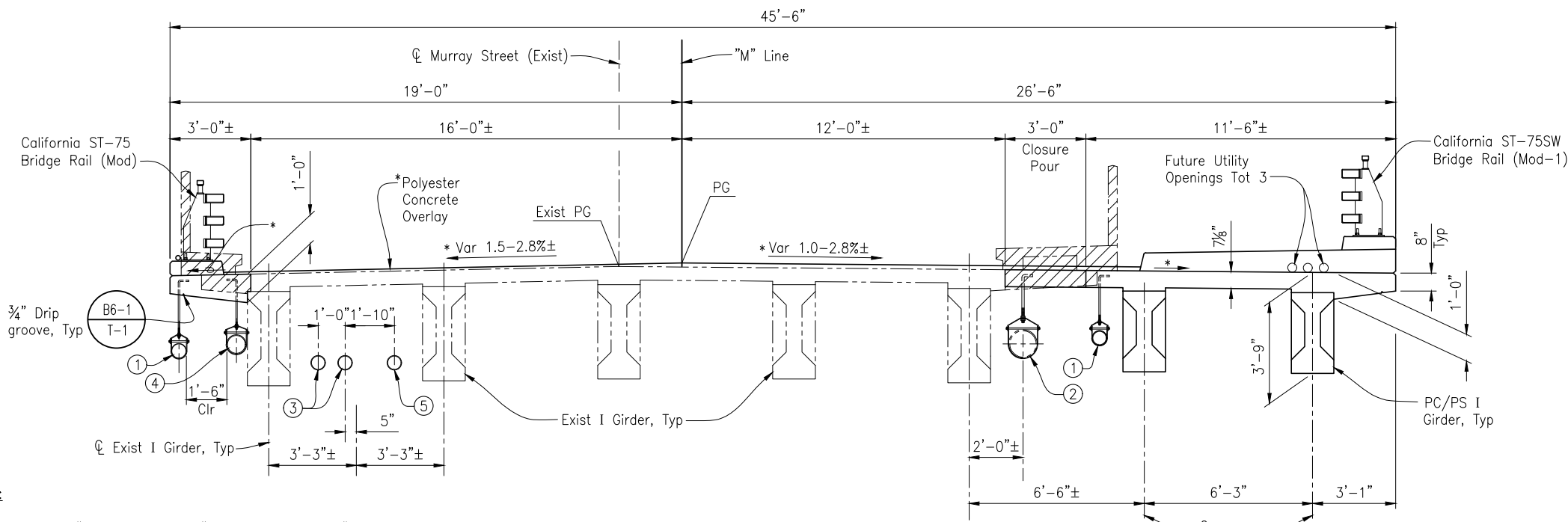
MARK IMBRIANI  
 PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**FENDER DETAILS**

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY) 09-18-13 07-01-15 07-28-21 12-07-22 03-23-23 04-21-23
---	--

SCALE	AS SHOWN
SHEET	160 OF 196
Vault No.	



**LEGEND:**

- ① NPS 6x0.135" Drain Pipe, see "DECK DRAIN DETAILS" sheet.
- ② Reconstruct 12" Water Line, see "WATER LINE HANGER DETAIL".
- ③ NPS 6x0.280" Casing for Electrical, see Note 7.
- ④ NPS 8x0.322" Casing and 4"Ø Gas Line (by others), see "GAS LINE HANGER DETAIL".
- ⑤ NPS 6x0.280" Casing for Comcast, see Note 7.

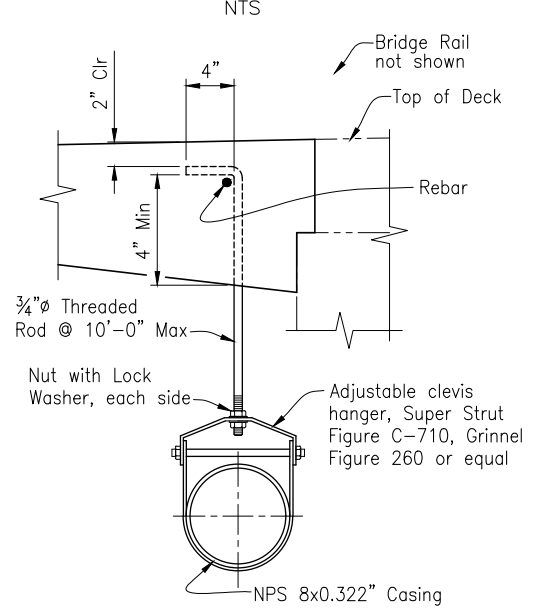
\*For overlay, profile grade and cross slope, see "POLYESTER CONCRETE OVERLAY DETAILS" sheet

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

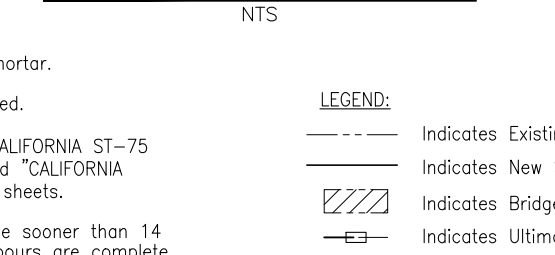
**UTILITY DATA TABLE**

TYPE	CASING SIZE (Ø)	CASING MATERIAL	UTILITY PIPE SIZE (Ø)	UTILITY PIPE MATERIAL	OWNER
Water Line	N/A	N/A	12"	Steel	City
Electrical	NPS 6x0.280"	Steel	N/A	N/A	PG&E
Gas Line	NPS 8x0.322"	Steel	4"	Steel	PG&E
Comcast	NPS 6x0.280"	Steel	N/A	N/A	Comcast

**WATER LINE HANGER DETAIL**



**GAS LINE HANGER DETAIL**

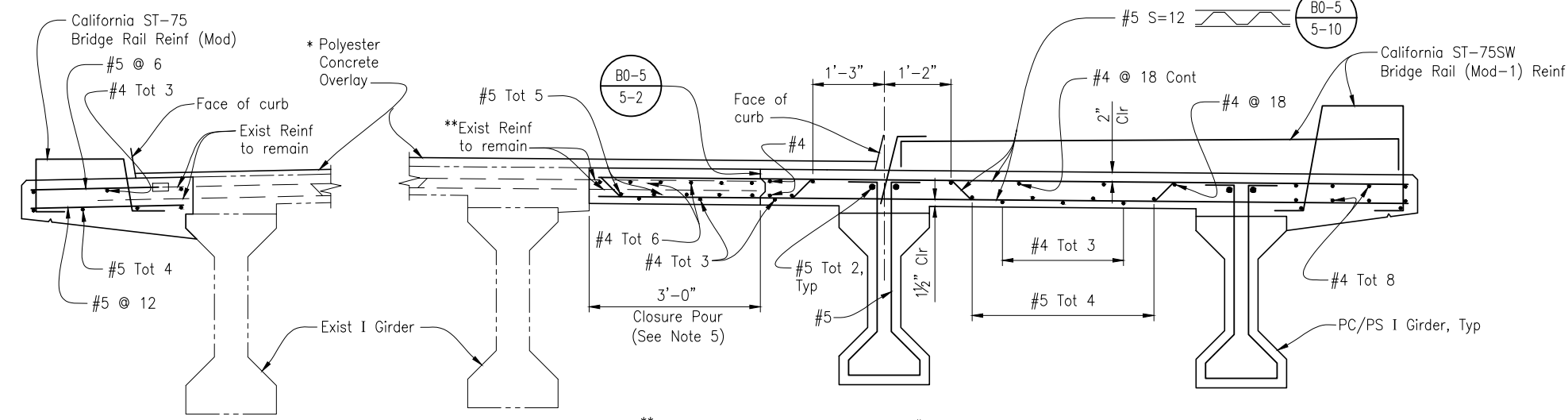


**NOTES:**

1. Fill existing deck drains with mortar.
2. Stay-in-place forms not allowed.
3. For Bridge Rail details, see "CALIFORNIA ST-75 BRIDGE RAIL DETAIL" sheets and "CALIFORNIA ST-75SW BRIDGE RAIL DETAIL" sheets.
4. Closure pour shall not be place sooner than 14 days after the adjacent deck pours are complete.
5. Place sidewalk and utilities minimum 15 days after closure pour.
6. The Contractor must protect existing reinforcement.
7. For additional details, see "END DIAPHRAGM DETAILS NO. 2" & "END DIAPHRAGM DETAILS NO. 3" sheet.

**LEGEND:**

- Indicates Existing Structure
- Indicates New Structure
- ▨ Indicates Bridge Removal (Portion)
- ⊞ Indicates Ultimate Butt Splice



\*\*Bend and trim exist bars, lap with #5 bars

**PART TYPICAL SECTION**  
3/4" = 1'-0"

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

REGISTERED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

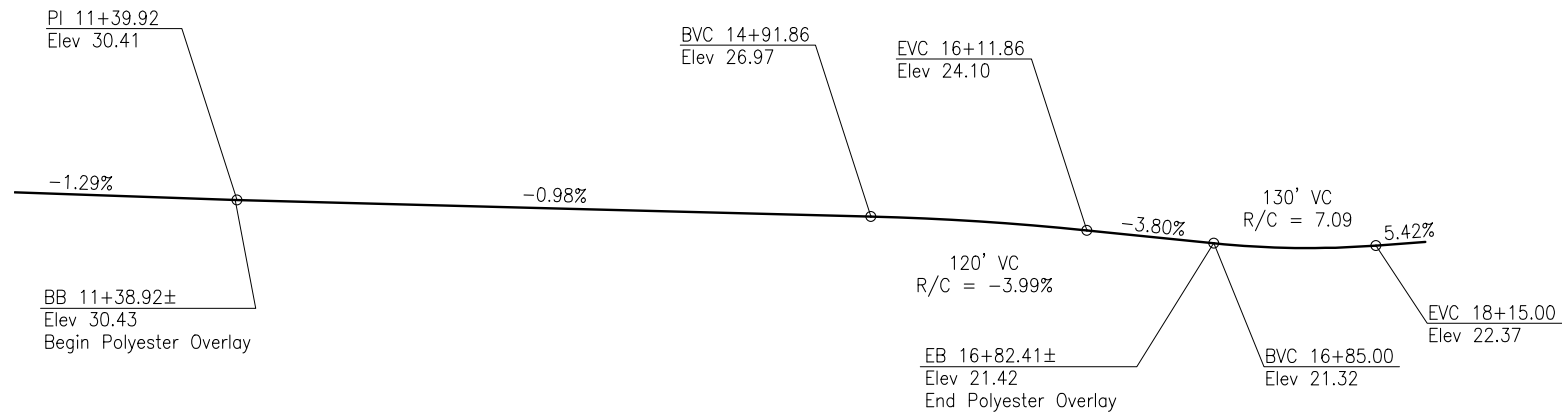
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**TYPICAL SECTION**

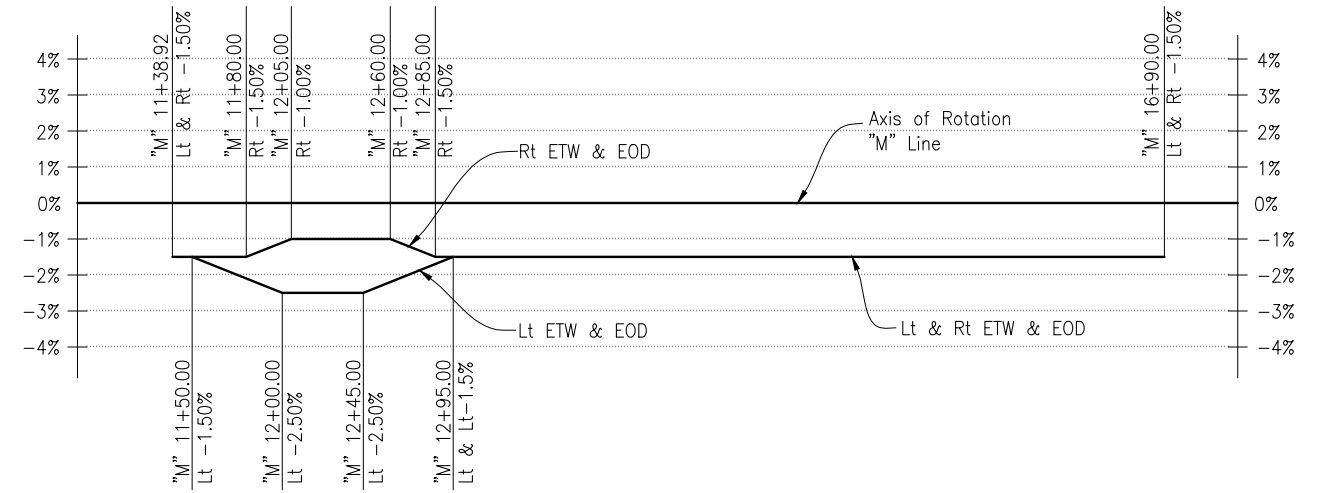
DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)
03-22-11 09-13-13 07-01-15 07-23-21 12-07-22 03-28-23 04-21-23

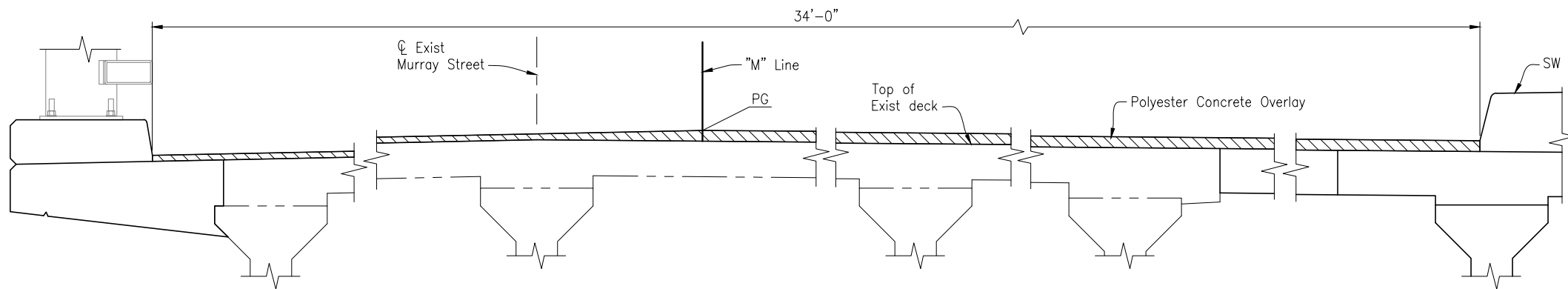
SCALE AS SHOWN
SHEET 161 OF 196
Vault No.



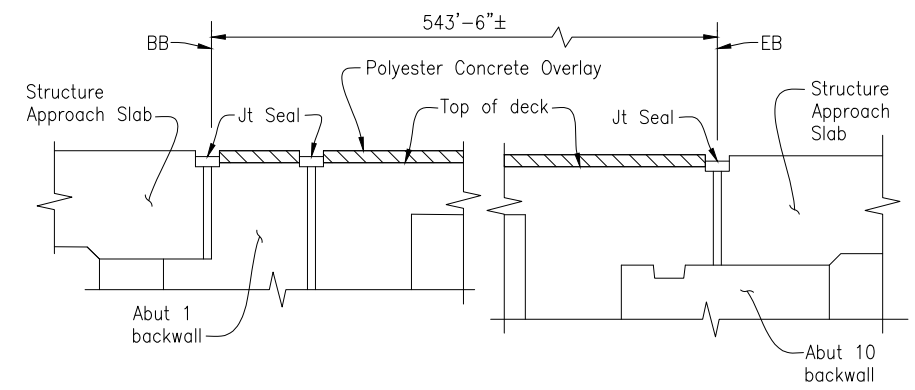
**PROFILE GRADE**  
NTS



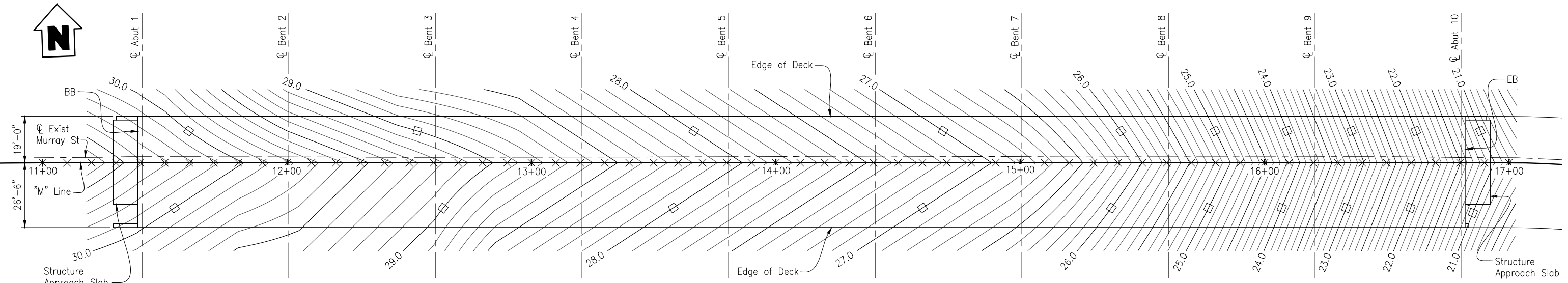
**SUPERELEVATION DIAGRAM**  
NTS



**PARTIAL CROSS SECTION**  
NTS



**PARTIAL LONGITUDINAL SECTION**  
NTS



**DECK CONTOURS**  
1"=20'-0"

**NOTES:**

- 1. Contours indicate elevations on top of polyester concrete overlay or top of approach slab. Grades of deck pour to match existing deck elevation and cross-slope.
- ⊗ Denotes 10' intervals along station line
- Indicates even foot contours. Contour intervals = 0.1' Contours do not include Camber.

NOTE:  
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REGISTERED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO. 36C0108
CONTRACT NO.
EA NO.

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**POLYESTER CONCRETE OVERLAY DETAILS**

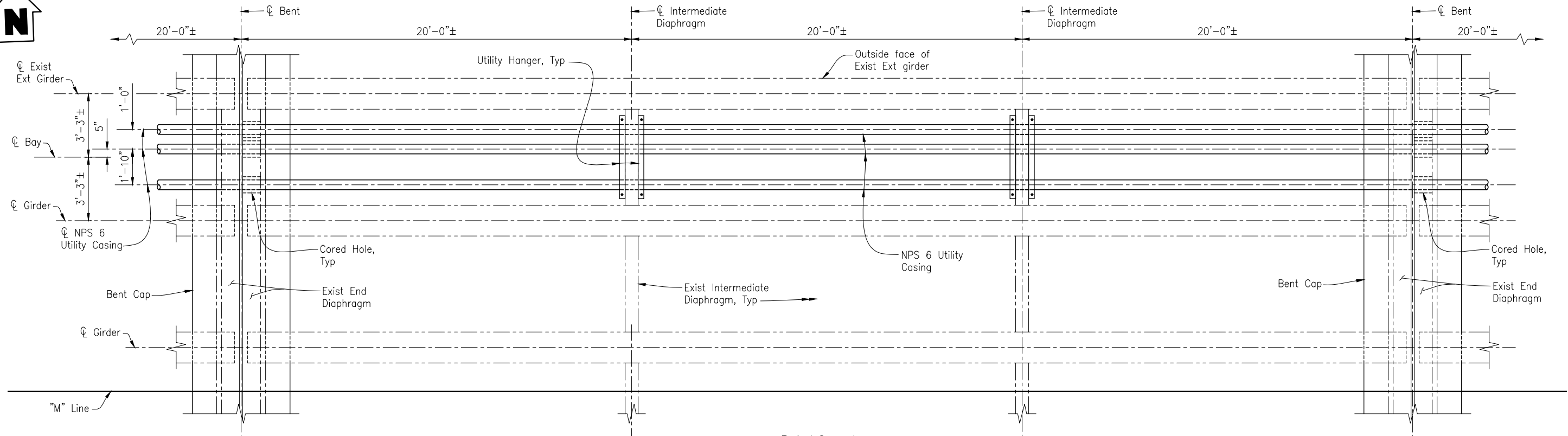
REVISION DATES (PRELIMINARY STAGE ONLY)

09-18-13	01-01-15	07-28-21	12-07-22	03-28-23	04-21-23
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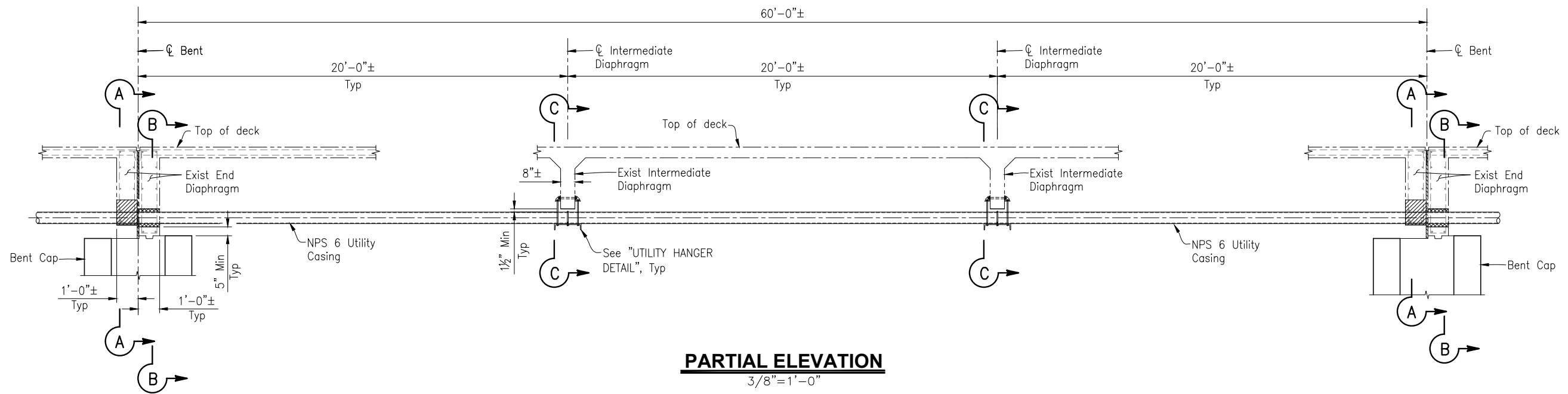
SCALE AS SHOWN
SHEET 162 OF 196
Vault No.







Typical Span shown  
Deck not shown for clarity  
**PARTIAL PLAN**  
3/8"=1'-0"



**PARTIAL ELEVATION**  
3/8"=1'-0"

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)

- NOTES:**
- For SECTION A-A thru C-C and Utility Hanger Detail, see "END DIAPHRAGM DETAILS NO. 3" sheet.

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

Professional Engineer Seal for Cameron J. Pinkerton, No. 73288, State of California. Includes the text: 'I, CAMERON J. PINKERTON, Registered Engineer - CIVIL, No. 73288, Exp. 12-31-24, am responsible for the accuracy or completeness of electronic copies of this plan sheet.'

Logo for City of Santa Cruz Public Works Department. Text: 'PREPARED FOR THE CITY OF SANTA CRUZ PUBLIC WORKS DEPARTMENT'.

DESIGN	BY C. PINKERTON	CHECKED A. PEYVANDI
DETAILS	BY G. IMBSEN	CHECKED A. PEYVANDI
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

Logo for TRC (Traffic Research Corporation). Text: 'MARK IMBRIANI PROJECT MANAGER'.

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT END DIAPHRAGM DETAILS NO. 2**

REVISION DATES (PRELIMINARY STAGE ONLY)

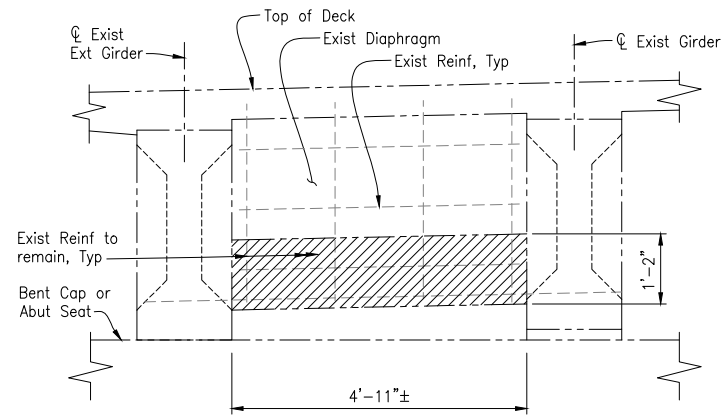
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DISREGARD PRINTS BEARING EARLIER REVISION DATES

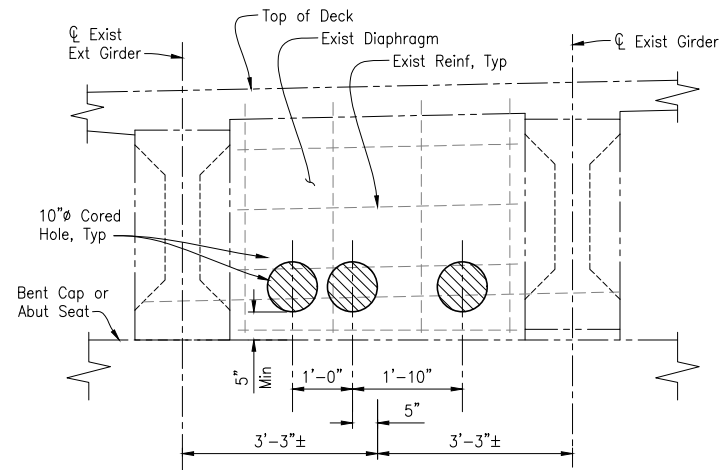
SCALE	AS SHOWN
SHEET	165 OF 196
Vault No.	

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\040-Girder LO-03\_1.dwg Layout Tab: DETAILS NO. 2 May 17, 2024 - 1:03pm gimbsen

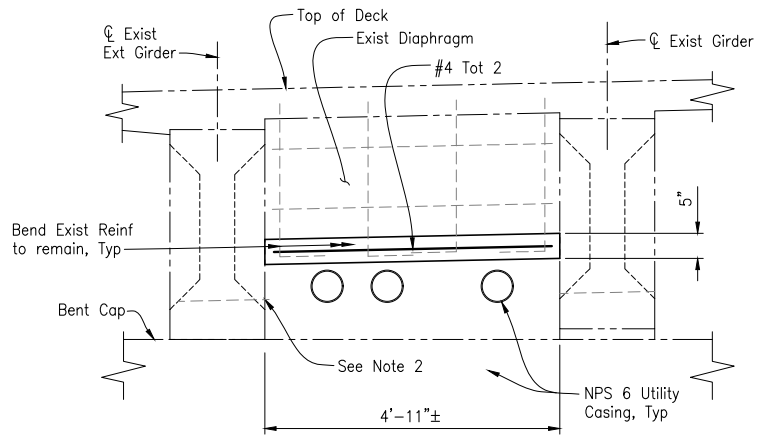
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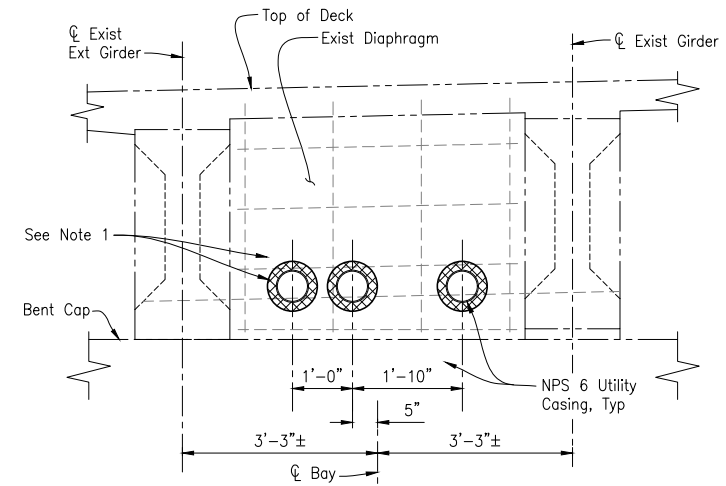
**REMOVAL SECTION A-A**  
3/4"=1'-0"



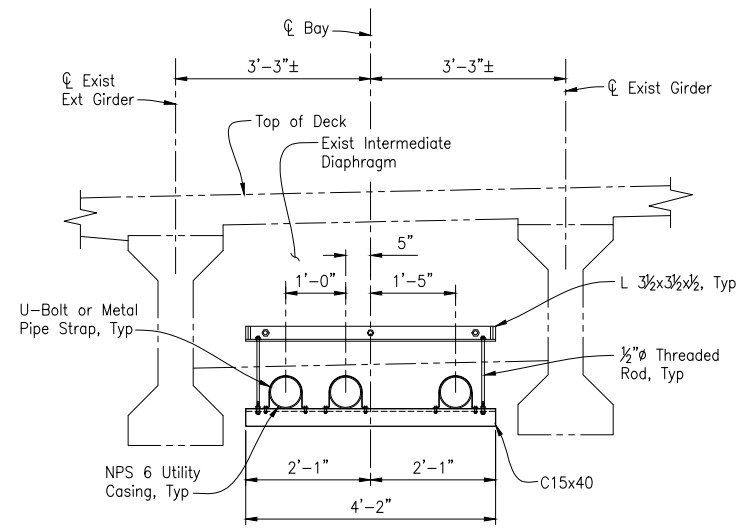
**REMOVAL SECTION B-B**  
3/4"=1'-0"



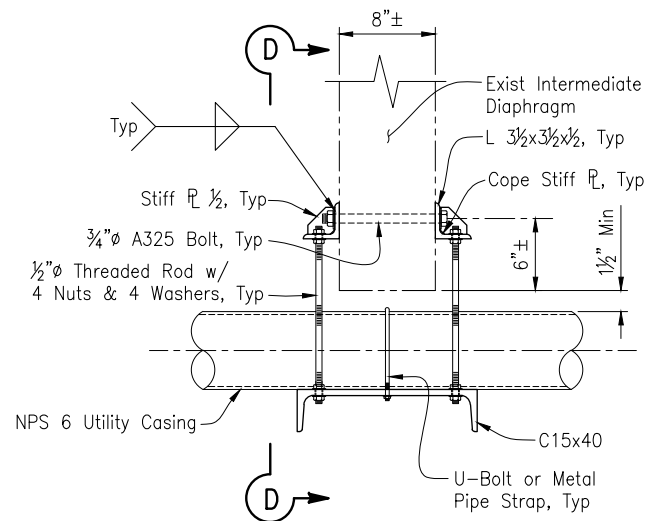
**SECTION A-A**  
3/4"=1'-0"



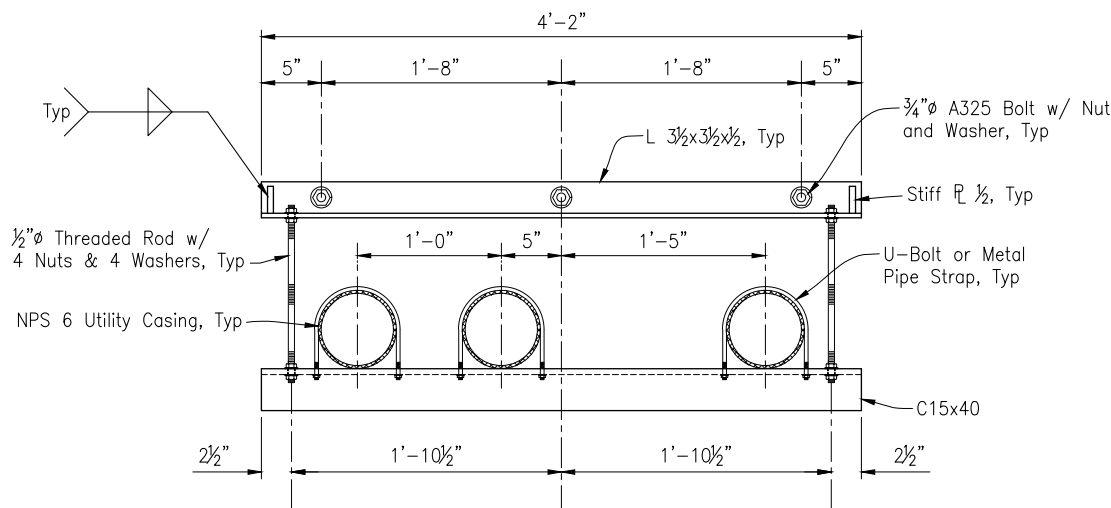
**SECTION B-B**  
3/4"=1'-0"



**SECTION C-C**  
3/4"=1'-0"



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



**VIEW D-D**  
1 1/2"=1'-0"

- LEGEND:**
- Indicates Existing Structure
  - Indicates New Structure
  - ▨ Indicates Bridge Removal (Portion)

- NOTES:**
1. Seal utility casing with concrete or mortar, after tightly wrapping utility casing with 2 layers of 15 LBS building paper.
  2. Grind flush with concrete surface and epoxy coat any exposed existing reinforcement.
  3. All steel components for Utility Hanger to be galvanized.

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

CAMERON PINKERTON  
 REGISTERED ENGINEER - CIVIL  
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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

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DETAILS	BY G. IMBSEN	CHECKED A. PEYVANDI
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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

MARK IMBRIANI  
 PROJECT MANAGER

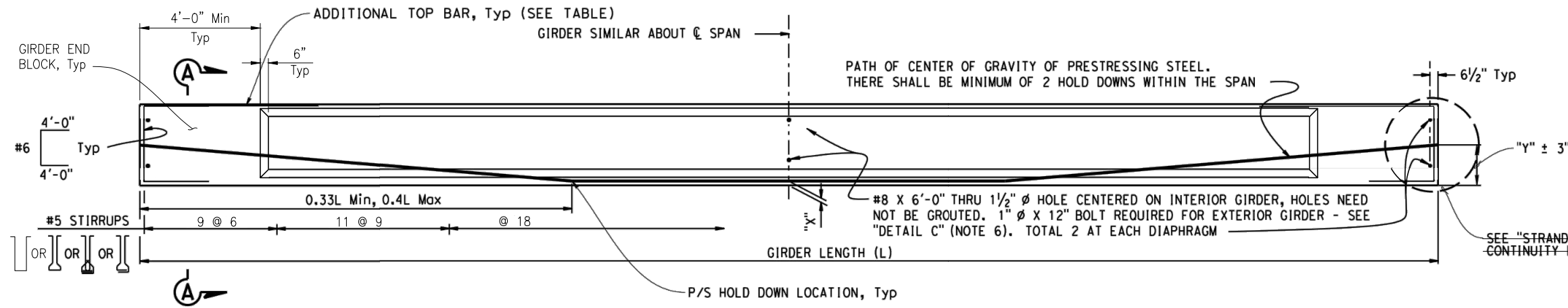
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**END DIAPHRAGM DETAILS NO. 3**

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)									
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SCALE	AS SHOWN
SHEET	166 OF 196
Vault No.	



NOTE: Girder ends to be cast such that a level surface is provided at bearing pads.

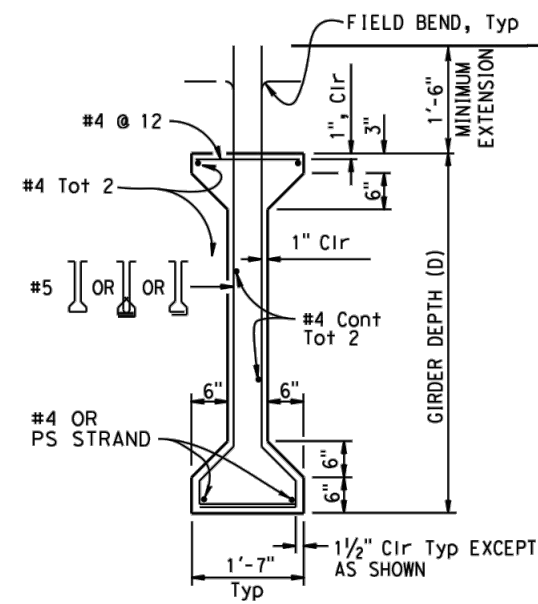
1 **ELEVATION**

LOCATION	GIRDER LENGTH (L)	GIRDER DEPTH (D)	"X" (in)	JACKING FORCE (P) (Kips)	As, Min (in <sup>2</sup> ) of 0.6" Ø STRANDS	"Y" (in)	CONCRETE STRENGTH (ksi)		MIDSPAN DEAD LOAD DEFLECTION (ft)		ADDITIONAL TOP BAR (EACH END)
							f'ci	f'c	DECK	RAIL	
ALL GIRDERS	*	3'-0"	4	560	N/A	17	5	6	0.60	**0.06	#_x_Tot_
			6	600							
GIRDER B			4								
			6								
GIRDER *			4								
			6								

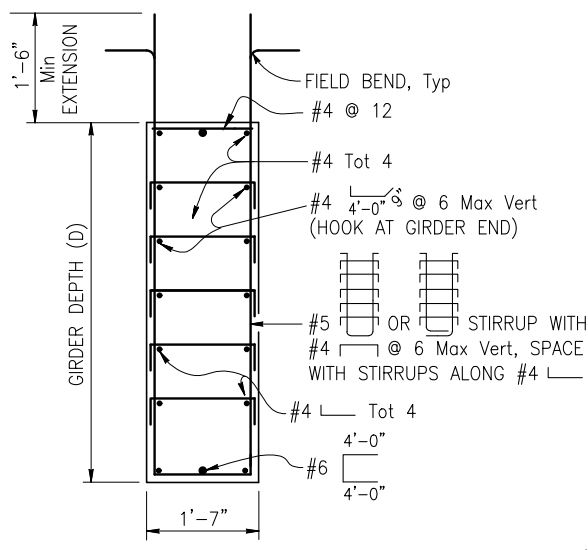
2 \*SPANS 1 & 9 59'-11", SPANS 2 THRU 8 59'-2"  
 \*\*INCLUDES SIDEWALK

NOTES:

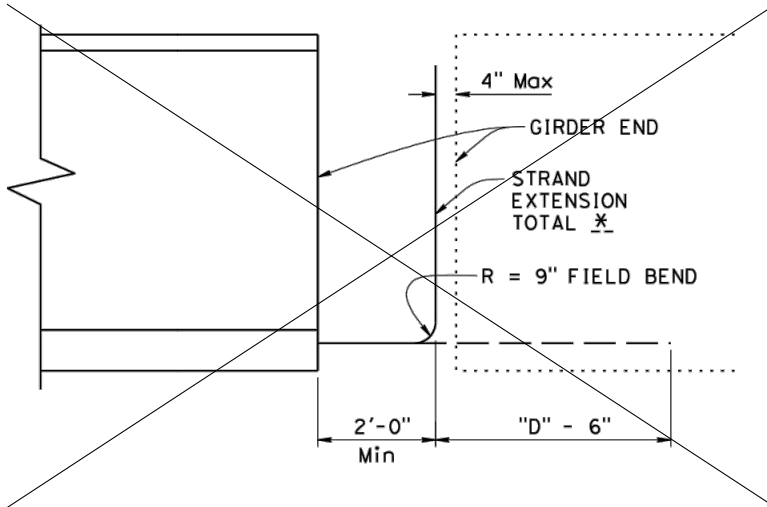
- The Jacking Force (P) is the force required at the center of the span before all design losses. The jacking force does not include any fabrication specific losses.
  - Concrete Strength: f'ci is at time of initial stressing f'c is the 28-day compressive strength
  - Deflection components will be used to set screed line elevations.
  - Screed line elevations for deck concrete will be determined by the Engineer.
  - Contractor may interpolate "JACKING FORCE" and "X" values between limits shown, as approved by the Engineer.
  - For "DETAIL C", see "PC/PRETENSIONED I GIRDER (MISC DETAILS)" sheet.
  - Prestressing strand shall be 270 ksi low relaxation.
- 4 \* ENGINEER TO FILL IN THESE VALUES, THEN DELETE THIS NOTE



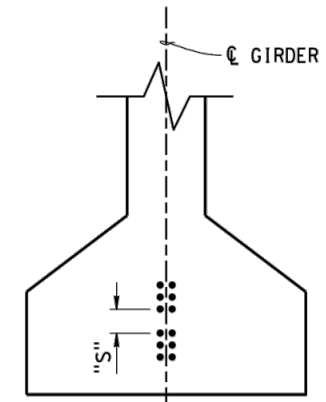
1 **TYPICAL GIRDER SECTION**



1 **SECTION A-A**



3 **STRAND EXTENSION HOOK DETAIL FOR CONTINUITY DIAPHRAGM (AT BENT)**



4 **CLEARANCES FOR PRETENSIONED STRANDS**

STRAND CLEARANCES NOTES:

- Strands may be bundled in groups consisting of 3 vertically and 2 horizontally at midspan, and separated at the ends.
- The minimum distance "S" between groups or individual strands is 1 3/4" for 0.5" Ø strand and 2" for 0.6" Ø strand.
- "S" is measured between centers of adjacent strands.
- Authorization of Engineer is required for deviation.

NOTE: For "WELDED WIRE REINFORCEMENT (WWR) ALTERNATIVE", see "PC/PRETENSIONED I GIRDER (MISC DETAILS)" sheet.

SPECIAL DETAILS NO SCALE B-42

BRIDGE STANDARD DETAILS		
xs1-120-2	July 2020	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.
FILE NO.	APPROVAL DATE	

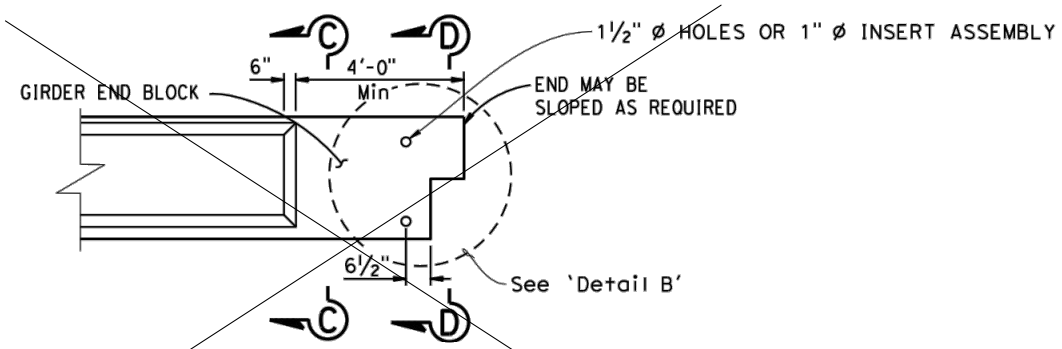
MODIFICATIONS SHOWN:	
1 REVISED DETAIL	3 REMOVED DETAIL
2 REVISED TABLE	4 REMOVED NOTE

STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES
DEPARTMENT OF TRANSPORTATION	

BRIDGE NO. 36C0108	POST MILE	MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT
		PC/PRETENSIONED I GIRDER (HARPED STRANDS)
UNIT: PROJECT NUMBER & PHASE:	CONTRACT NO.:	DISREGARD PRINTS BEARING EARLIER REVISION DATES
		REVISION DATES: 05-12-14, 01-28-20, 07-15-20
		SHEET 167 OF 196

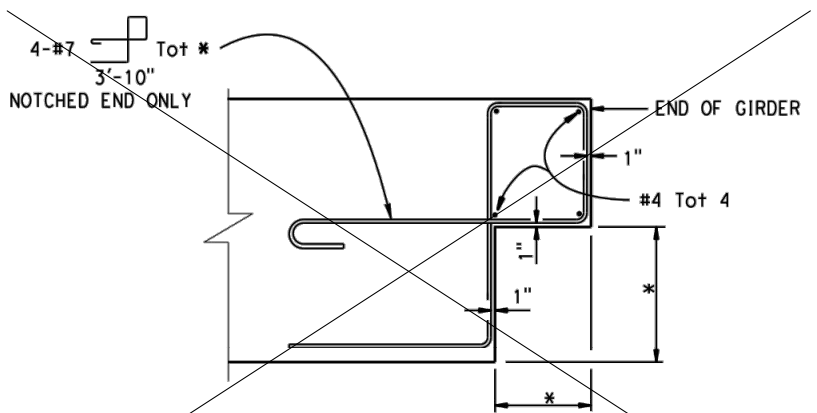
Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\042-xs1-120-2.dwg Layout Tab: Layout1 May 04, 2024 - 12:02pm gimbsen

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
<i>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.</i>					
<i>The Registered Civil Engineer for the project is responsible for the selection and proper application of the component design and any modifications shown.</i>					



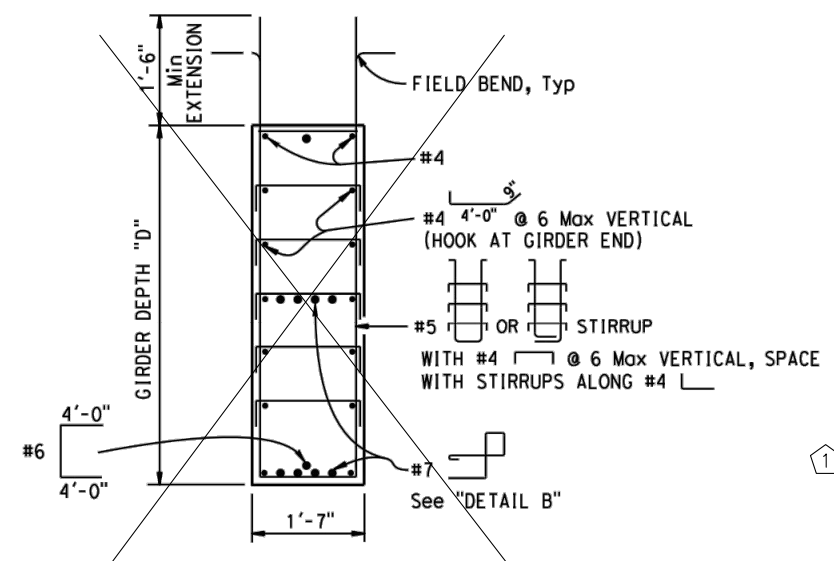
**OPTIONAL NOTCHED END DETAIL**

NOTE: Girder end block with notch shown, optional girder end block without notch similar.



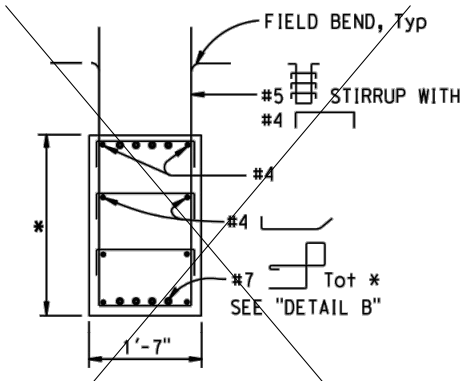
**DETAIL B**

NOTE: For optional notched end detail only.

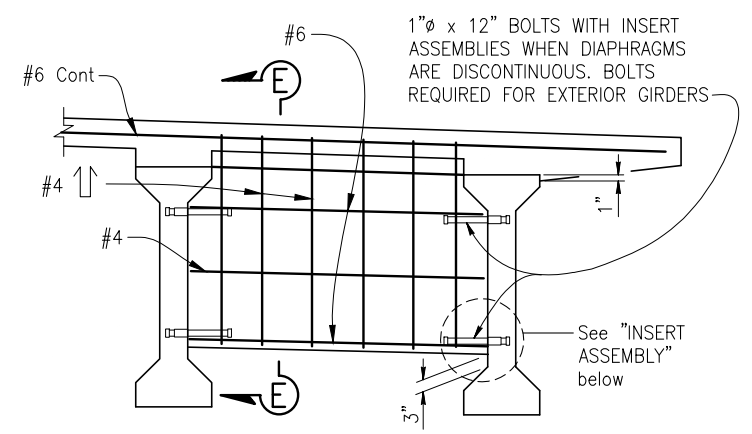


**SECTION C-C**

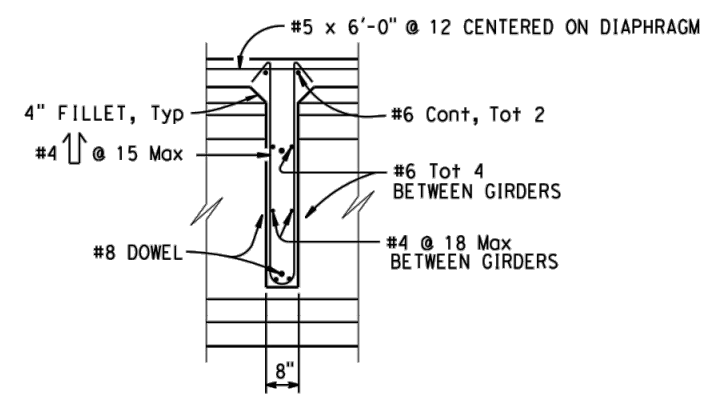
\* ENGINEER TO FILL IN THESE VALUES, THEN DELETE THIS NOTE



**SECTION D-D**

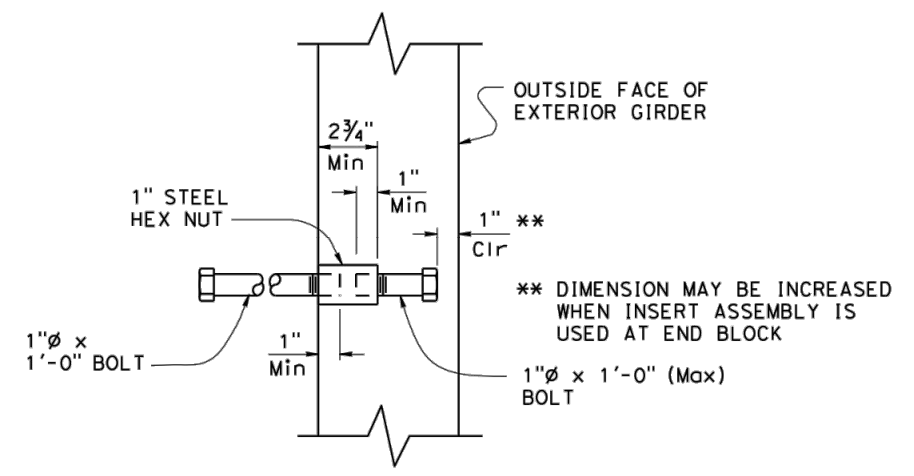


**INTERMEDIATE DIAPHRAGM**



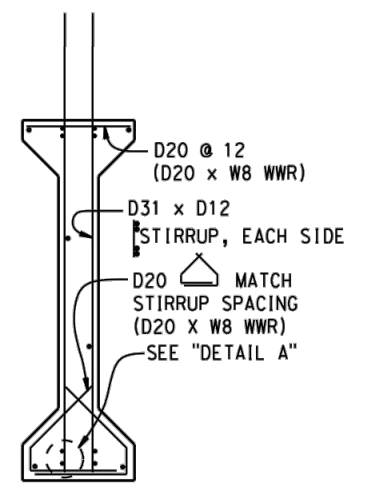
NOTE: Diaphragm may be vertical or normal to deck grade.

**SECTION E-E**



**DETAIL C**

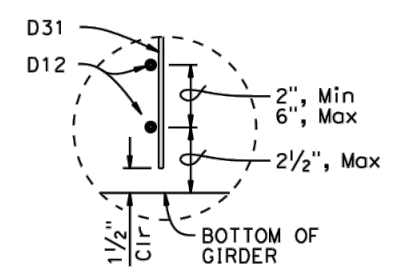
\*\* DIMENSION MAY BE INCREASED WHEN INSERT ASSEMBLY IS USED AT END BLOCK



NOTES:

- For details not shown, see 'SECTION A-A' and 'TYPICAL GIRDER SECTION' on 'PC/PRE-TENSIONED I GIRDER' sheet.
- W8 WWR not shown.

**WELDED WIRE REINFORCEMENT (WWR) ALTERNATIVE**



NOTES:

- Bottom of stirrup WWR detail shown, top similar.
- Longitudinal wire area shall be 40% or greater of vertical deformed wire's area.

**DETAIL A**

SPECIAL DETAILS NO SCALE B-43

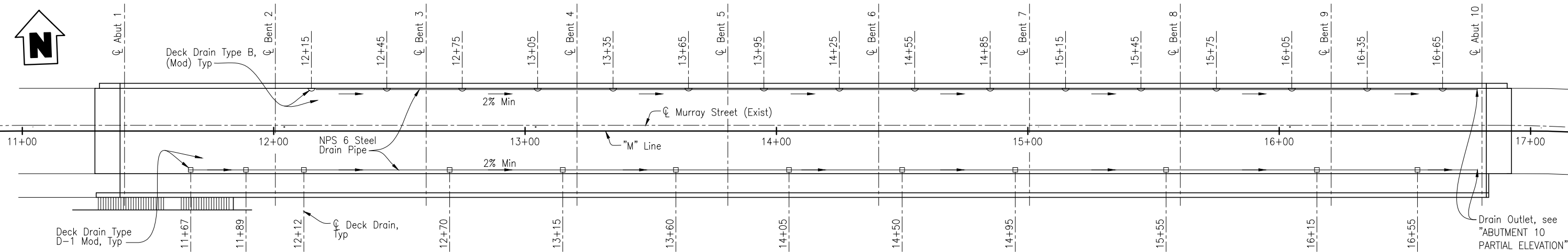
BRIDGE STANDARD DETAILS		
xs1-120-3	July 2020	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.
FILE NO.	APPROVAL DATE	

MODIFICATIONS SHOWN:	
1 REMOVED DETAIL	3 REMOVED NOTE
2 REPLACED DETAIL	
FILE => 202007-xs1-120-3.dgn	

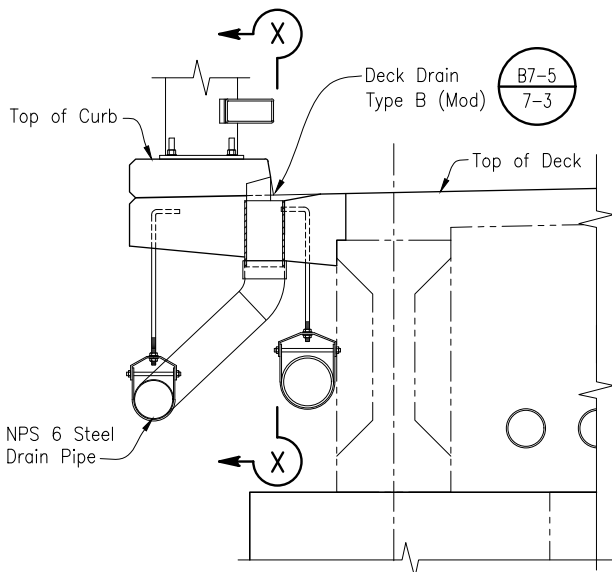
STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES
DEPARTMENT OF TRANSPORTATION	
BRIDGE NO. 36C0108	POST MILE
UNIT: PROJECT NUMBER & PHASE:	CONTRACT NO.:

MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT PC/PRE-TENSIONED I GIRDER (MISC DETAILS)			
DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 168	OF 196
	05-12-14 01-28-20 07-15-20		

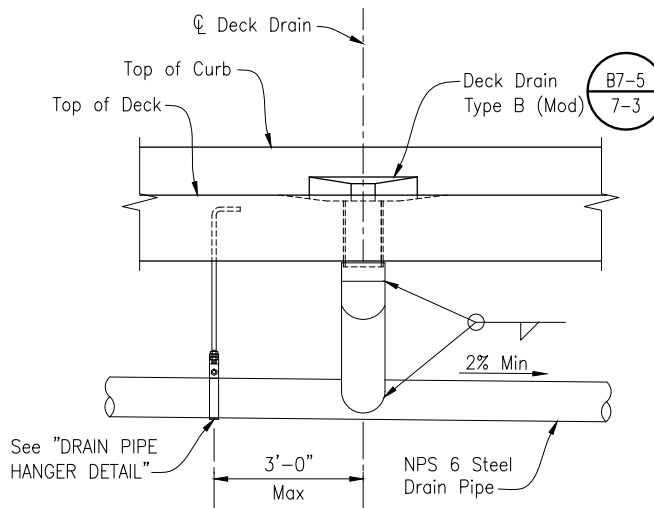
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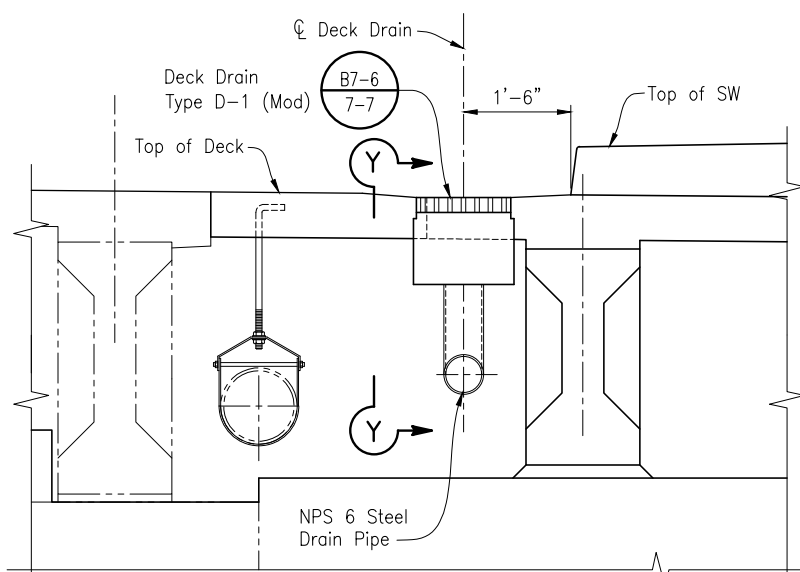
**PLAN**  
1"=20'



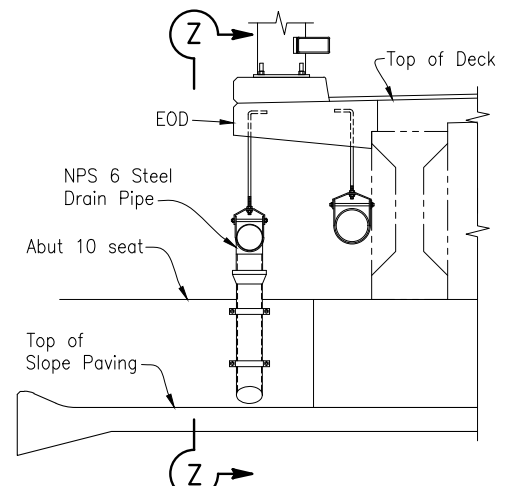
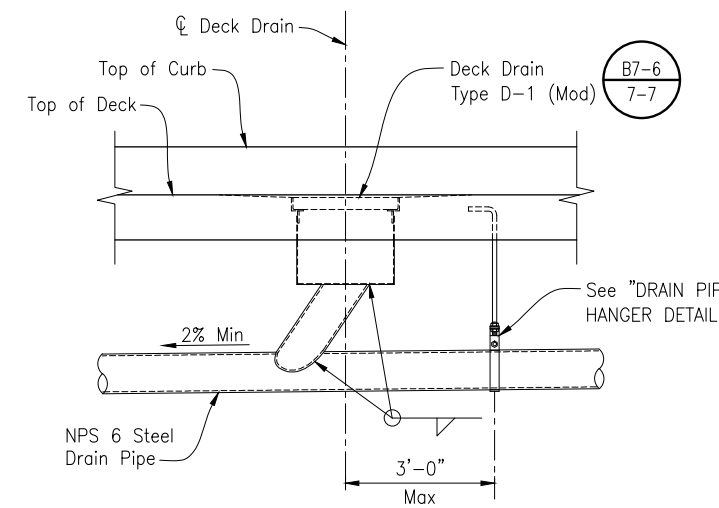
**DECK DRAIN TYPE B**  
3/4"=1'-0" B7-5/7-3



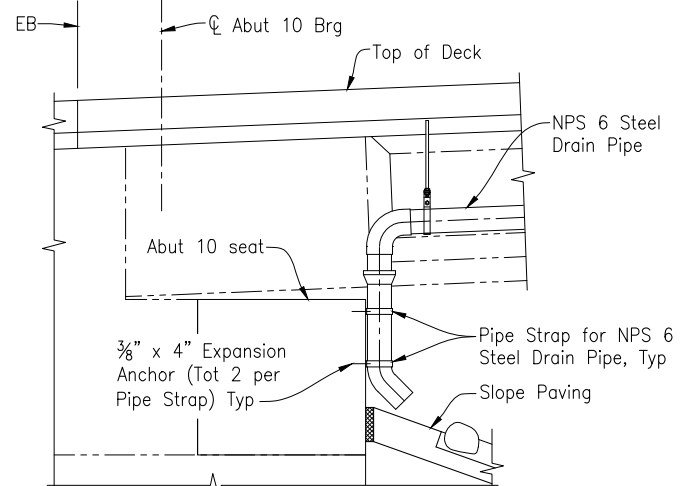
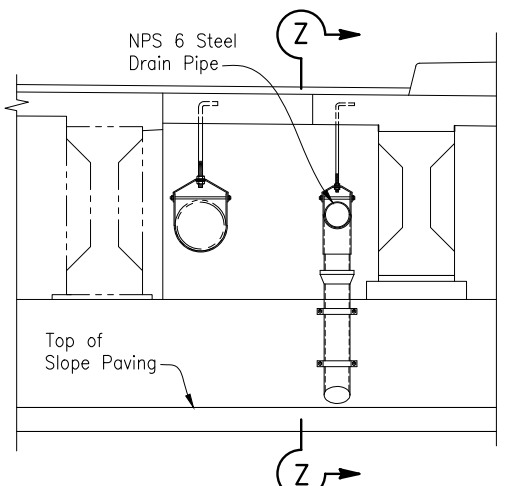
**SECTION X-X**  
3/4"=1'-0"



**DECK DRAIN TYPE D-1 Mod**  
3/4"=1'-0" B7-6/7-7

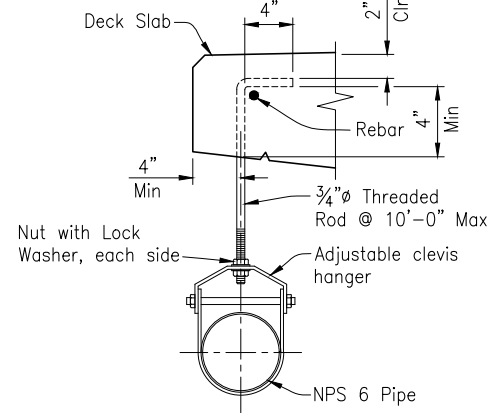


**ABUTMENT 10 PARTIAL ELEVATION**  
1/2"=1'-0"



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

**DRAIN PIPE HANGER DETAIL**  
NTS



**LEGEND:**  
--- Indicates Existing Structure  
— Indicates New Structure

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

REGISTERED PROFESSIONAL ENGINEER  
CAMERON J. PINKERTON  
No. 73288  
Exp. 12-31-24  
CIVIL  
STATE OF CALIFORNIA

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PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED W. CULLUMBER
DETAILS	BY G. IMBSEN	CHECKED W. CULLUMBER
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
MARK IMBRIANI  
PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**DECK DRAIN DETAILS**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

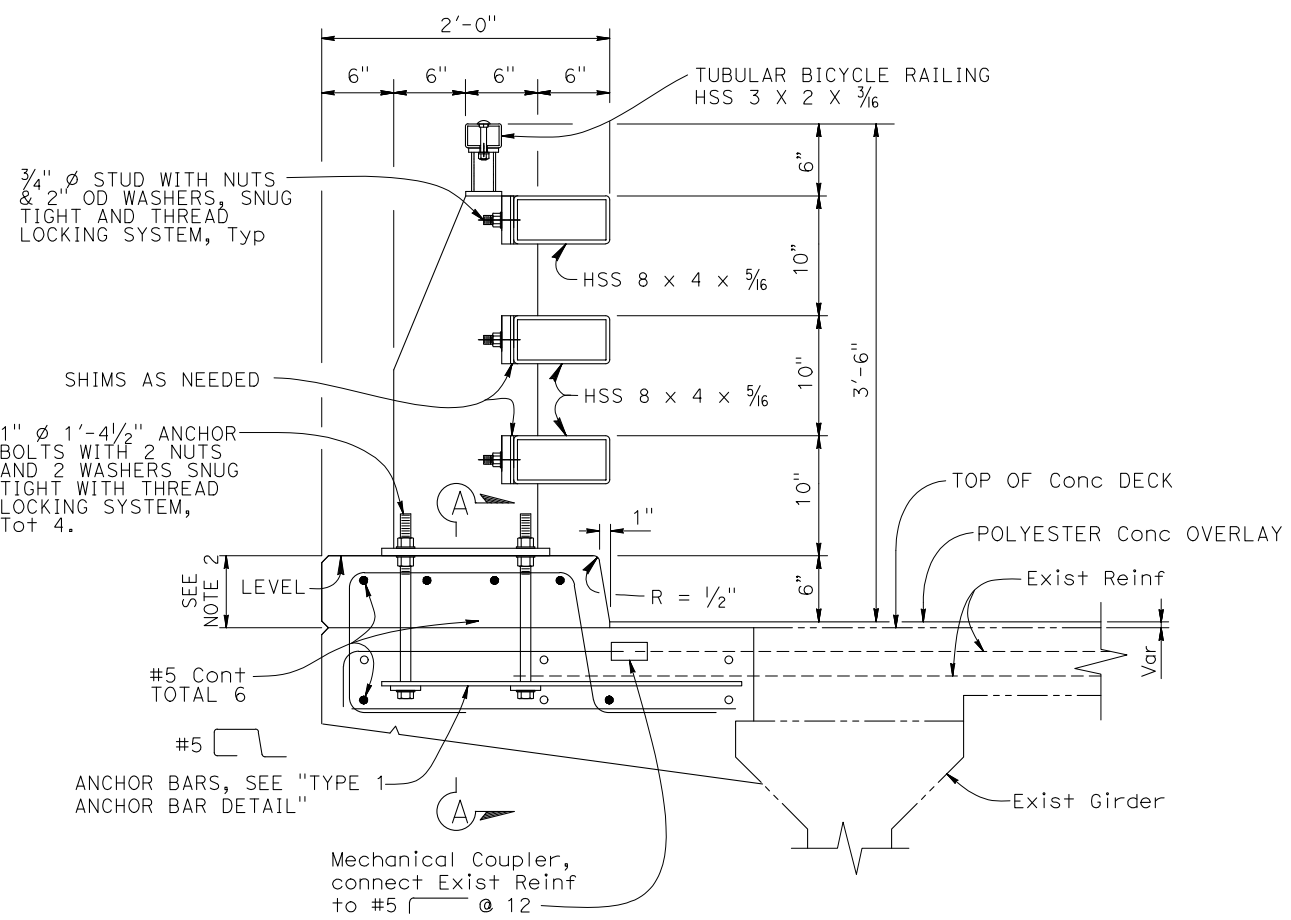
09-18-13	07-01-15	07-28-21	12-07-22	03-28-23	04-21-23
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SCALE	AS SHOWN
SHEET	169 OF 196
Vault No.	

B-44

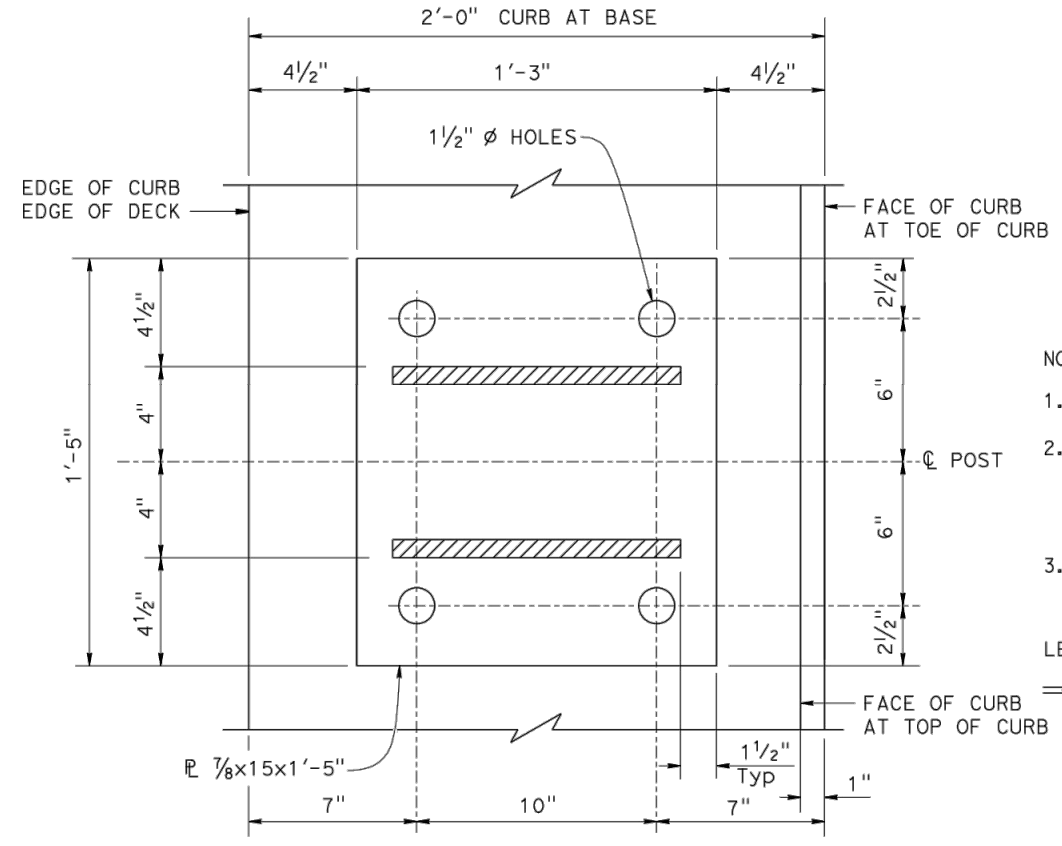
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
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Note: For Reinforcement details not shown see "TYPICAL SECTION" sheet.

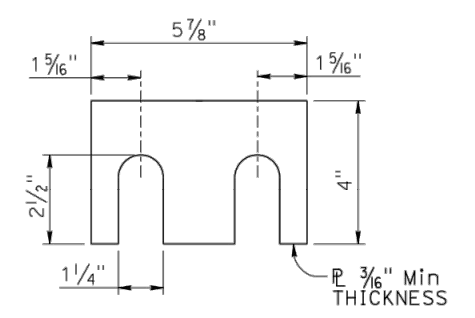
**1 TYPICAL SECTION**  
NO SCALE



**BASE PLATE**  
NO SCALE

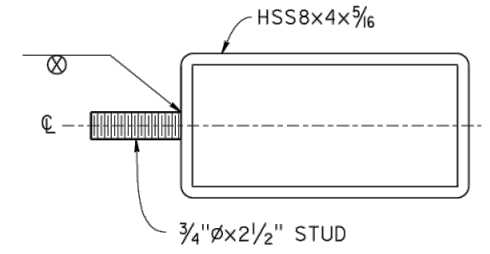
- NOTES:
- Anchor bolts may be tack welded to anchor bars.
  - Curb dimension at back side of rail will vary with bridge deck cross slope, and if overlay is placed on the bridge deck. For the same reasons, the anchor bolt lengths will vary.
  - Use extra thick washers for anchor bolts, with a minimum thickness of 0.305" and a maximum thickness of 0.375".

LEGEND:  
 Bundled reinforcement

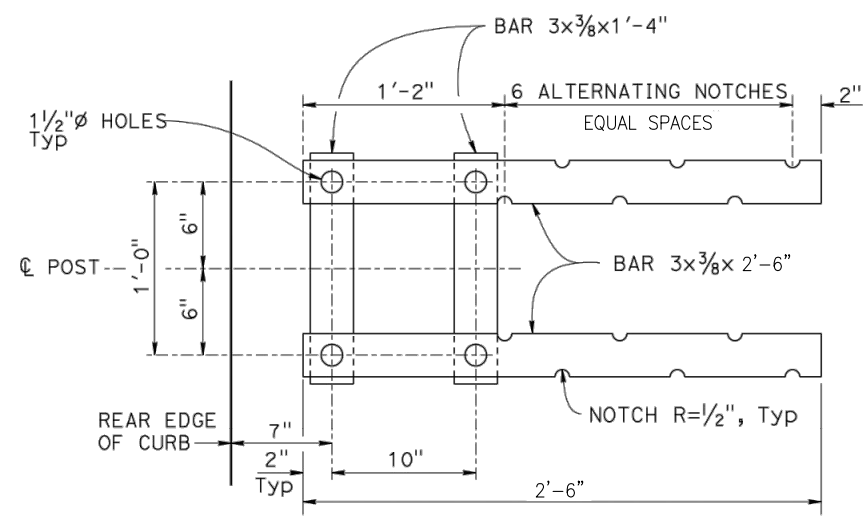


**SHIM DETAIL**  
NO SCALE

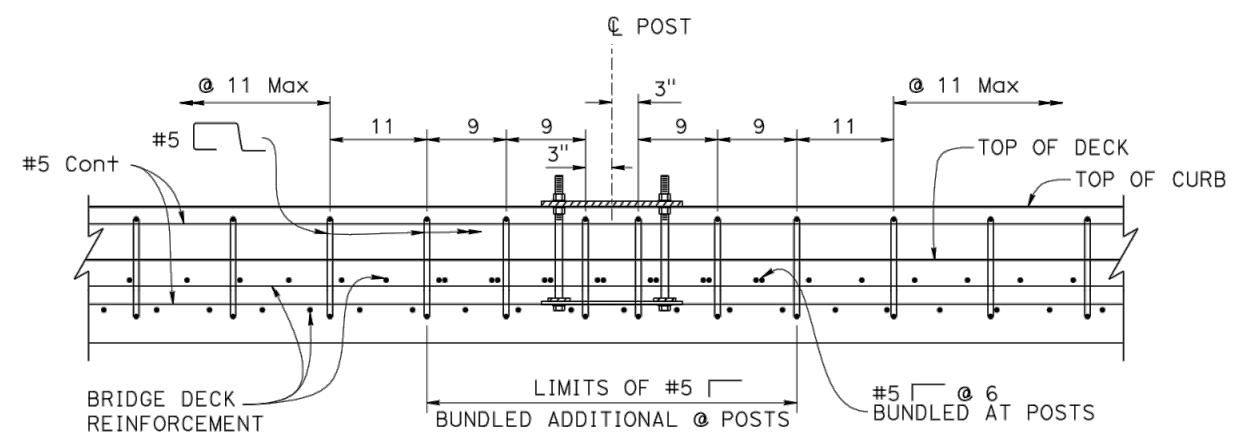
NOTE:  
Shim as needed between posts and HSS rail tubes.



**RAIL SECTION AT POST**  
NO SCALE



**1 TYPE 1 ANCHOR BAR DETAIL**  
NO SCALE



**SECTION A-A**  
NO SCALE

NOTE: Post not shown for clarity.

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\045-xst16-116-1.dwg Layout Tab: Layout1 May 10, 2024 - 2:12pm gjmbien

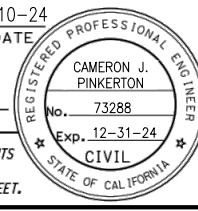
BRIDGE STANDARD DETAILS		
<b>xs16-116-1</b>	JULY 2022	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.
FILE NO.	APPROVAL DATE	

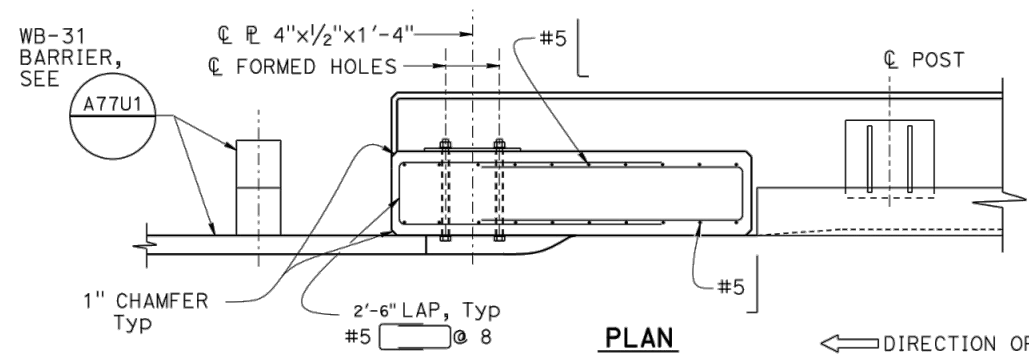
MODIFICATIONS SHOWN:  
 1 MODIFIED DETAIL

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF ENGINEERING SERVICES

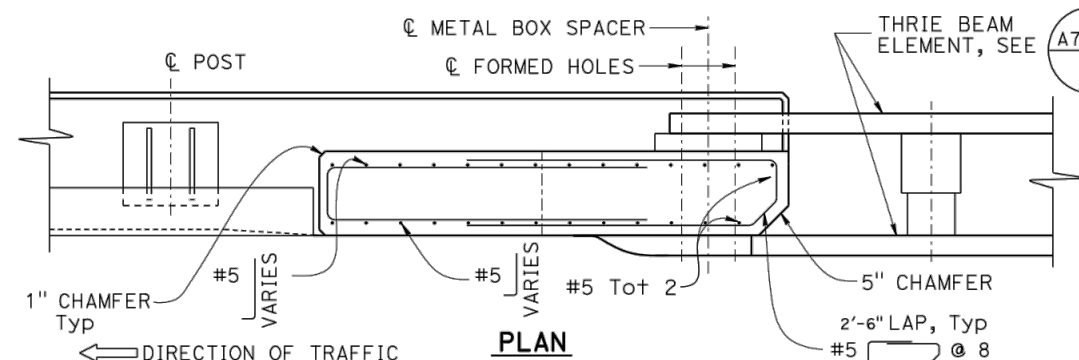
BRIDGE No.	36C0108
POST MILE	

SPECIAL DETAILS B-45  
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**CALIFORNIA ST-75 BRIDGE RAIL**  
**DETAILS No. 1**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
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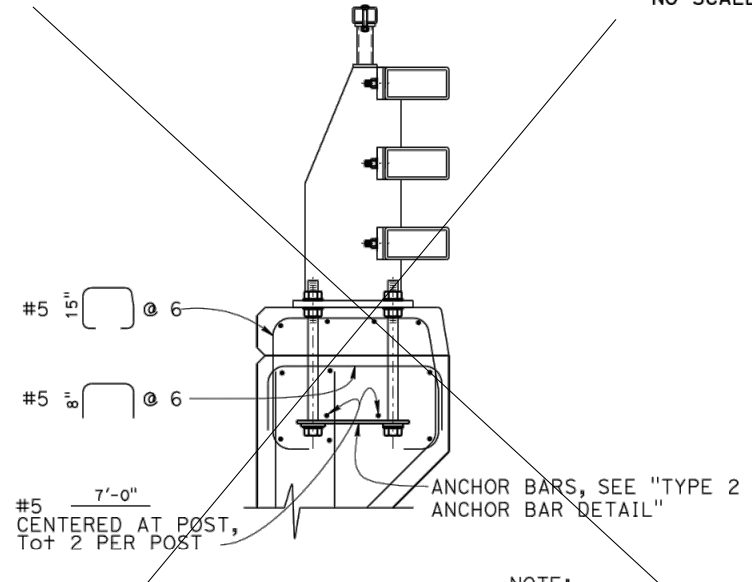
**PLAN**  
**DEPARTURE END BLOCK DETAIL**  
NO SCALE



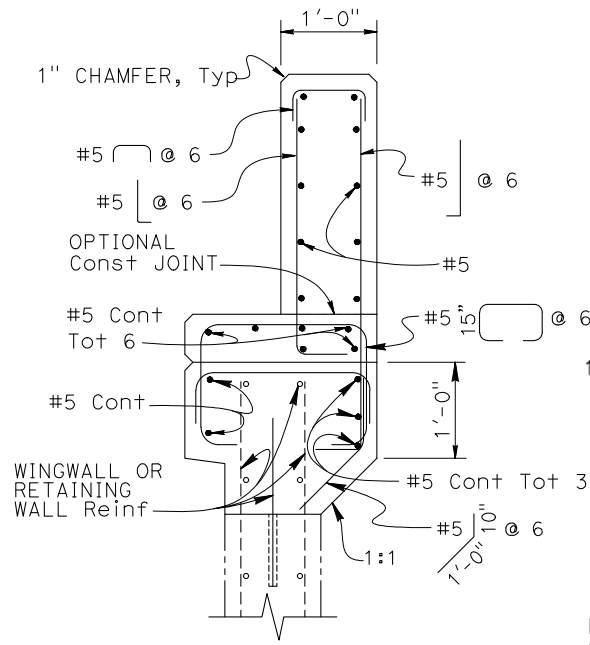
**PLAN**  
**APPROACH TRANSITION END BLOCK DETAIL**  
NO SCALE

NOTES:

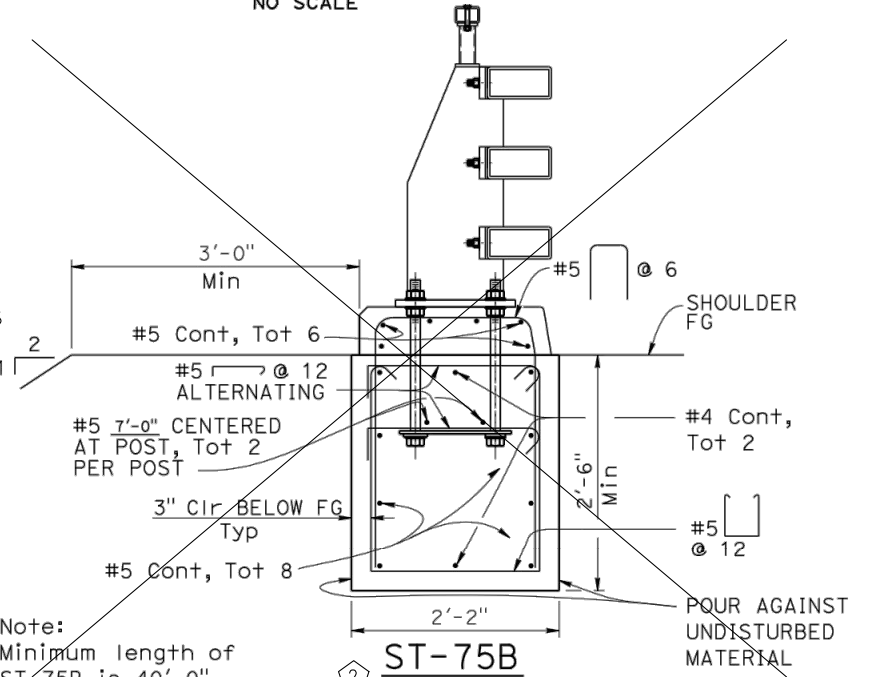
- All horizontal members are parallel to longitudinal profile grade.
- Posts are normal to profile grade of structure.
- Posts are vertical to the transverse cross section.
- If departure end block is within the Clear Recovery Zone (CRZ, 30 feet for expressways and freeways and 20 feet for conventional highways) of opposing traffic, then use the approach end block at the departure end.
- Anchor bolts may be tack welded to anchor bars.
- For parapet shoes details see "CALIFORNIA ST-75 BRIDGE RAIL DETAILS No. 5" SHEET.



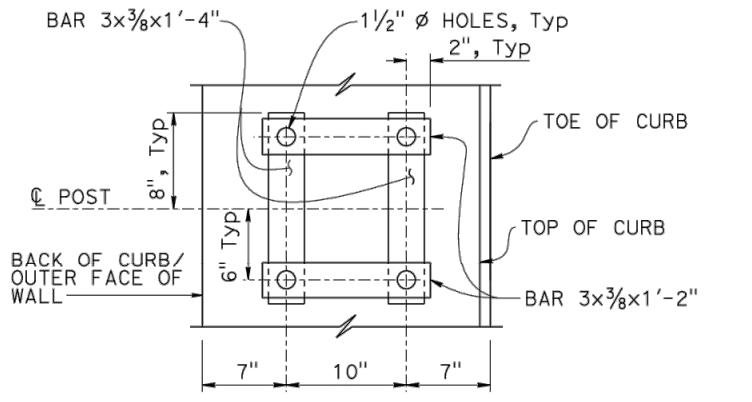
**SECTION B-B**  
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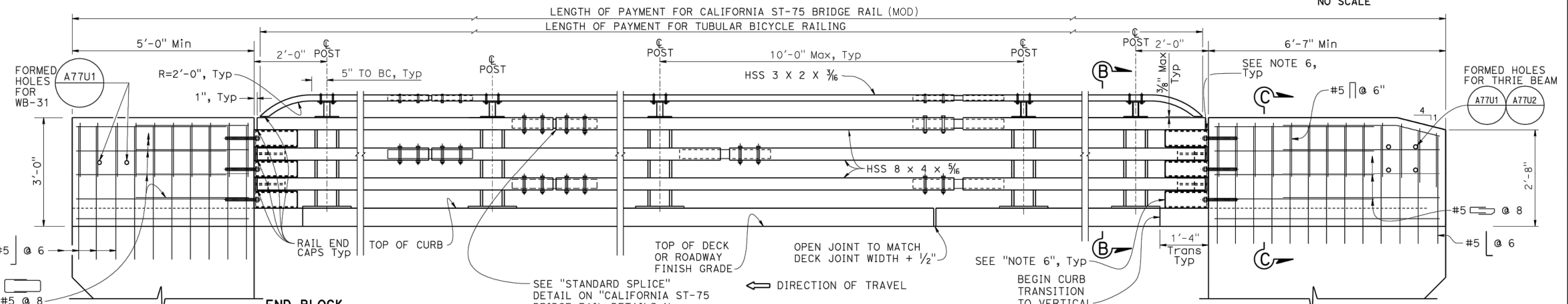
**SECTION C-C**  
NO SCALE



**ST-75B**  
NO SCALE  
AESTHETIC ALTERNATIVE TO GUARD RAIL



**TYPE 2 ANCHOR BAR DETAIL**  
NO SCALE



**ELEVATION**  
NO SCALE

**END BLOCK (APPROACH)**

**END BLOCK (DEPARTURE)**  
SEE NOTE 4

**SPECIAL DETAILS B-46**  
NOTE: Not all reinforcement shown for clarity.

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\046-xst16-116-2.dwg Layout Tab: Layout1 May 10, 2024 - 2:14pm gimbsen

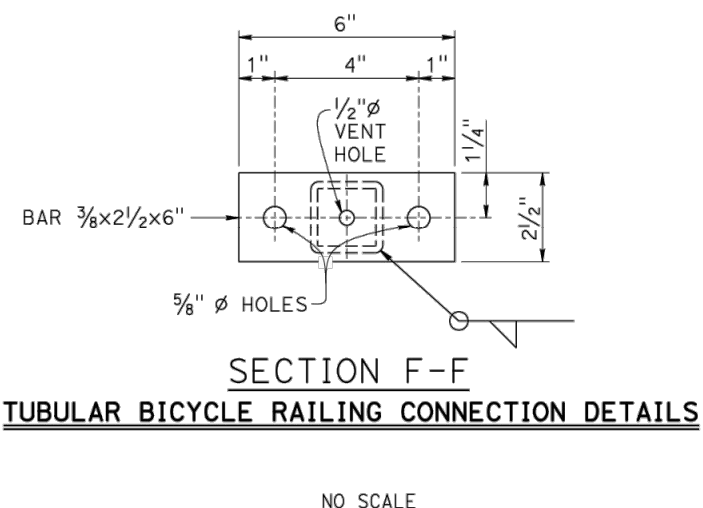
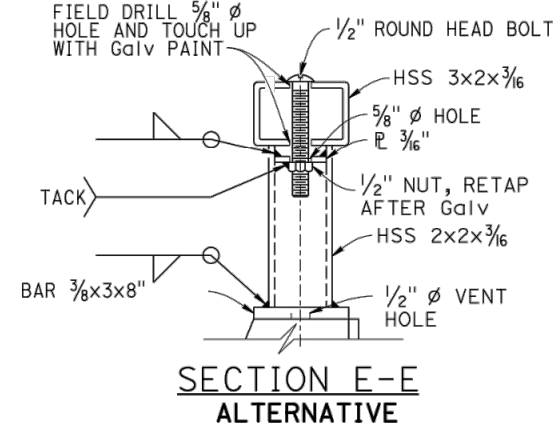
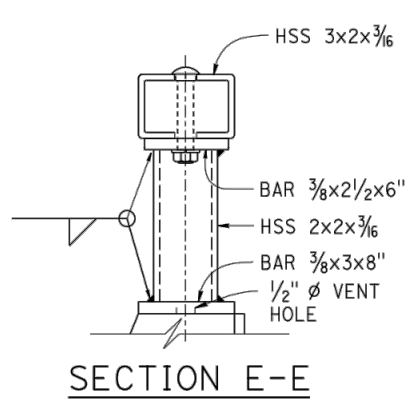
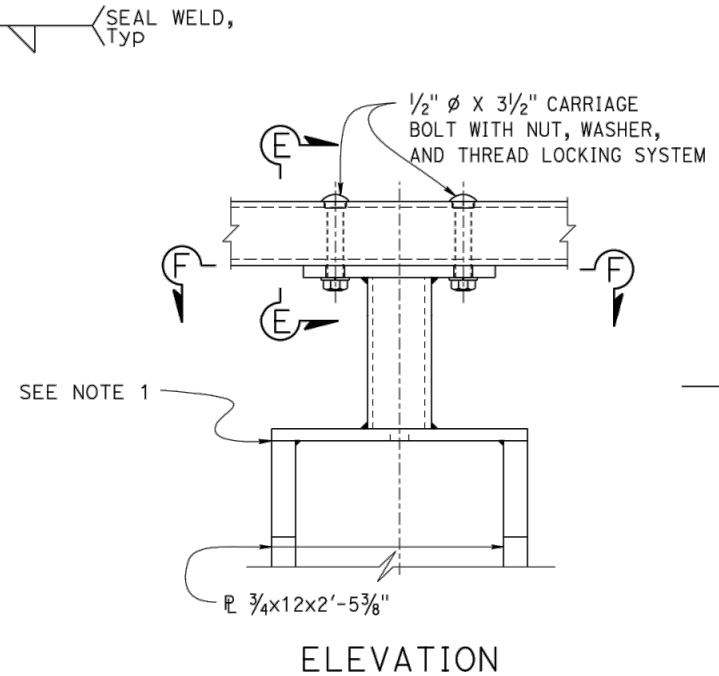
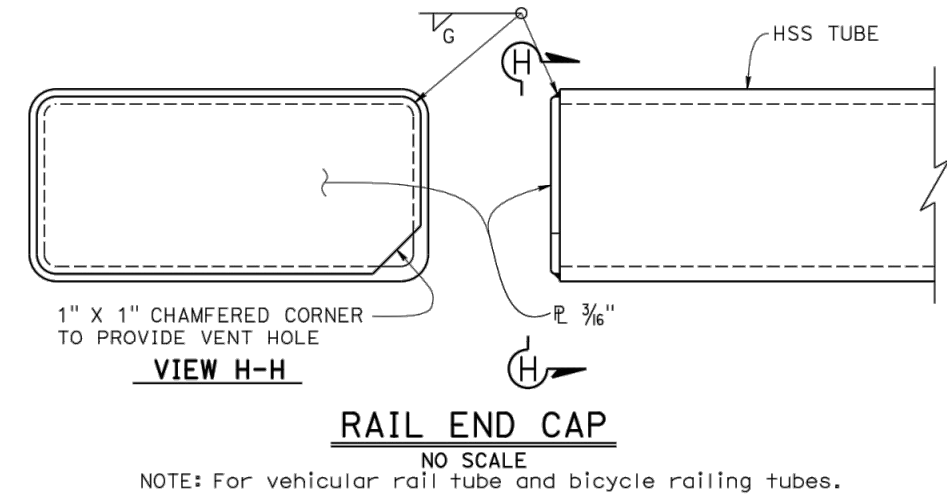
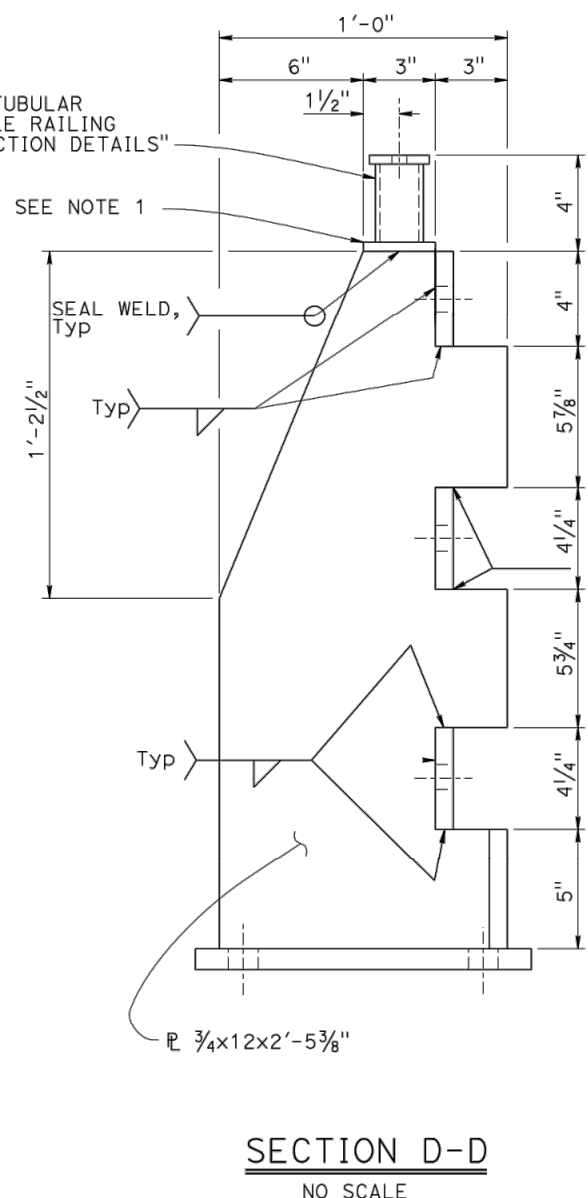
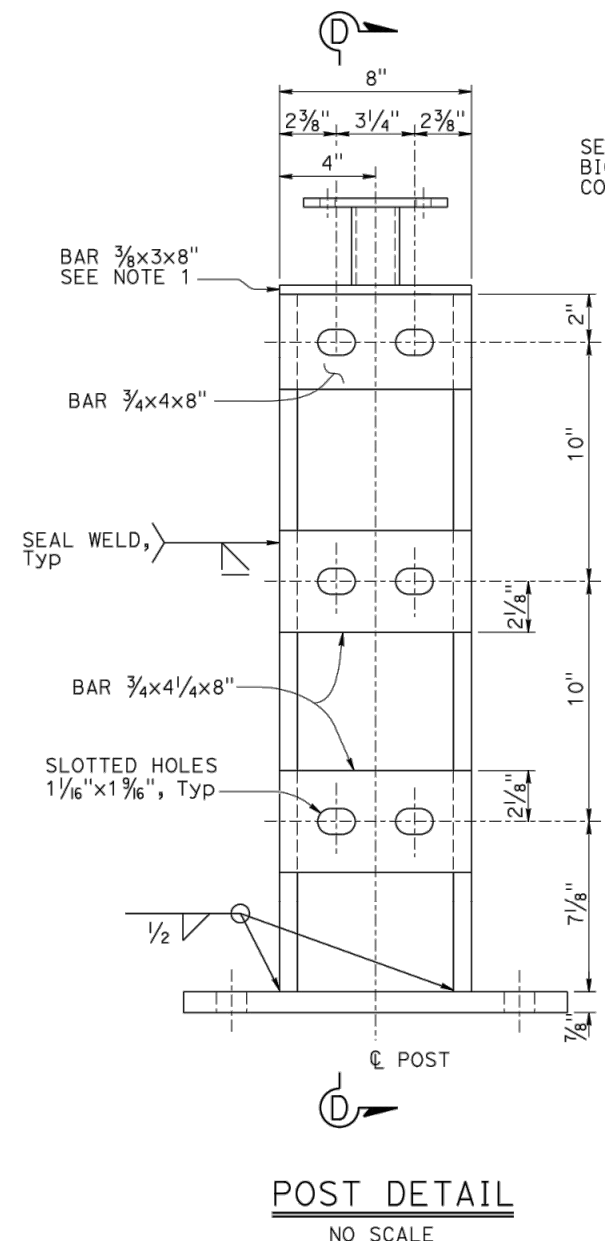
BRIDGE STANDARD DETAILS		
xs16-116-2	JULY 2022	<small>The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.</small>
FILE NO.	APPROVAL DATE	

MODIFICATIONS SHOWN:
① MODIFIED DETAIL
② REMOVED DETAIL

STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES
DEPARTMENT OF TRANSPORTATION	

BRIDGE No.	36C0108	<b>MURRAY STREET BRIDGE</b> <b>SEISMIC RETROFIT AND BARRIER REPLACEMENT</b> <b>CALIFORNIA ST-75 BRIDGE RAIL</b> <b>DETAILS No. 2</b>
POST MILE		

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
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NOTE:  
1. For access controlled freeways and expressways where bicycle traffic is prohibited by signage on the on-ramps, the bicycle railing (includes bar 3/8x3x8" and above) may be omitted.

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\047-s16-116-3.dwg Layout Tab: Layout1 May 10, 2024 - 2:17pm gimbsien

BRIDGE STANDARD DETAILS		
<b>xs16-116-3</b> FILE NO.	JULY 2022 APPROVAL DATE	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.

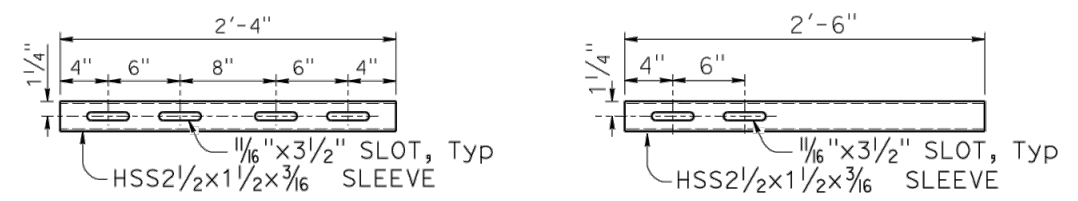
Refer to: <http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/bridge-standard-detail-sheets/index.html>

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

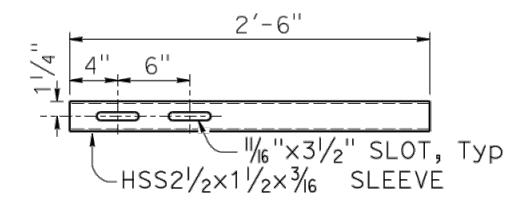
UNIT: PROJECT NUMBER & PHASE: CONTRACT No.:

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET	OF
	12/27/19 01/27/22 7/5/22	172	196

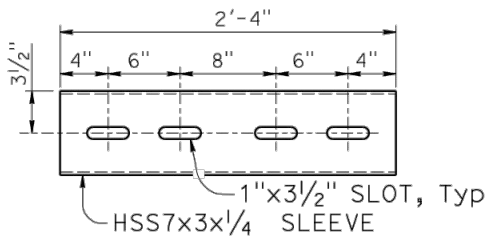
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER					
PLANS APPROVAL DATE					
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**HSS3x2x3/16 RAIL**

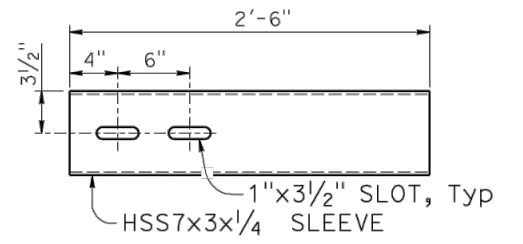


**HSS3x2x3/16 RAIL**



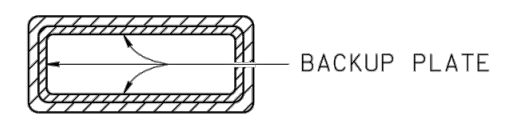
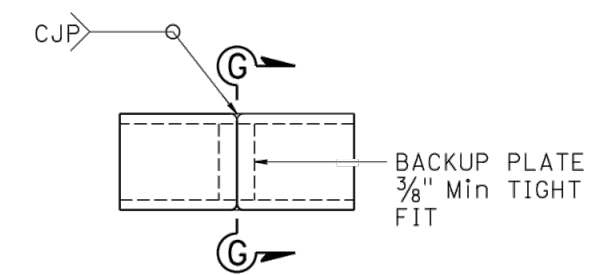
**HSS8x4x5/16 RAIL**

**STANDARD SLEEVES  
DETAILS  
NO SCALE**



**HSS8x4x5/16 RAIL**

**EXPANSION SLEEVES  
DETAILS  
NO SCALE**



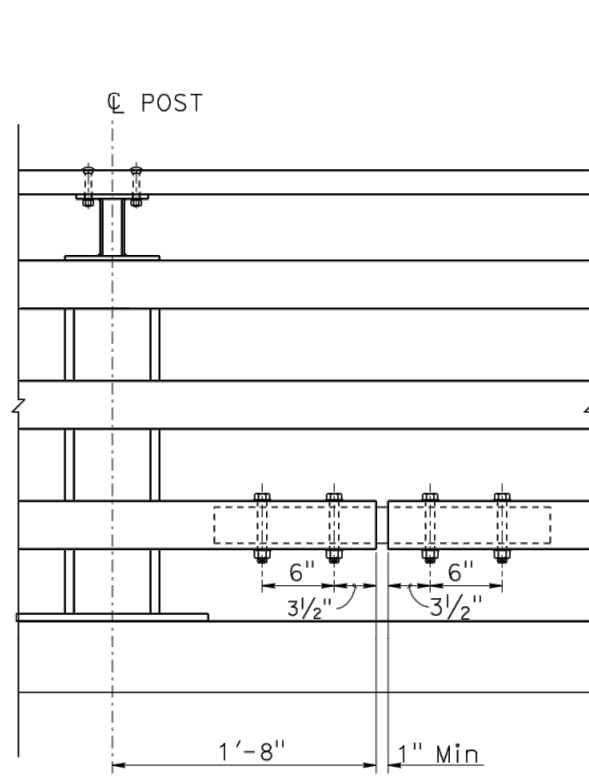
**SECTION G-G**

**ALTERNATE TUBE  
WELDED STANDARD SPLICE**

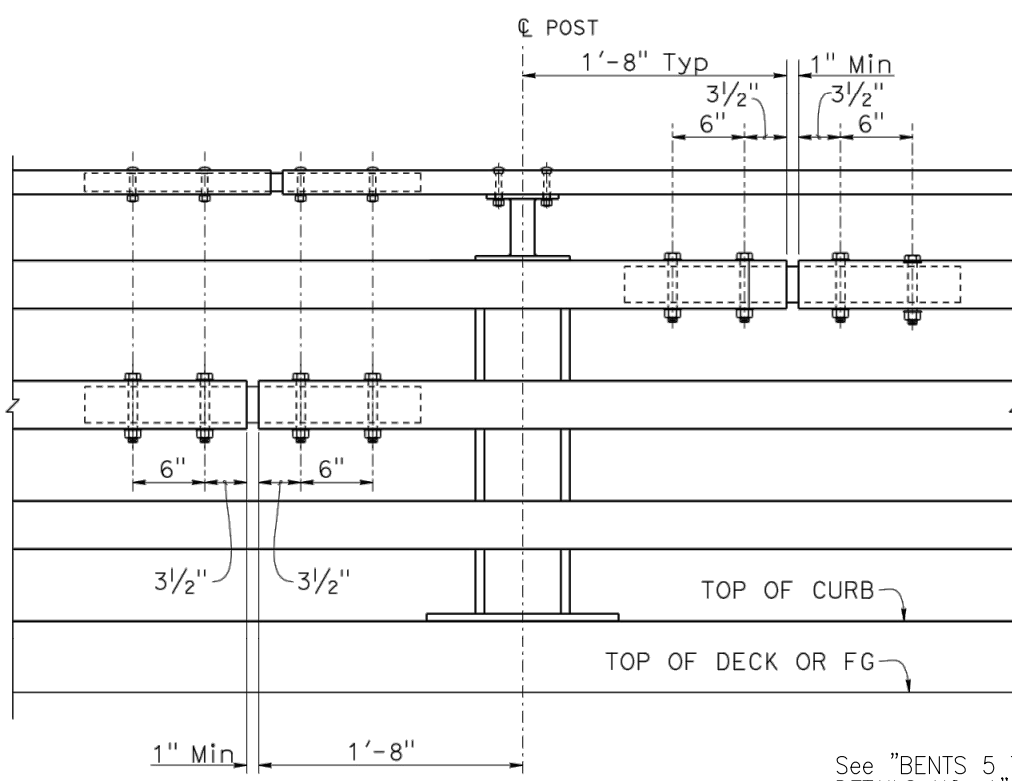
NO SCALE

**NOTES:**

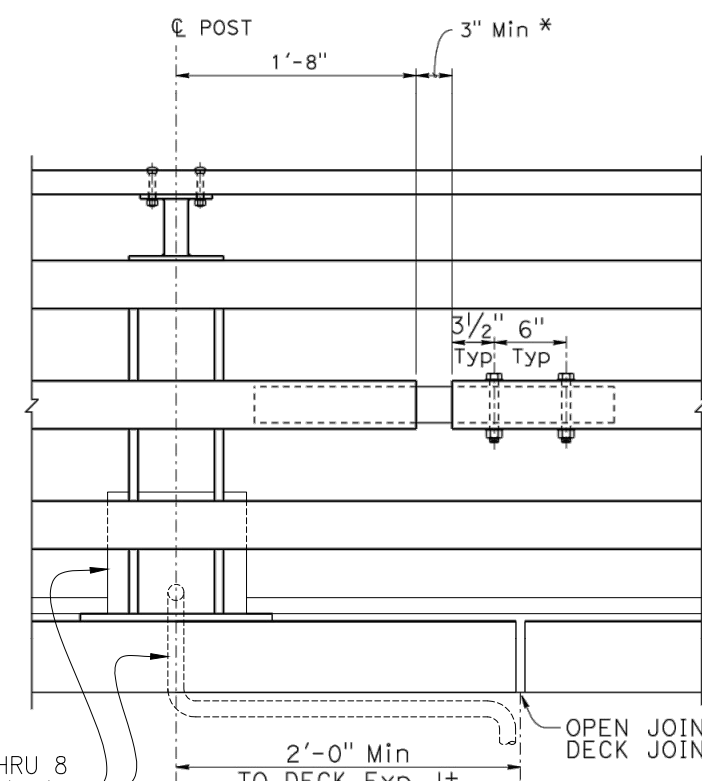
1. HS bolts with nut and washers, snug tightened, and thread locking system.
2. Use 1/2"  $\phi$  x 3 5/16 BOLTS (HSS3x2x3/16)  
Use 3/4"  $\phi$  x 5 5/16 BOLTS (HSS8x4x5/16)
3. Each rail length must be continuous over a minimum of two posts.
4. The fabricator must check that the tubular sleeve splices conform to the dimensions indicated to assure proper clearance.
5. Except for expansion splices, not more than one splice permitted per same side of post.



**STANDARD SPLICE  
NO SCALE**

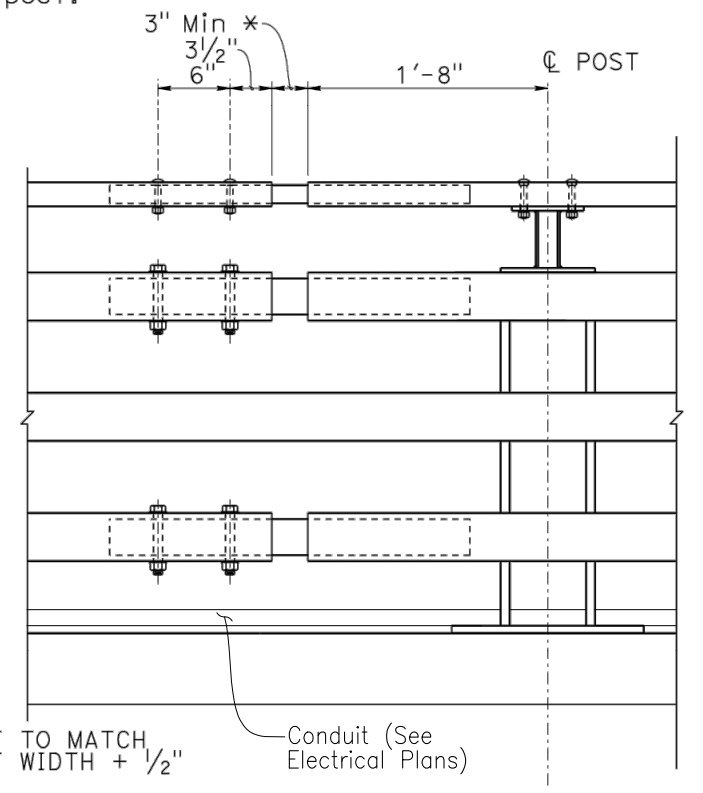


See "BENTS 5 THRU 8  
DETAILS NO. 1" sheet



**EXPANSION SPLICE  
NO SCALE**

\* Match deck or wall joint



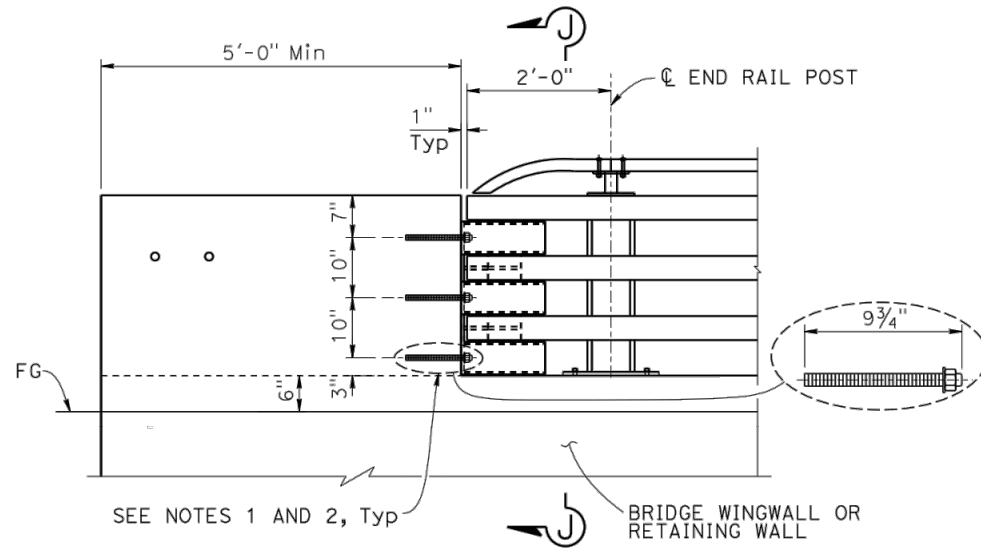
Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\048-xst16-116-4.dwg Layout Tab: Layout1 May 10, 2024 - 2:18pm gjmbesen

BRIDGE STANDARD DETAILS		
xs16-116-4	JULY 2022	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.
FILE NO.	APPROVAL DATE	

STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES
DEPARTMENT OF TRANSPORTATION	
BRIDGE No. 36C0108	POST MILE

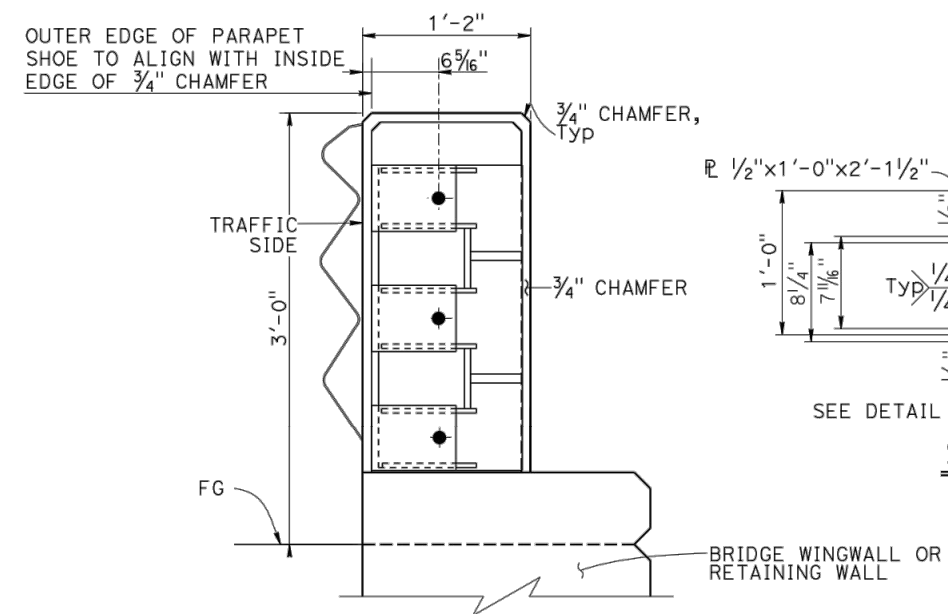
MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT CALIFORNIA ST-75 BRIDGE RAIL DETAILS No. 4			
REVISION DATES	SHEET 173	OF 196	
12-18-19	7/5/22	6-20-22	

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
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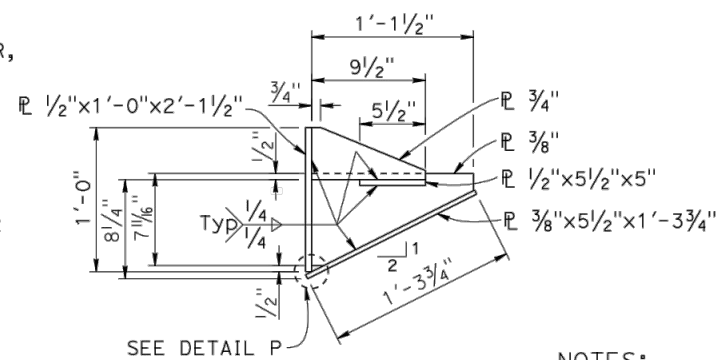
**PARAPET SHOE AT DEPARTURE END BLOCK**

NOTE: Parapet shoe connection to approach end block is similar.



**SECTION J-J**

NOTE: Bridge railing not shown clarity.

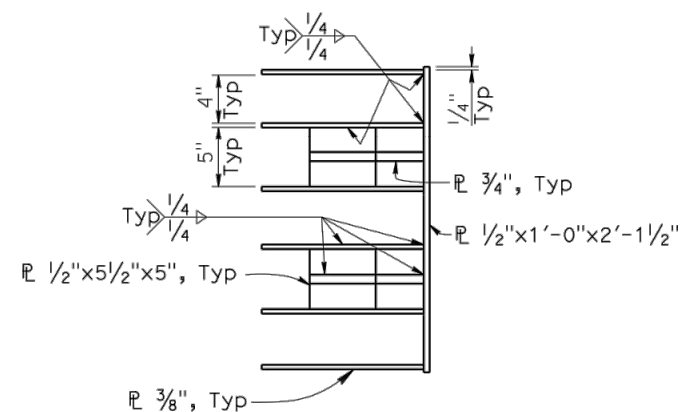


**SECTION K-K**

1/2" = 1'-0"

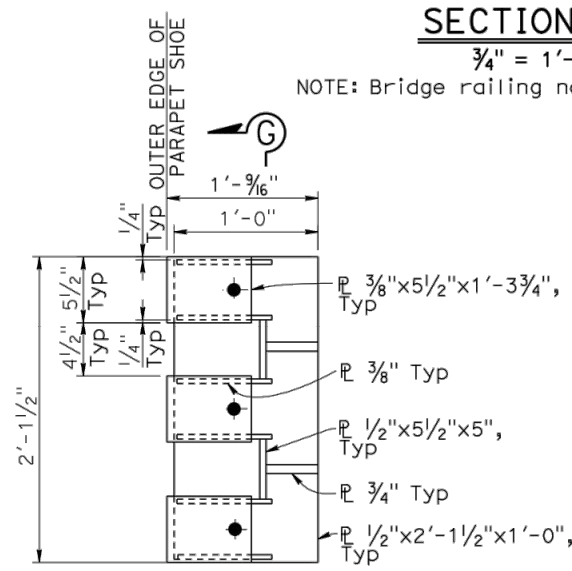
NOTES:

- Anchor bolts must be 7/8" Dia and ASTM F1554 Grade 105 fully threaded rods with heavy hex nut and one hardened washer (1 3/4" OD) each. Embed threaded rods 8" into concrete anchor block with DRILL AND BOND (CHEMICAL ADHESIVE) anchorage system.
- DRILL AND BOND (CHEMICAL ADHESIVE) anchorages is subjected to approval of Engineer. Installation procedure must comply with manufacture's instructions.



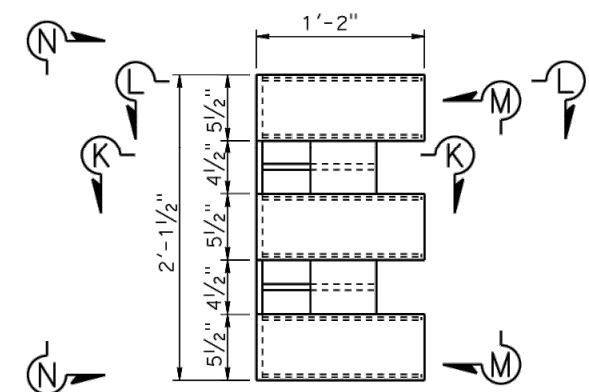
**SECTION Q-Q**

1/2" = 1'-0"



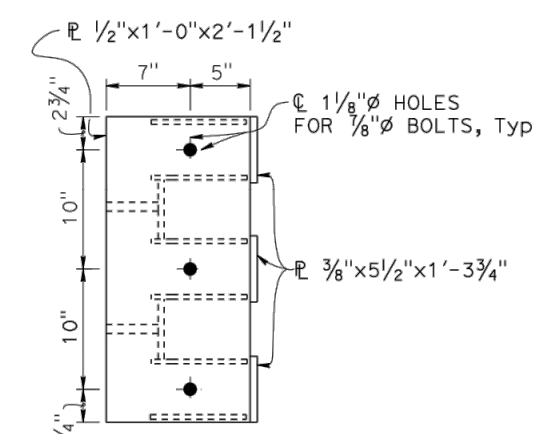
**VIEW M-M**

1/2" = 1'-0"



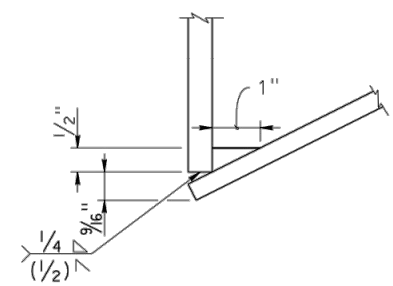
**PARAPET SHOE ELEVATION**

1/2" = 1'-0"



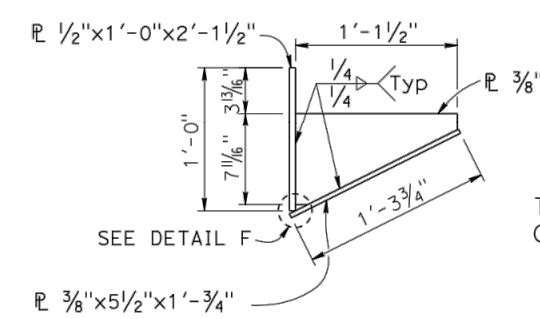
**VIEW N-N**

1/2" = 1'-0"



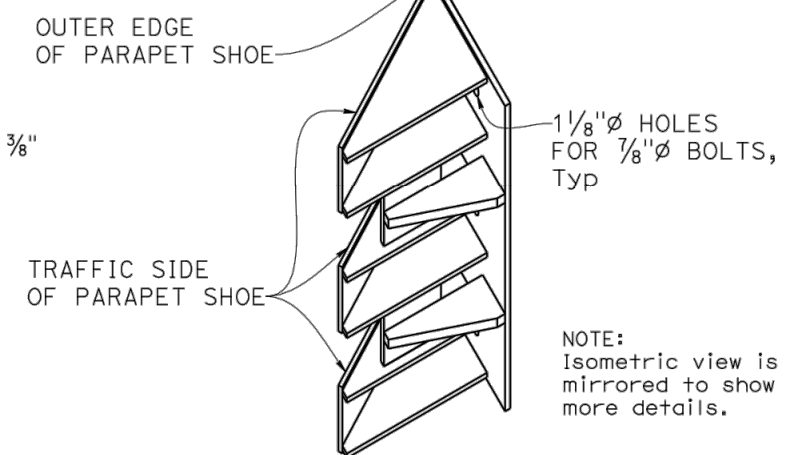
**DETAIL F**

6" = 1'-0"



**SECTION L-L**

1/2" = 1'-0"



**ISOMETRIC VIEW**

1/2" = 1'-0"

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\049-xst16-116-5.dwg  
 Layout Tab: Layout1  
 May 10, 2024 - 2:19pm gjmbien

BRIDGE STANDARD DETAILS		
<b>xs16-116-5</b>	JULY 2022	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.
FILE NO.	APPROVAL DATE	

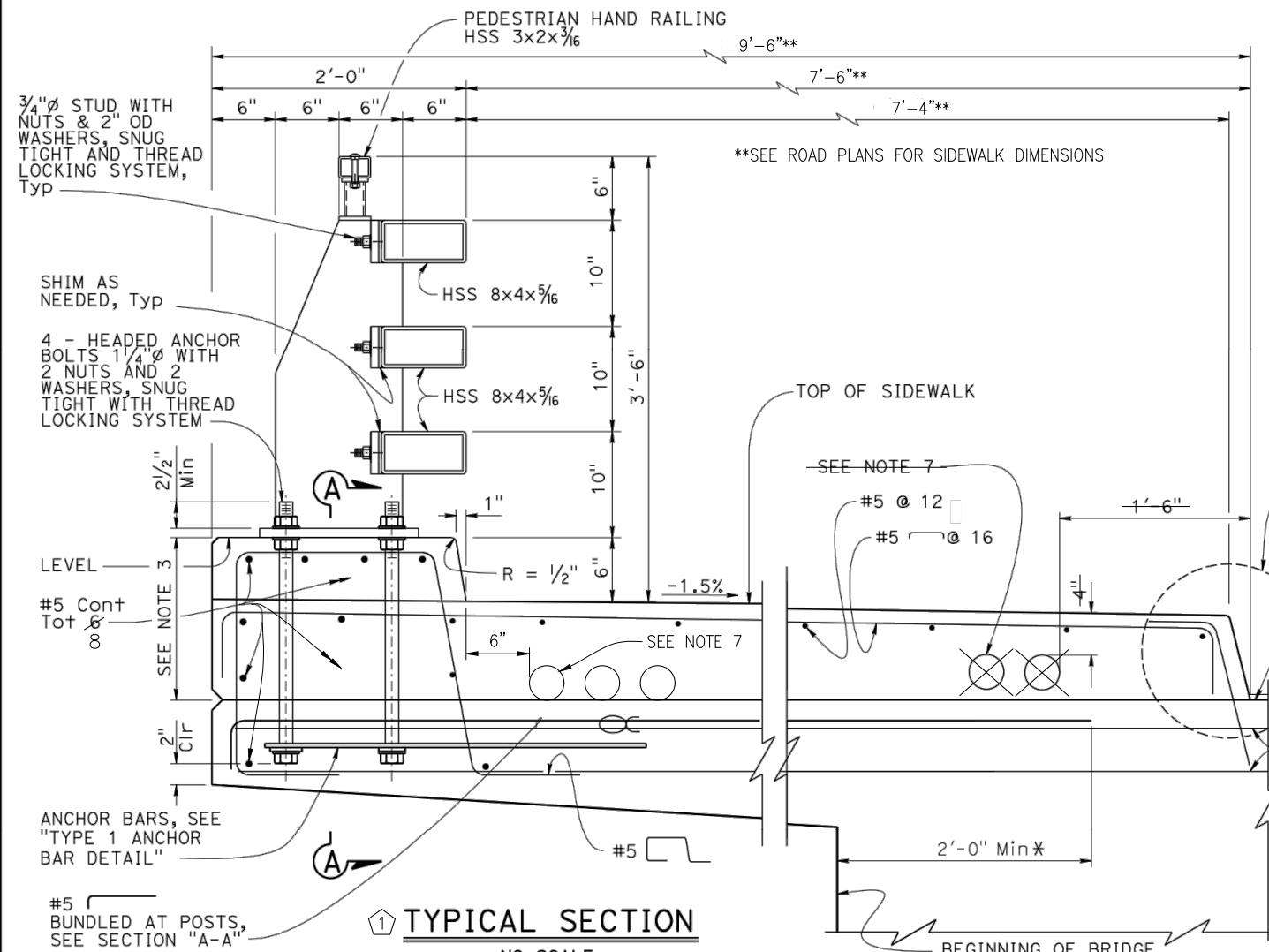
Refer to: <http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/bridge-standard-detail-sheets/index.html>

<b>STATE OF CALIFORNIA</b>		<b>DIVISION OF ENGINEERING SERVICES</b>	
DEPARTMENT OF TRANSPORTATION		BRIDGE No. 36C0108	<b>MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT CALIFORNIA ST-75 BRIDGE RAIL DETAILS No. 5</b>
		POST MILE X	

UNIT: X PROJECT NUMBER & PHASE: X CONTRACT No.: X

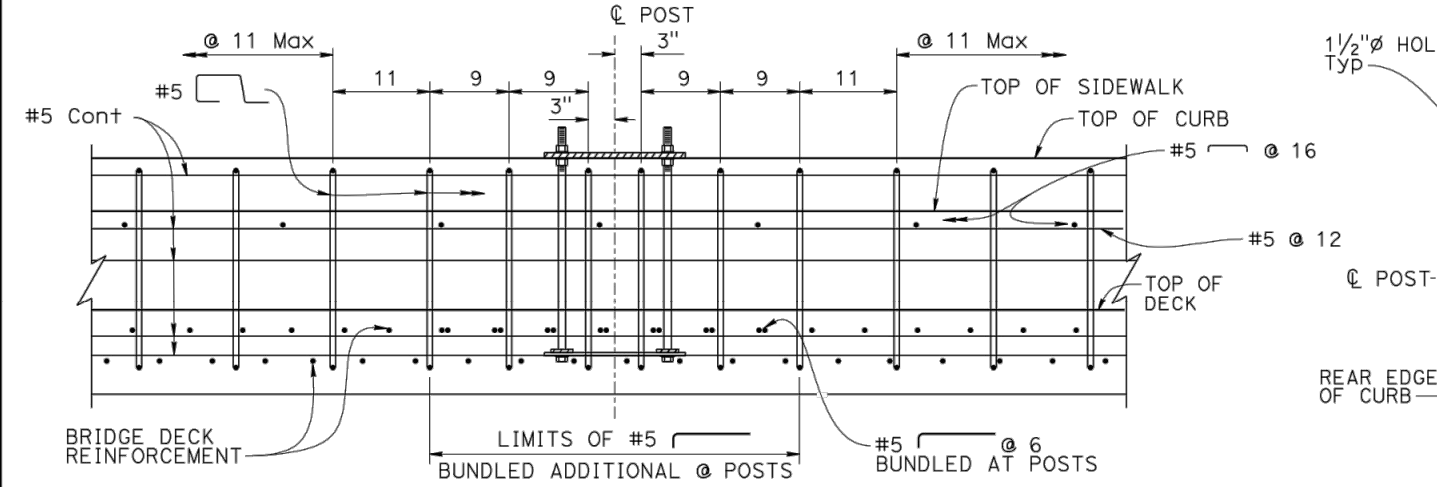
DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES	SHEET	OF
		04-26-22 05-16-22 7/5/22 6-14-22	174	196

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
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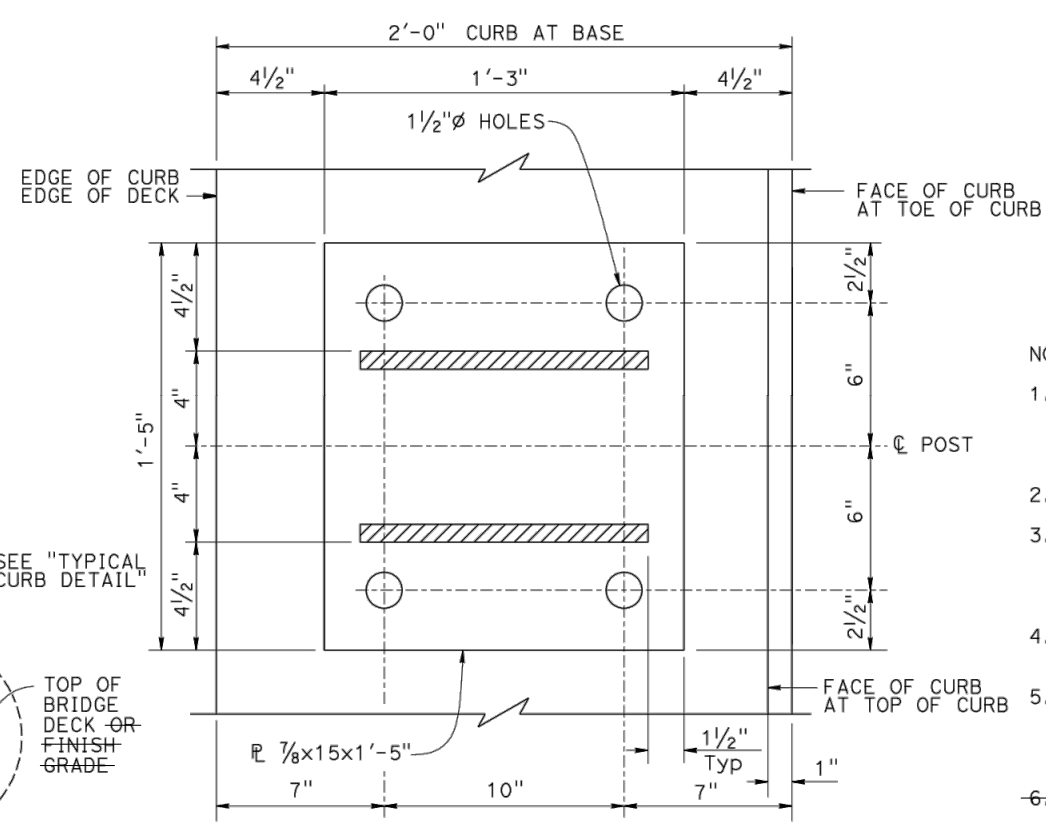
**TYPICAL SECTION**  
NO SCALE

\* #5 Bundled at posts to extend 2'-0" Min beyond beginning of bridge deck overhang.

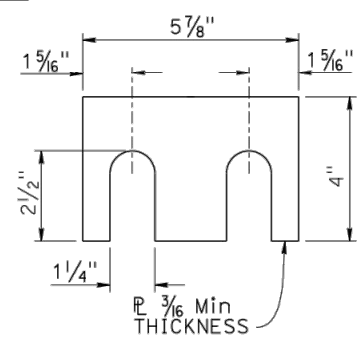


**SECTION A-A**  
NO SCALE

NOTE: Post not shown for clarity.

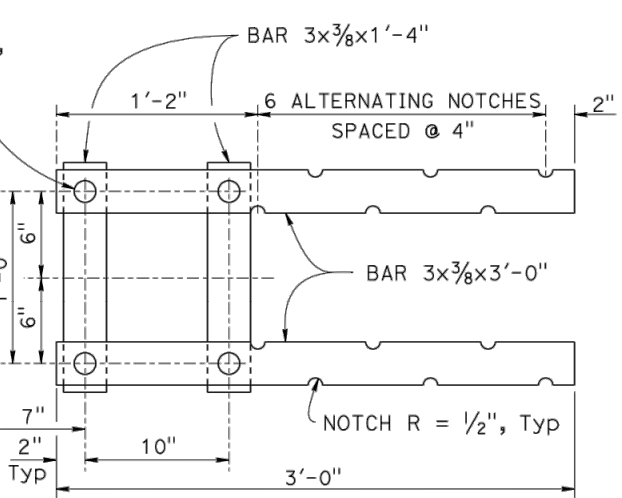


**BASE PLATE**  
NO SCALE

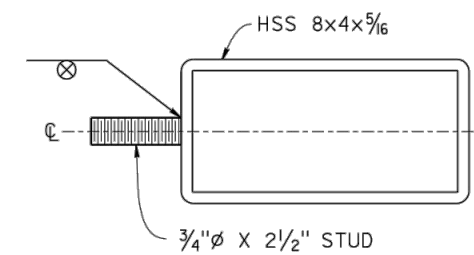


**SHIM DETAIL**  
NO SCALE

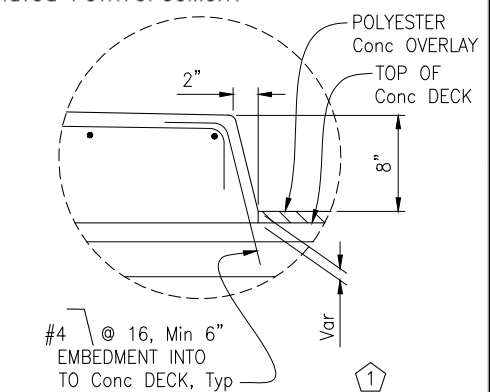
NOTE: Shim as needed between posts and HSS rail tubes.



**TYPE 1 ANCHOR BAR DETAIL**  
NO SCALE



**RAIL SECTION AT POST**  
NO SCALE



**TYPICAL CURB DETAIL**  
NO SCALE

- NOTES:
- This barrier is to be used only for posted speeds of 45 MPH or less. For speeds greater than 45 MPH, pedestrians must be protected by a separation traffic barrier.
  - Anchor bolts may be welded to anchor bars.
  - Dimensions will vary with cross slope of sidewalk and bridge deck, and sidewalk width, and if overlay is placed on deck. For the same reasons, anchor bolt lengths will vary.
  - Walls must be backfilled before curb and parapet is placed.
  - Clearance to reinforcing steel in curb and railing is 2" except as noted. Longitudinal reinforcement to stop at all expansion joints.
  - See Project Plans for "Joint Armor For Pedestrian Walkways and Sidewalks" details.
  - A minimum of three 4" round openings for future utilities, and a maximum of six 4" round openings for a 6'-2" sidewalk. One 4" round opening can be added for each additional 1'-0" of sidewalk width. Utility opening must be a minimum of 6" from face of barrier parapet. Openings are to be sealed at ends and extended 8" minimum past end of sidewalk if not used. Duct forms are to be tied down. For exact number and placement of utility openings see other details. Minimum 2" clear between conduits.
  - See Project Plans for pull box location and type.
  - Use extra thick washers for anchor bolts, with a minimum thickness of 0.305" and a maximum thickness of 0.375".

LEGEND:  
 Bundled reinforcement

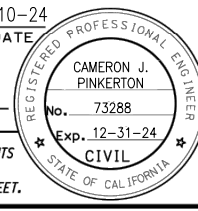
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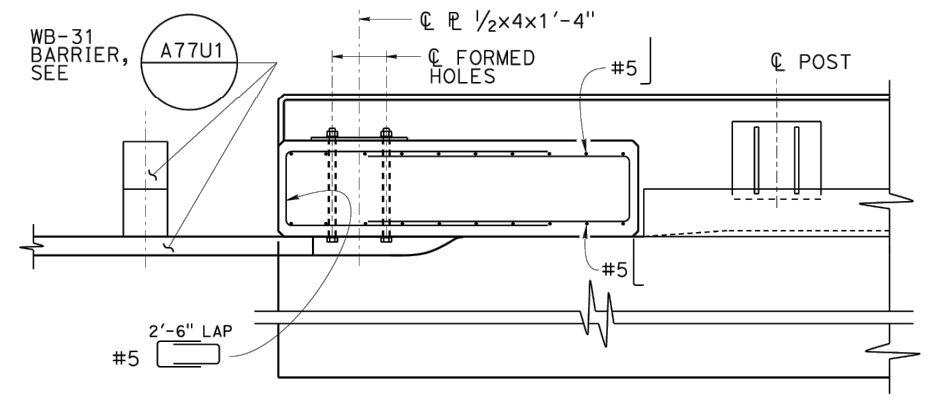
BRIDGE STANDARD DETAILS		
xs16-119-1	JULY 2022	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.
FILE NO.	APPROVAL DATE	

MODIFICATIONS SHOWN:
1 REVISED DETAIL
2 REMOVED NOTE

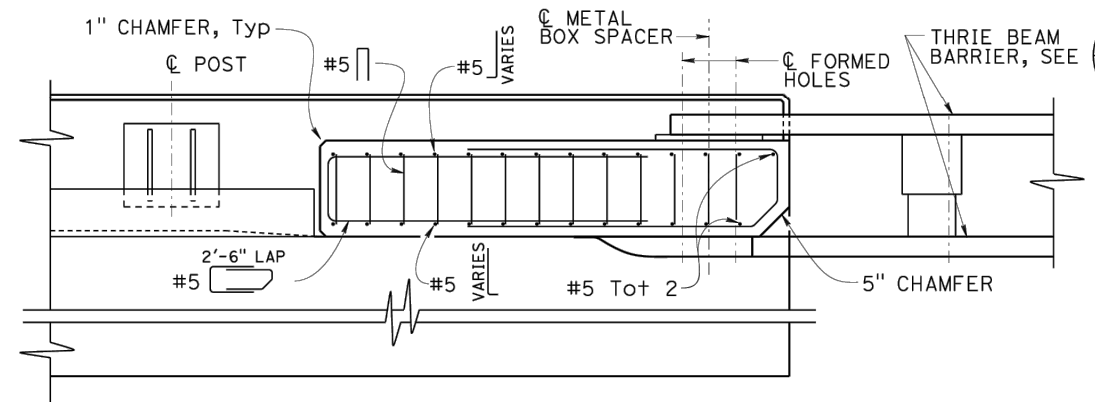
STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES
DEPARTMENT OF TRANSPORTATION	

BRIDGE No.	36C0108	MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT
POST MILE	X	
CALIFORNIA ST-75SW BRIDGE RAIL DETAILS No. 1		

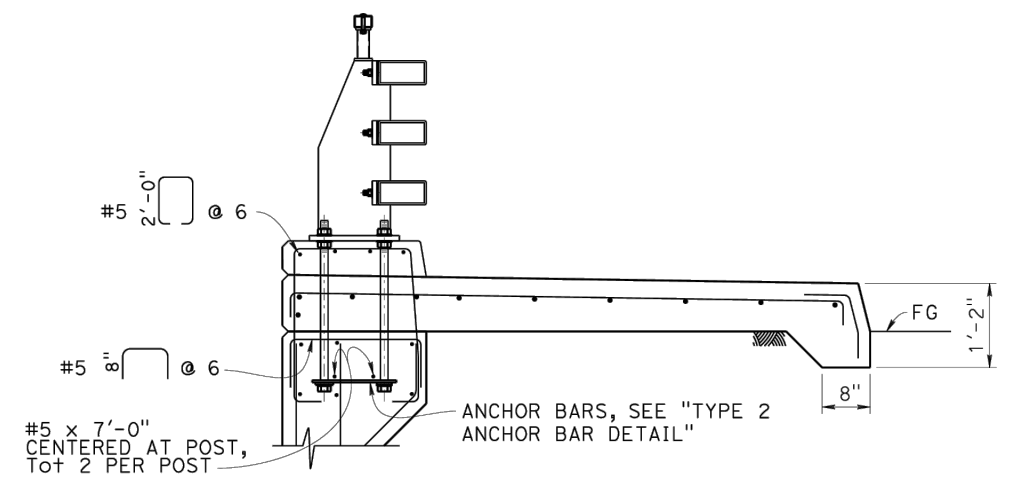
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
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**PLAN**  
**DEPARTURE END BLOCK DETAIL**  
 NO SCALE

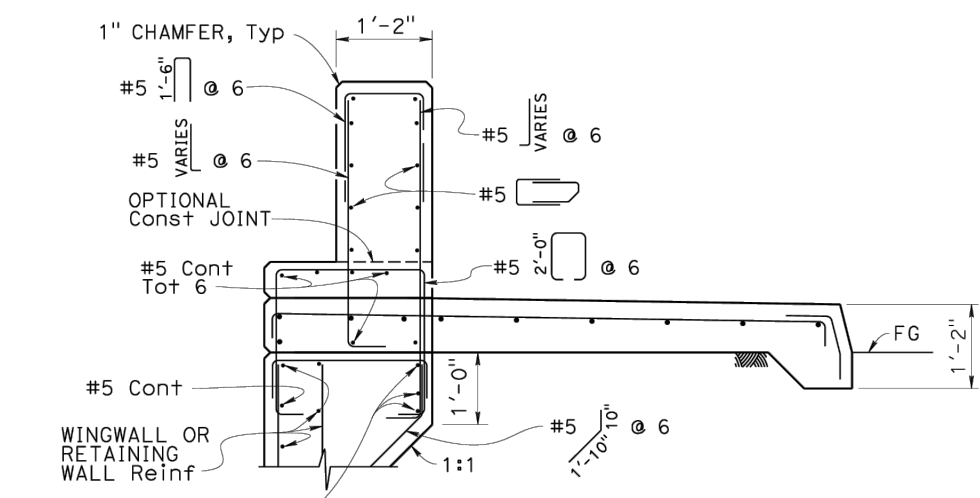


**PLAN**  
**APPROACH TRANSITION END BLOCK DETAIL**  
 NO SCALE

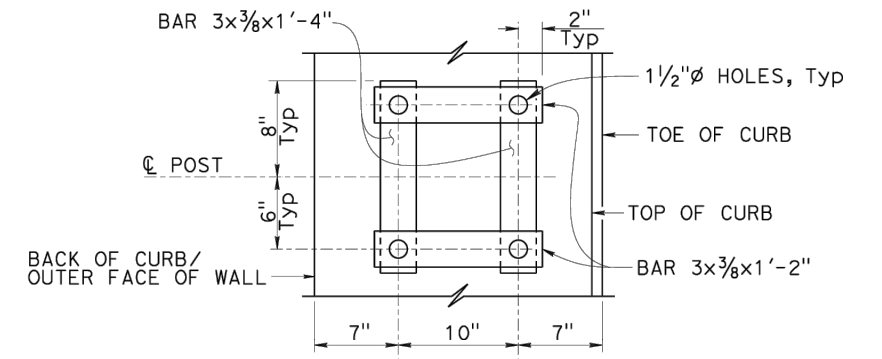


**SECTION B-B**  
 NO SCALE

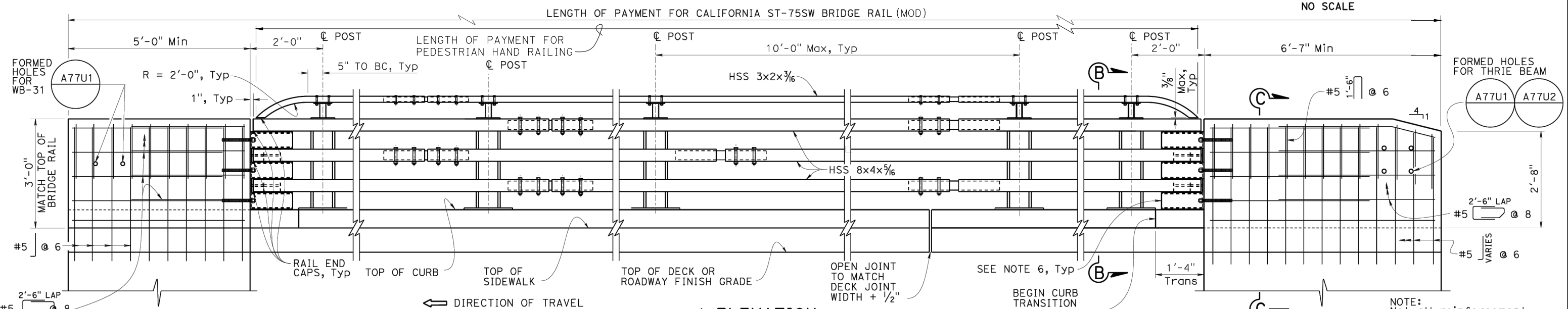
NOTE:  
 For details not shown,  
 see "SECTION C-C"



**SECTION C-C**  
 NO SCALE



**TYPE 2 ANCHOR BAR DETAIL**  
 NO SCALE



**ELEVATION**  
 NO SCALE

**END BLOCK (APPROACH) SPECIAL DETAILS B-51**

BRIDGE STANDARD DETAILS		
<b>xs16-119-2</b>	JULY 2022	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.
FILE NO.	APPROVAL DATE	

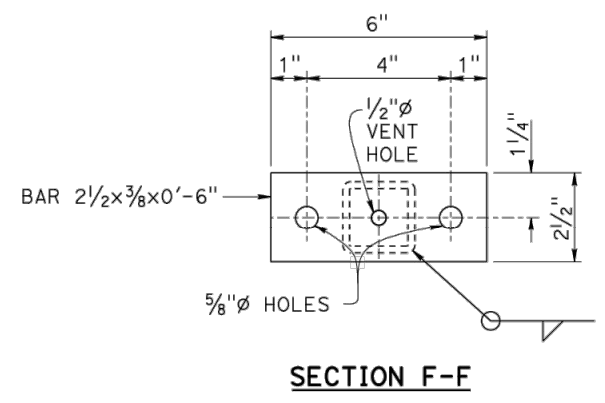
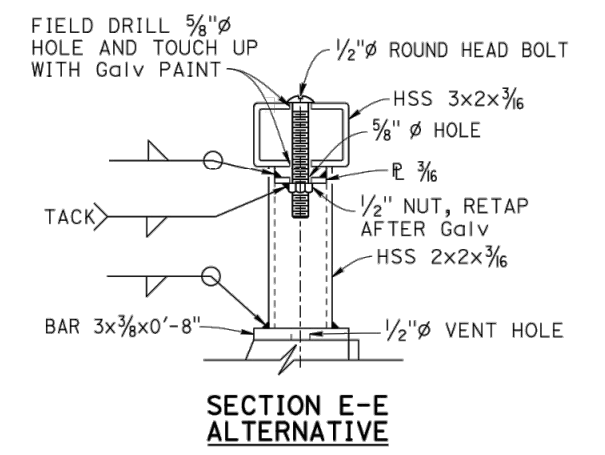
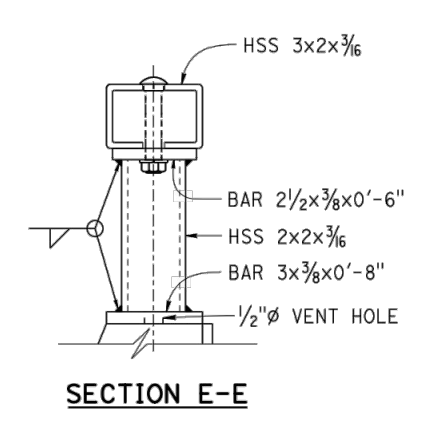
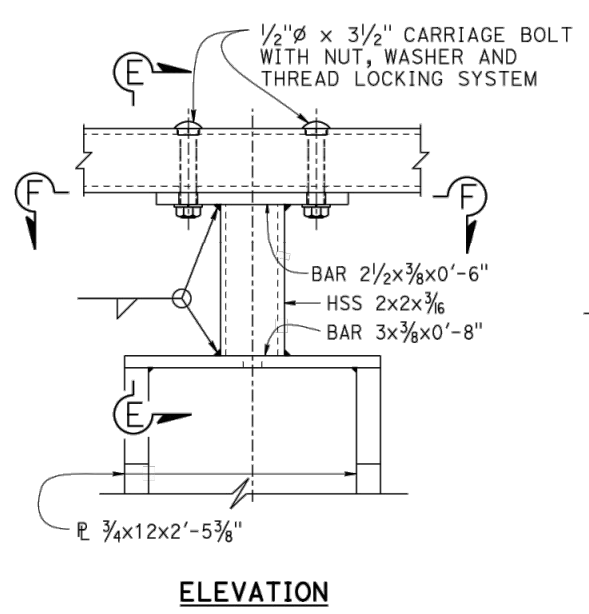
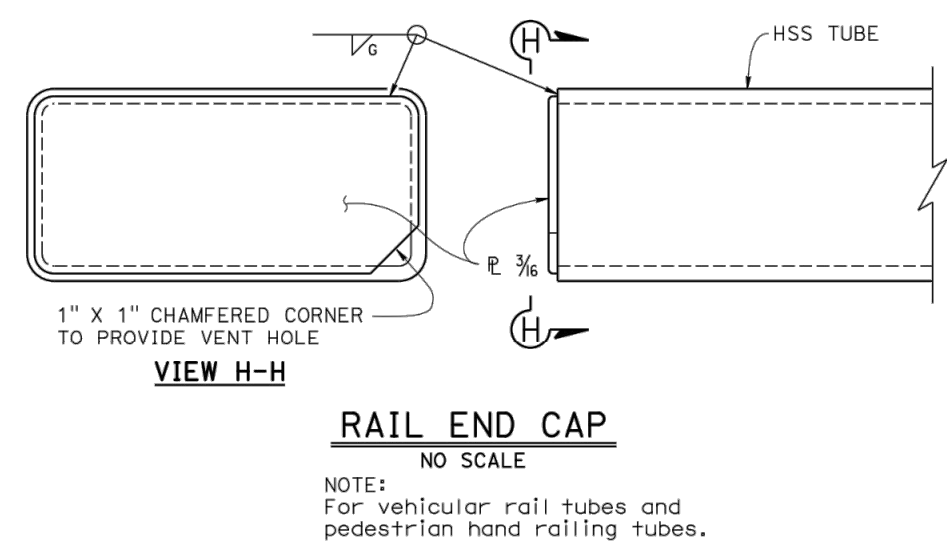
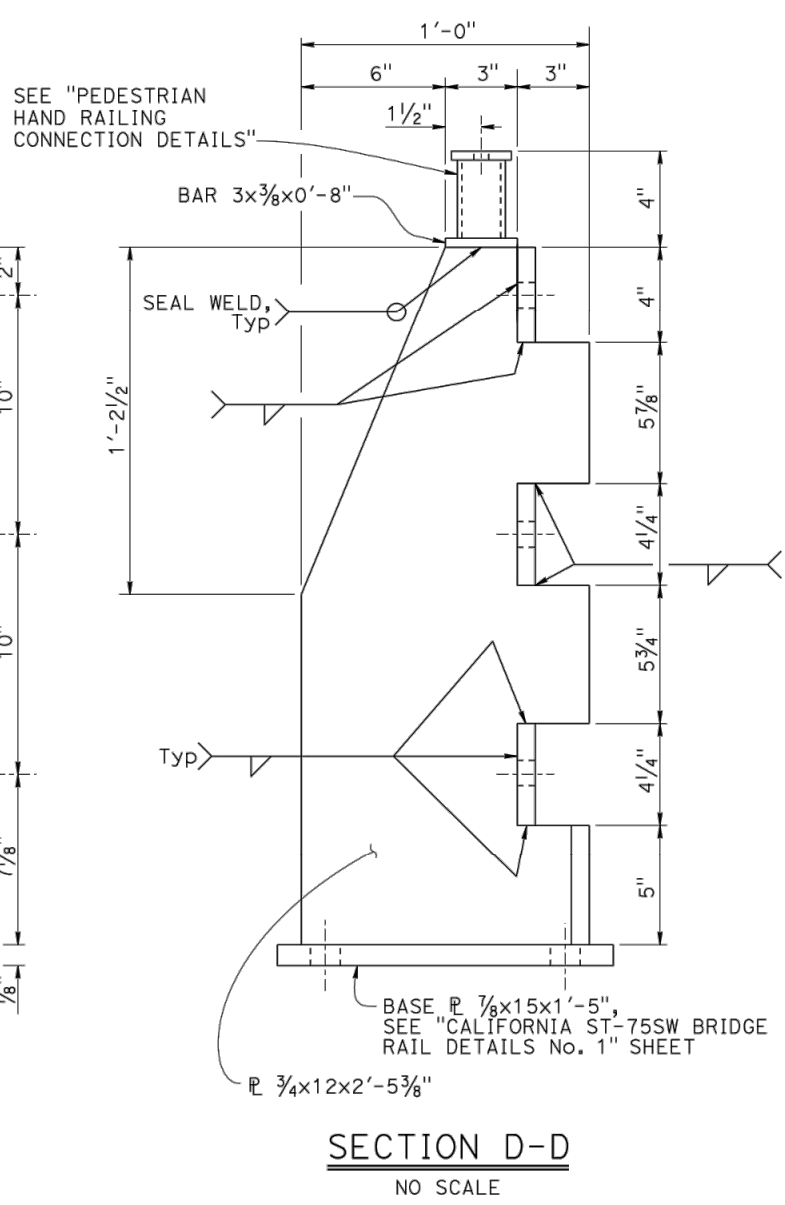
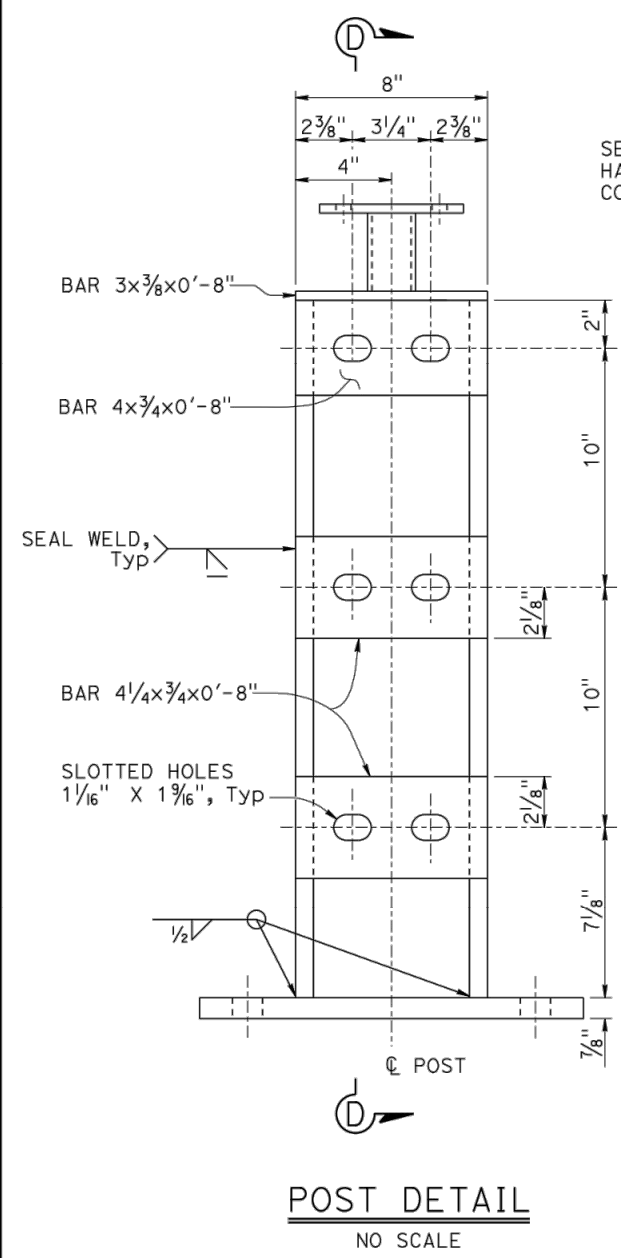
MODIFICATIONS SHOWN:  
 ① REVISED DETAIL

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF ENGINEERING SERVICES

BRIDGE No.	<b>MURRAY STREET BRIDGE</b>	
36C0108	<b>SEISMIC RETROFIT AND BARRIER REPLACEMENT</b>	
POST MILE	<b>CALIFORNIA ST-75SW BRIDGE RAIL DETAILS No. 2</b>	
X		

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\051-xst16-119-2.dwg  
 Layout Tab: Layout1  
 May 21, 2024 - 9:51am ACardozo

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
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**PEDESTRIAN HAND RAILING CONNECTION DETAILS**  
NO SCALE

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\052-vst16-119-3.dwg  
 Layout Tab: Layout1  
 May 04, 2024 - 12:26pm gimbisen

BRIDGE STANDARD DETAILS		
<b>xs16-119-3</b>	JULY 2022	<i>The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.</i>
FILE NO.	APPROVAL DATE	

Refer to: <http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/bridge-standard-detail-sheets/index.html>

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1	2	3
--	---	---	---	---

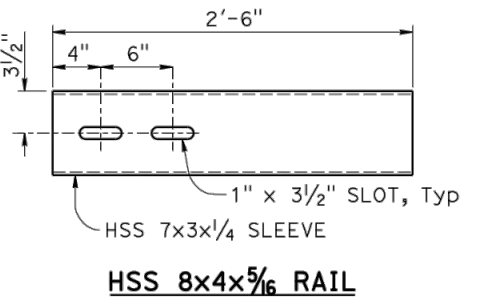
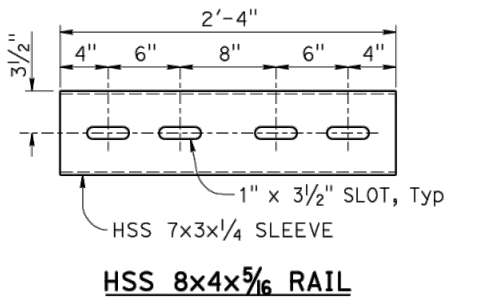
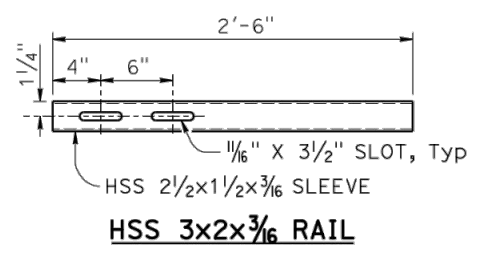
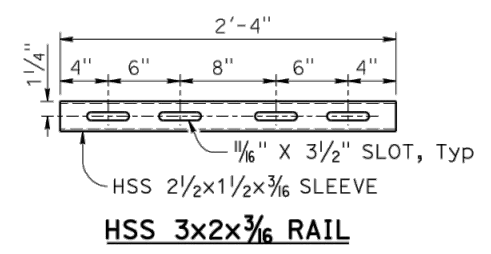
UNIT: X  
PROJECT NUMBER & PHASE: X

BRIDGE No.	36C0108
POST MILE	X

**MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**CALIFORNIA ST-75SW BRIDGE RAIL DETAILS No. 3**

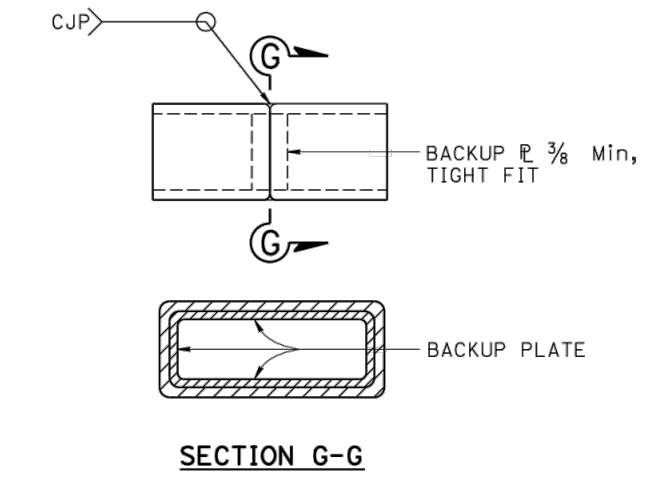
CONTRACT No.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET 177	OF 196
		09/18/20	06/28/22	05/14/22

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					
<small>THE REGISTERED CIVIL ENGINEER FOR THE PROJECT IS RESPONSIBLE FOR THE SELECTION AND PROPER APPLICATION OF THE COMPONENT DESIGN AND ANY MODIFICATIONS SHOWN.</small>					

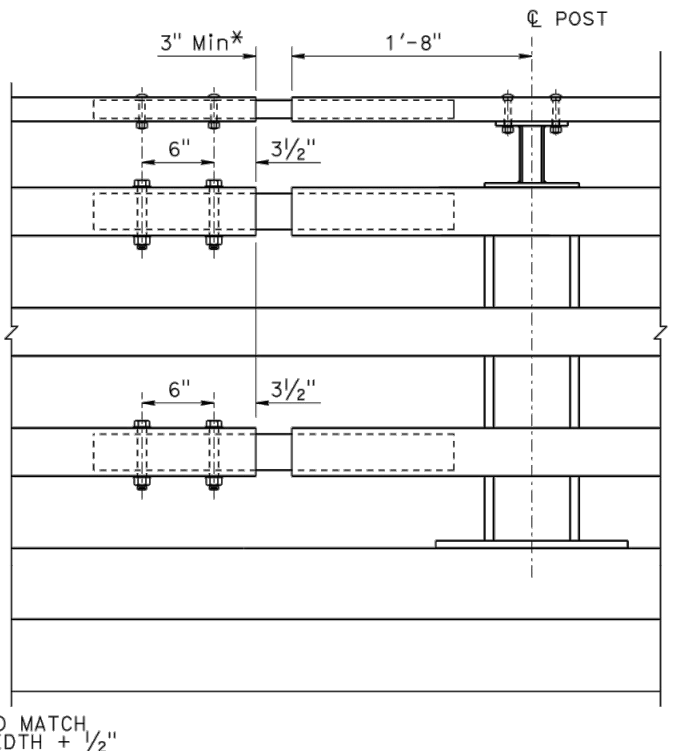
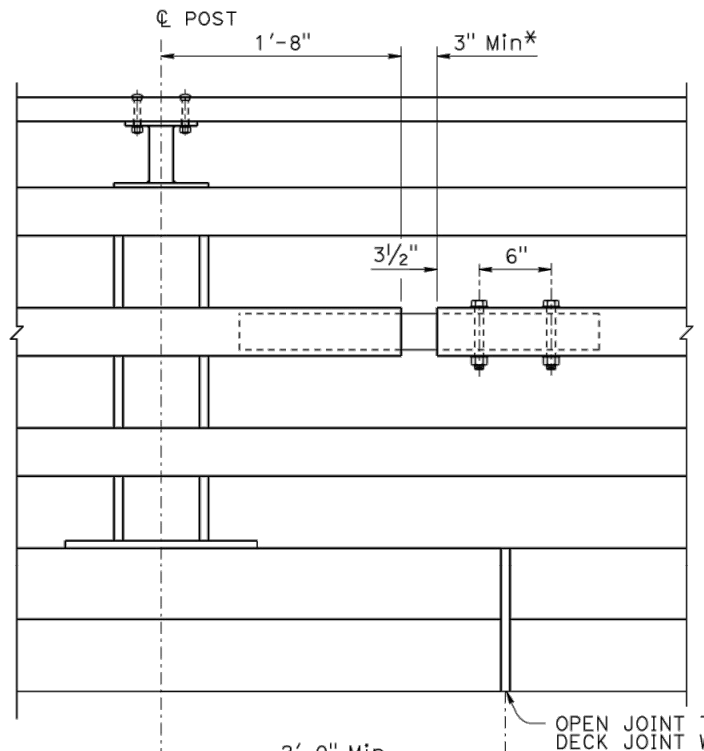
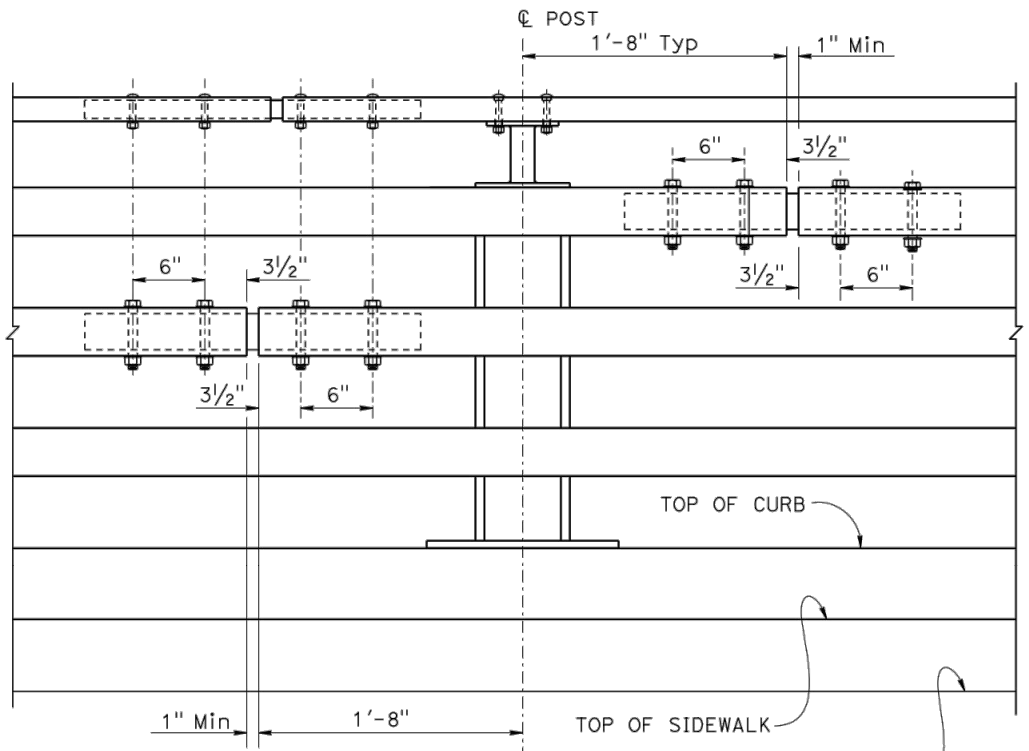
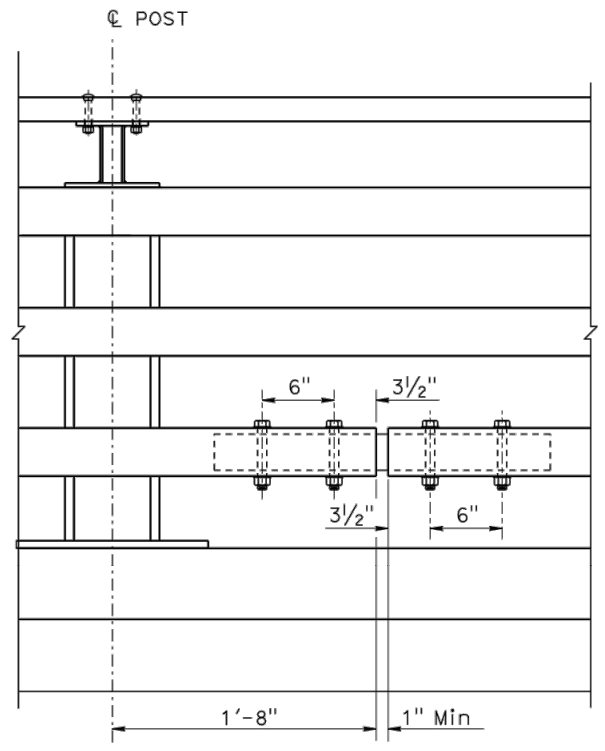


**STANDARD SLEEVE  
DETAIL**  
NO SCALE

**EXPANSION SLEEVE  
DETAIL**  
NO SCALE



**ALTERNATE TUBE  
WELDED STANDARD SPLICE**  
NO SCALE



**EXPANSION SPLICE**  
NO SCALE  
\* Match deck or wall joint

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\053-xst16-119-4.dwg Layout Tab: Layout1 May 04, 2024 - 12:28pm gimlsen

BRIDGE STANDARD DETAILS		
xs16-119-4 FILE NO.	JULY 2022 APPROVAL DATE	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California

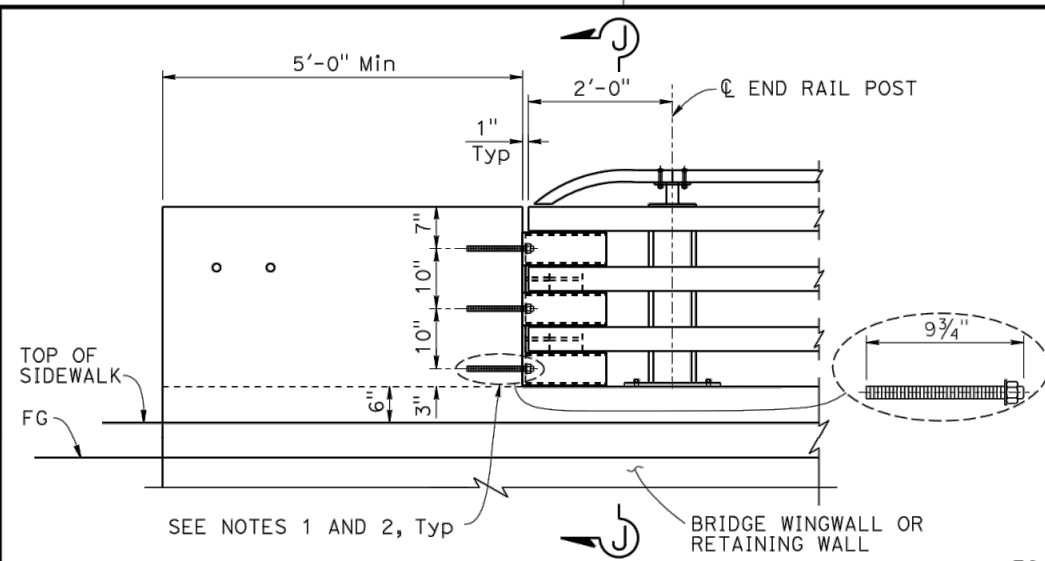
Refer to: <http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/bridge-standard-detail-sheets/index.html>

**STATE OF CALIFORNIA**  
 DEPARTMENT OF TRANSPORTATION  
**DIVISION OF ENGINEERING SERVICES**

BRIDGE No. 36C0108	<b>MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT CALIFORNIA ST-75SW BRIDGE RAIL DETAILS No. 4</b>
POST MILE X	

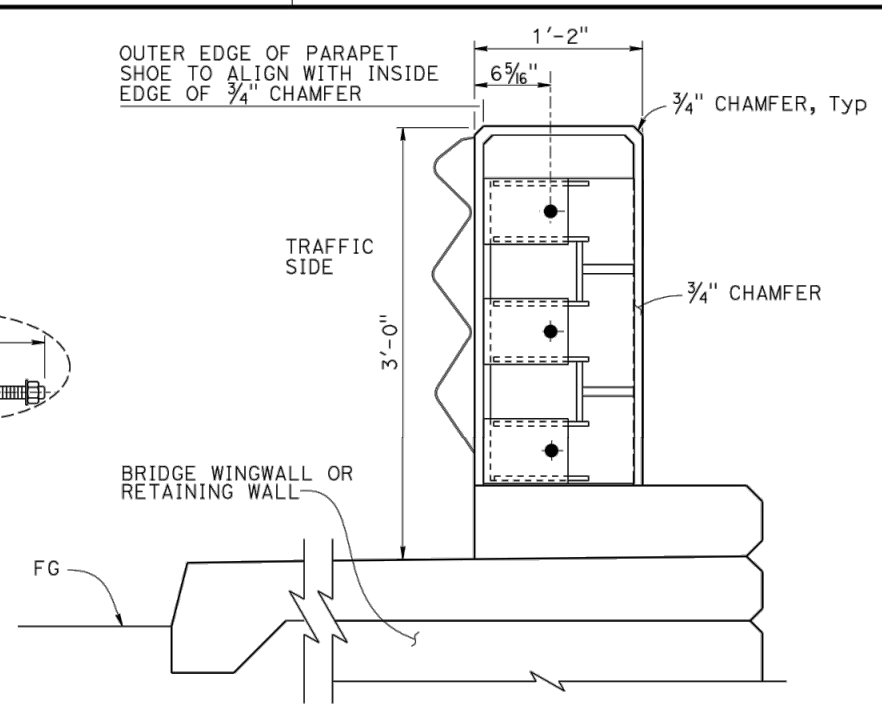
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0 1 2 3	UNIT: X PROJECT NUMBER & PHASE: X	CONTRACT No.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET OF
					09/15/20 02-04-21 10-9-20	178 196

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Scr				
			5-10-24	DATE	
REGISTERED CIVIL ENGINEER PLANS APPROVAL DATE					
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
THE REGISTERED CIVIL ENGINEER FOR THE PROJECT IS RESPONSIBLE FOR THE SELECTION AND PROPER APPLICATION OF THE COMPONENT DESIGN AND ANY MODIFICATIONS SHOWN.					

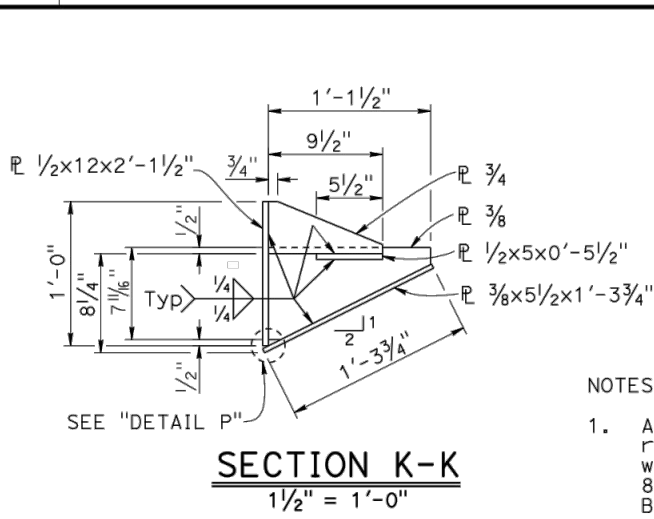


**PARAPET SHOE AT DEPARTURE END BLOCK**

NOTE: Parapet shoe connection to approach end block is similar.

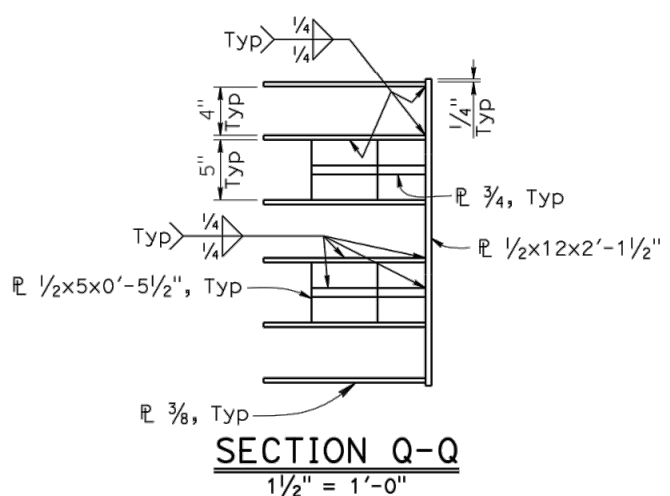


**SECTION J-J**  
1/2" = 1'-0"

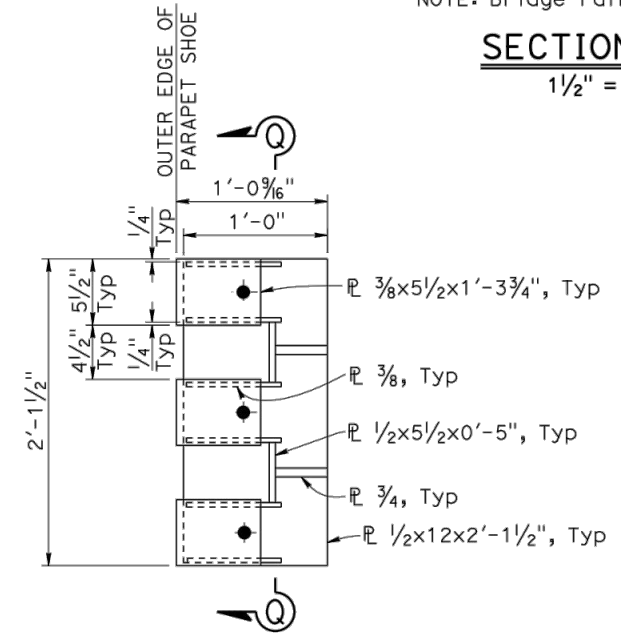


**SECTION K-K**  
1/2" = 1'-0"

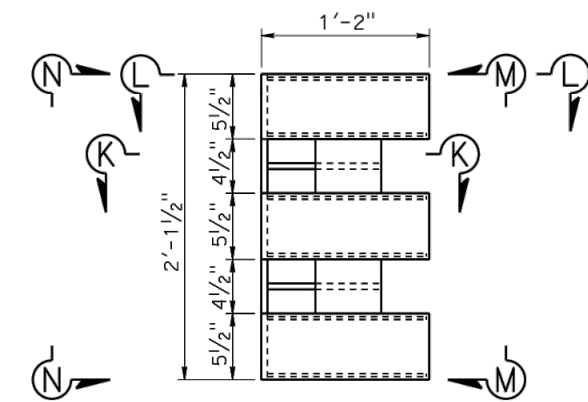
- NOTES:
- Anchor bolts must be 7/8"Ø and fully threaded rods with heavy hex nut and one hardened washer (1 3/4" OD) each. Embed threaded rods 8" into concrete anchor block with DRILL AND BOND (CHEMICAL ADHESIVE) anchorage system.
  - DRILL AND BOND (CHEMICAL ADHESIVE) anchorages are subjected to approval of Engineer. Installation procedure must comply with manufacturer's instructions.



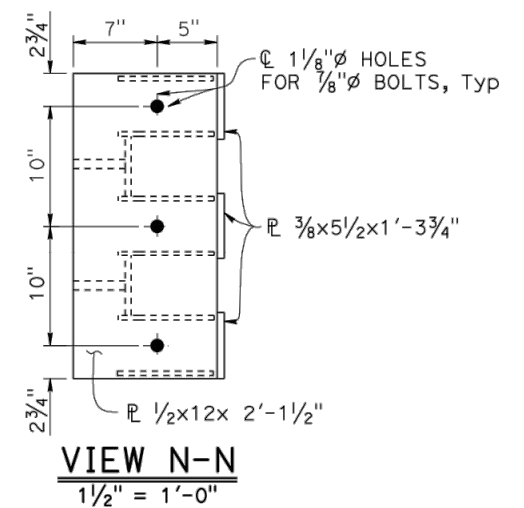
**SECTION Q-Q**  
1/2" = 1'-0"



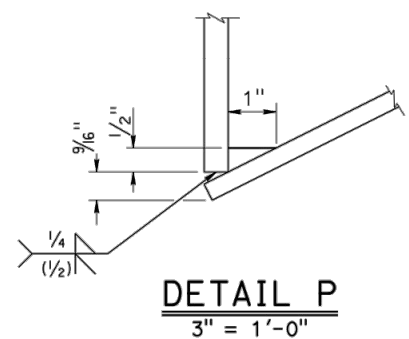
**VIEW M-M**  
1/2" = 1'-0"



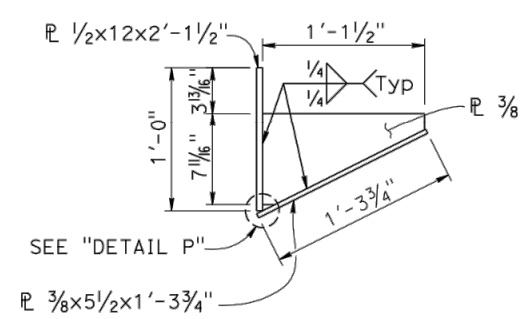
**PARAPET SHOE ELEVATION**  
1/2" = 1'-0"



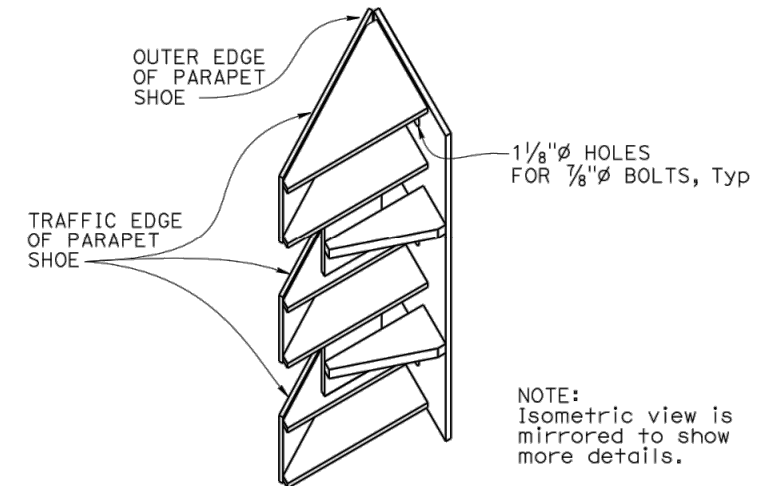
**VIEW N-N**  
1/2" = 1'-0"



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



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



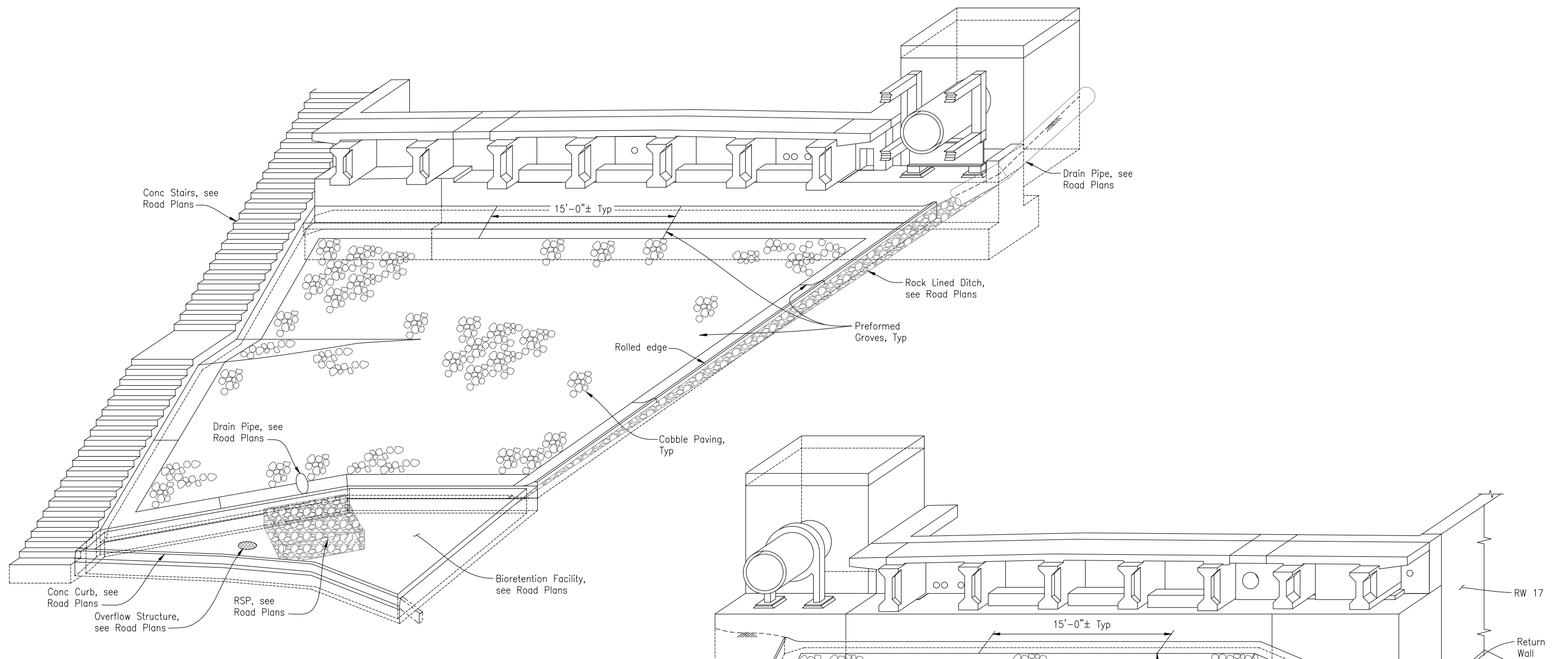
**ISOMETRIC VIEW**  
1/2" = 1'-0"

B-54

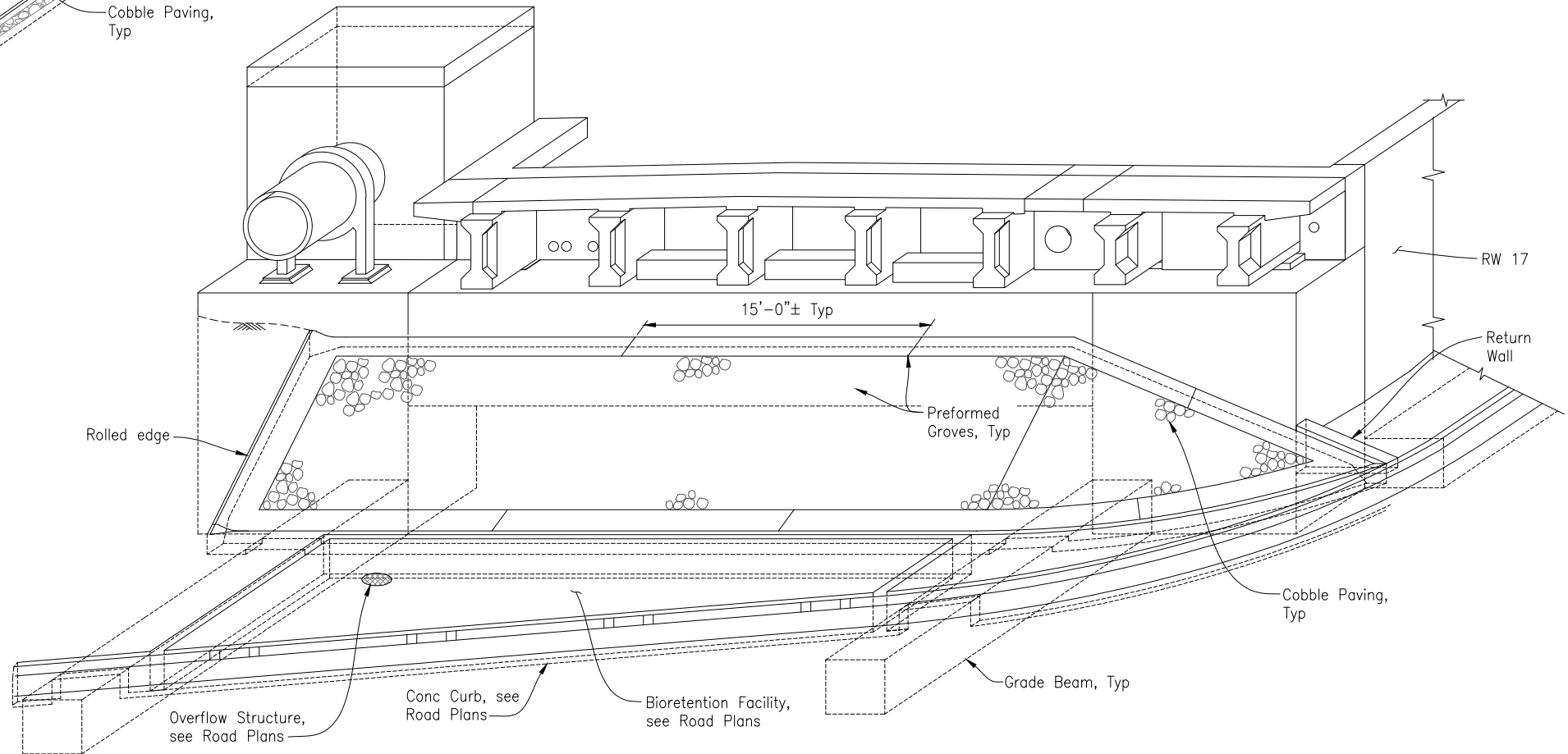
Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\054-xst16-119-5.dwg Layout Tab: Layout1 May 04, 2024 - 12:30pm gimlsen

<b>BRIDGE STANDARD DETAILS</b> <b>xs16-119-5</b> FILE NO.		JULY 2022 APPROVAL DATE	<i>The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California.</i>	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES	BRIDGE No. 36C0108 POST MILE X	<b>MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT</b> <b>CALIFORNIA ST-75SW BRIDGE RAIL DETAILS No. 5</b>
Refer to: <a href="http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/bridge-standard-detail-sheets/index.html">http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/bridge-standard-detail-sheets/index.html</a>				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3	UNIT: X PROJECT NUMBER & PHASE: X	CONTRACT No.: X	DISREGARD PRINTS BEARING EARLIER REVISION DATES REVISION DATES: 04/26/22, 05/16/22, 05/07/22, 06/28/22 SHEET 179 OF 196

Drawing name: H:\1161 - Santa Cruz\Murray Street Bridge Seismic Retrofit\055-Slope paving.dwg Layout Tab: Layout1 May 04, 2024 - 12:36pm gribben



**PICTORIAL VIEW OF ABUTMENT 1 INSTALLATION**



**PICTORIAL VIEW OF ABUTMENT 10 INSTALLATION**

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

CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

TRC Engineers or its officers  
 or agents shall not be  
 responsible for the accuracy  
 or completeness of electronic  
 copies of this plan sheet

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED T. LAMBERT
DETAILS	BY G. IMBSEN	CHECKED T. LAMBERT
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

MARK IMBRIANI  
 PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

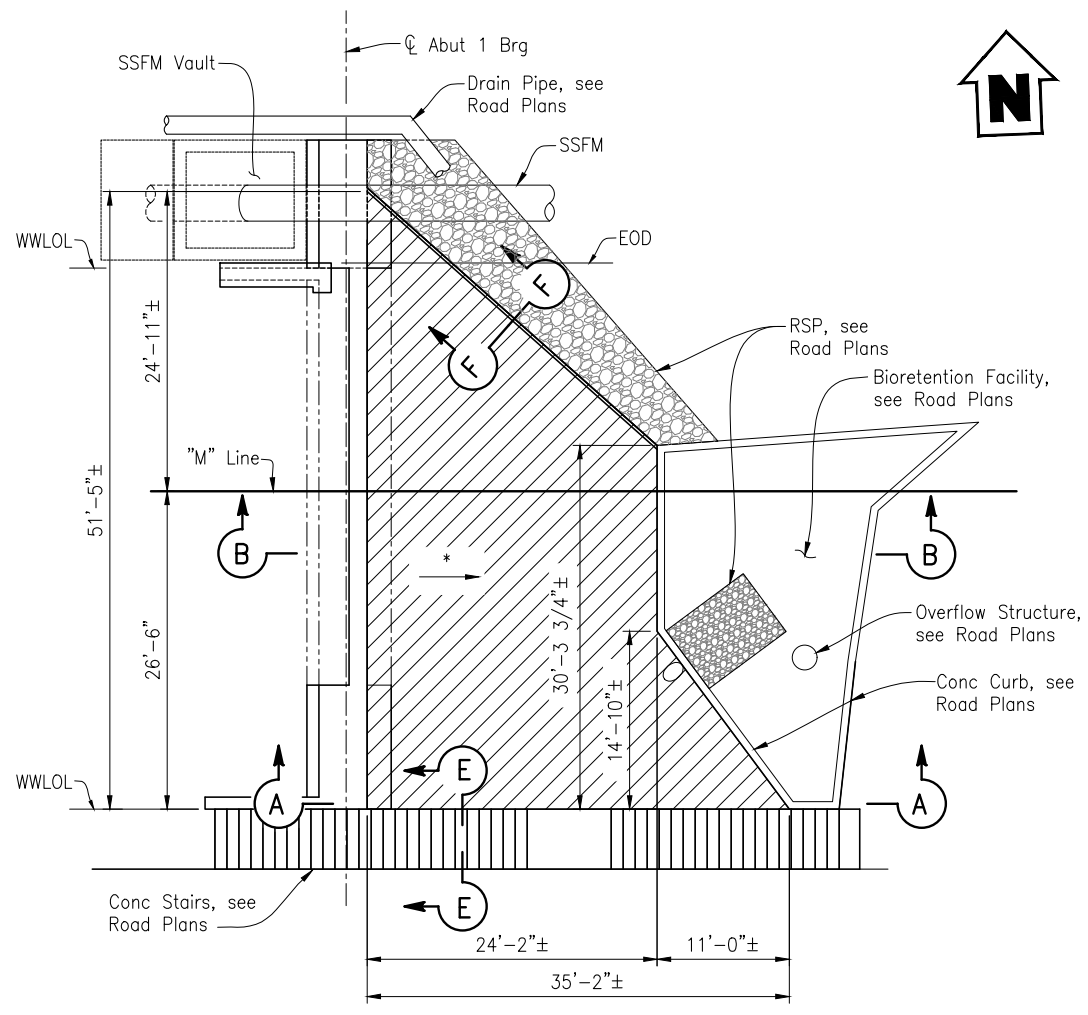
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**SLOPE PAVING - FULL SLOPE DETAILS NO. 1**

DISREGARD PRINTS BEARING  
 EARLIER REVISION DATES

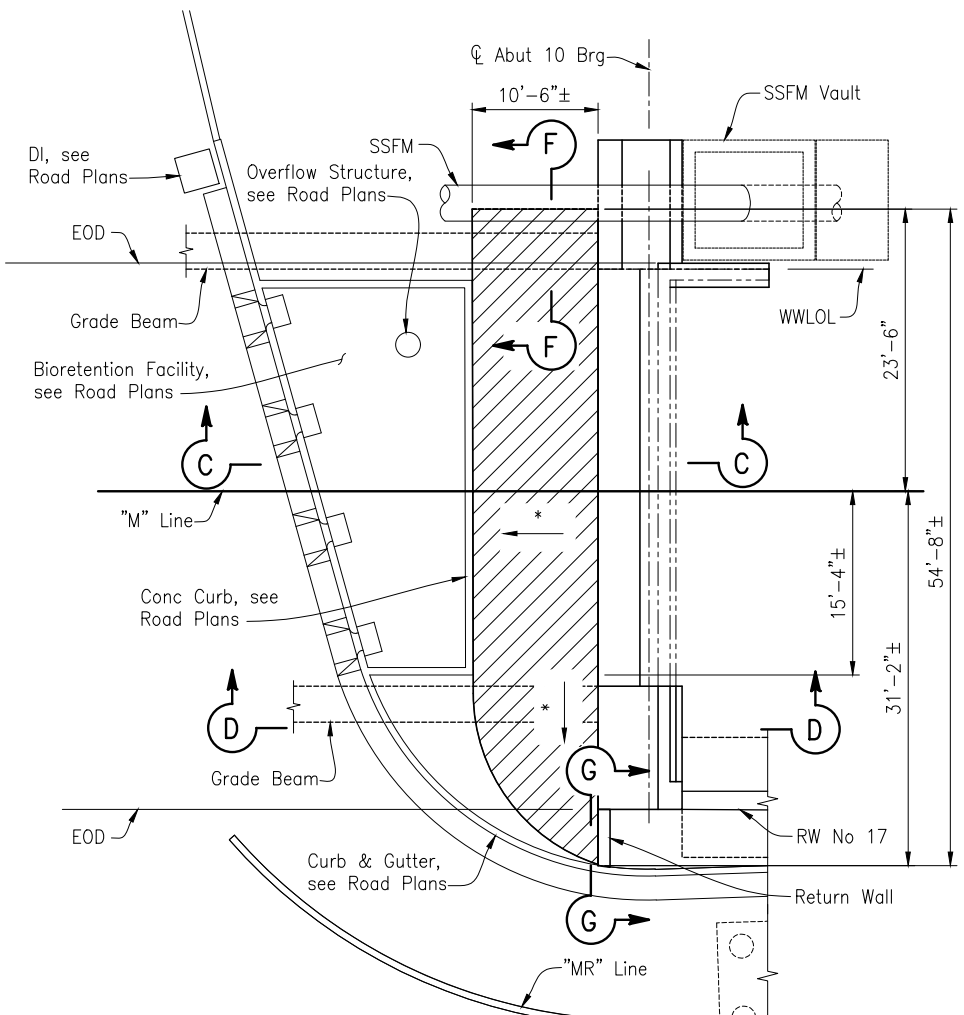
REVISION DATES (PRELIMINARY STAGE ONLY)	
09-13-13	07-01-15
08-16-21	03-23-23
04-21-23	

SCALE	AS SHOWN
SHEET	180 OF 196
Vault No.	

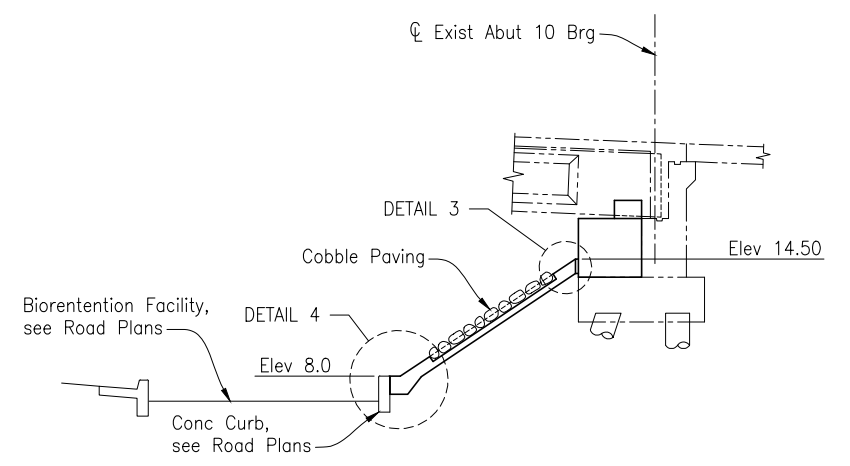
B-55



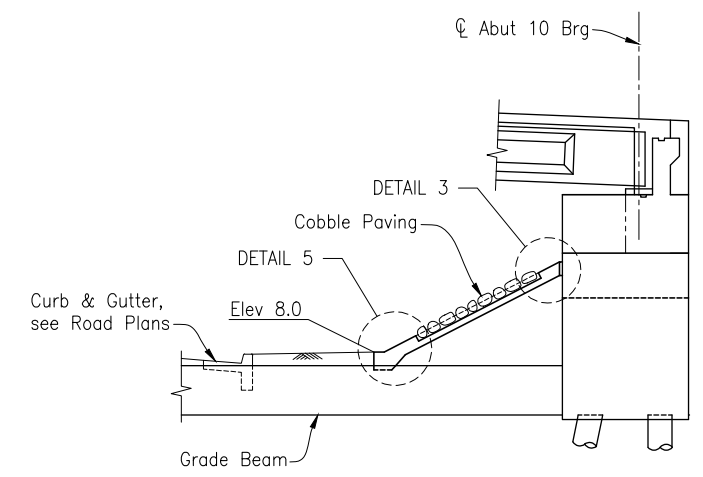
**Abut 1 PLAN**



**Abut 10 PLAN**

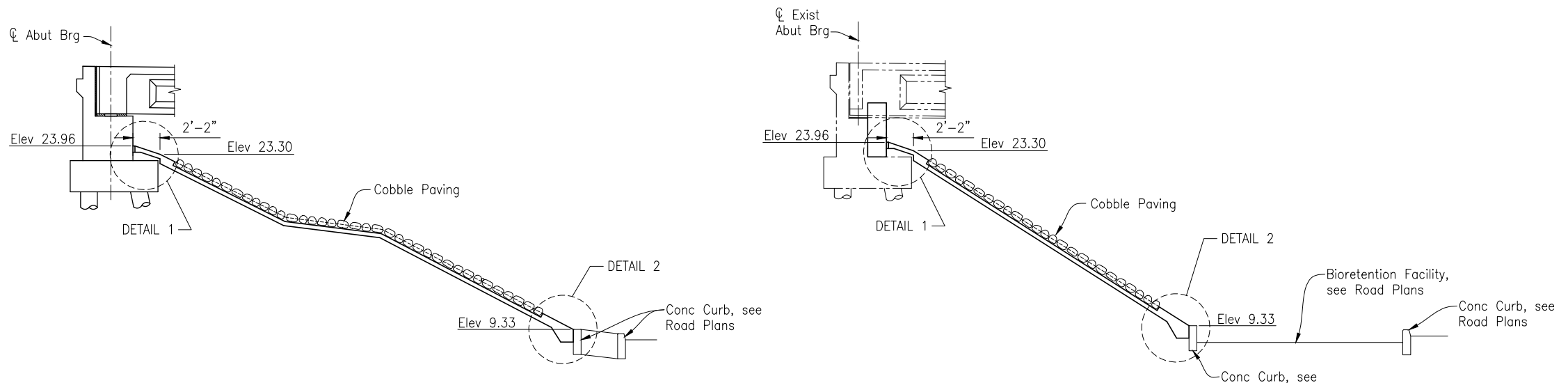


**SECTION C-C**  
3/16"=1'-0"



**SECTION D-D**  
3/16"=1'-0"

**LIMITS OF SLOPE PAVING LAYOUT**  
1/8"=1'-0"



**SECTION A-A**  
3/16"=1'-0"

**SECTION B-B**  
3/16"=1'-0"

- NOTES:**
- For Details 1 thru 5 and Sections E-E, F-F and View G-G, see "Slope Paving - Full Slope Details No. 3" sheet.
  - For Preformed Groove details, see "Slope Paving - Full Slope Details No. 3" sheet.

**LEGEND:**  
 Indicates Limits of Payment for Slope Paving Concrete and Minor Concrete (Cobble Paving)

NOTE:  
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REGISTERED PROFESSIONAL ENGINEER  
**CAMERON J. PINKERTON**  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED T. LAMBERT
DETAILS	BY G. IMBSEN	CHECKED T. LAMBERT
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
 MARK IMBRIANI  
 PROJECT MANAGER

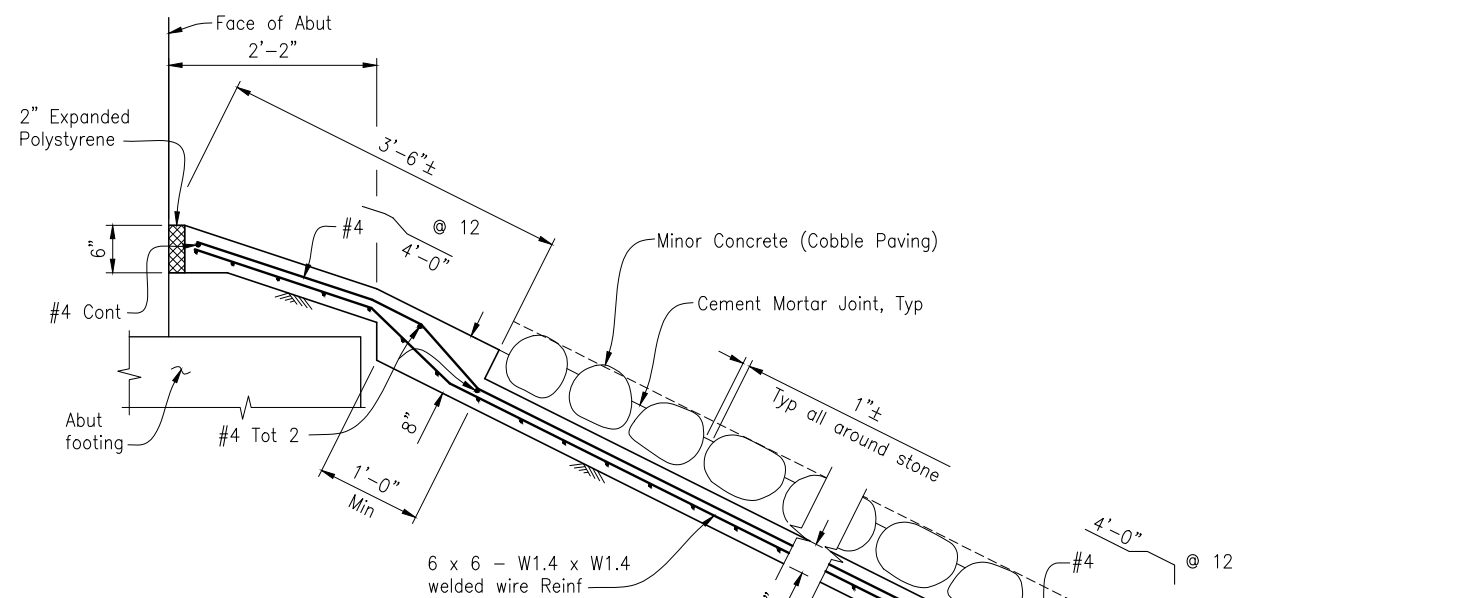
BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**SLOPE PAVING - FULL SLOPE DETAILS NO. 2**

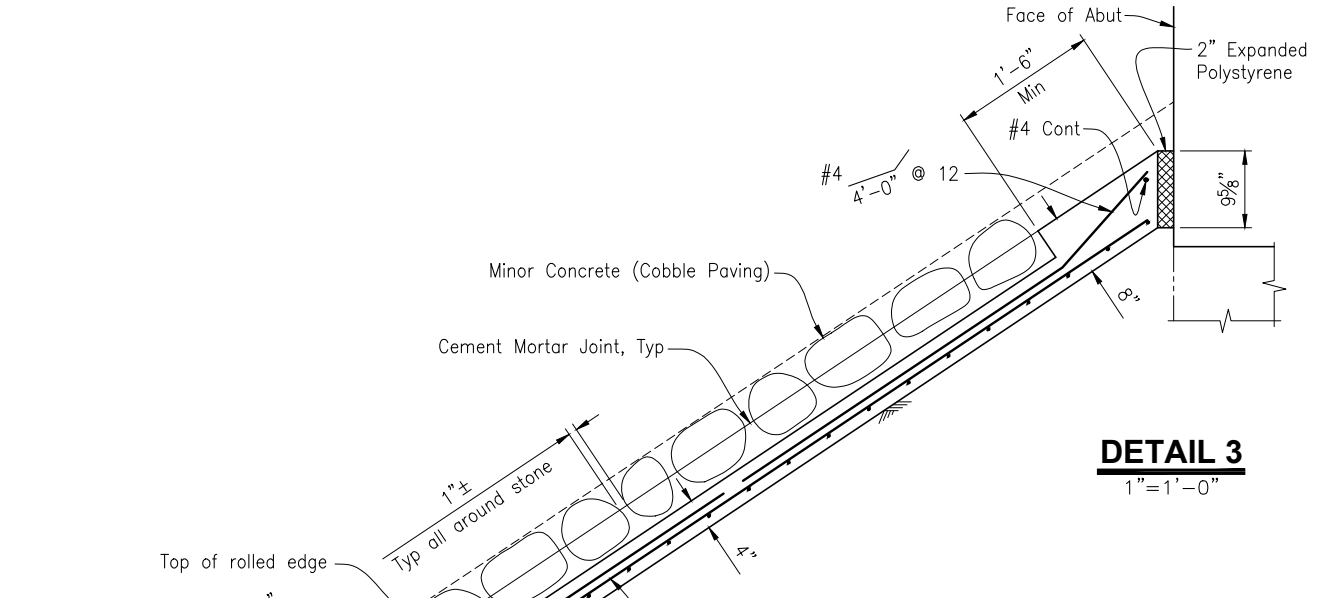
DISREGARD PRINTS BEARING EARLIER REVISION DATES

09-18-13	07-01-15	08-08-21	03-28-23	04-21-23
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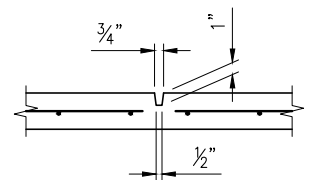
SCALE	AS SHOWN
SHEET	181 OF 196
Vault No.	



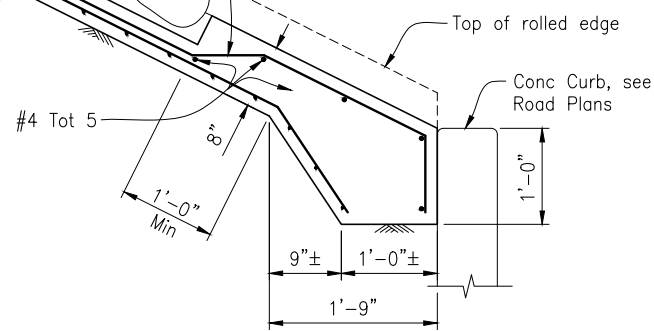
**DETAIL 1**  
1"=1'-0"



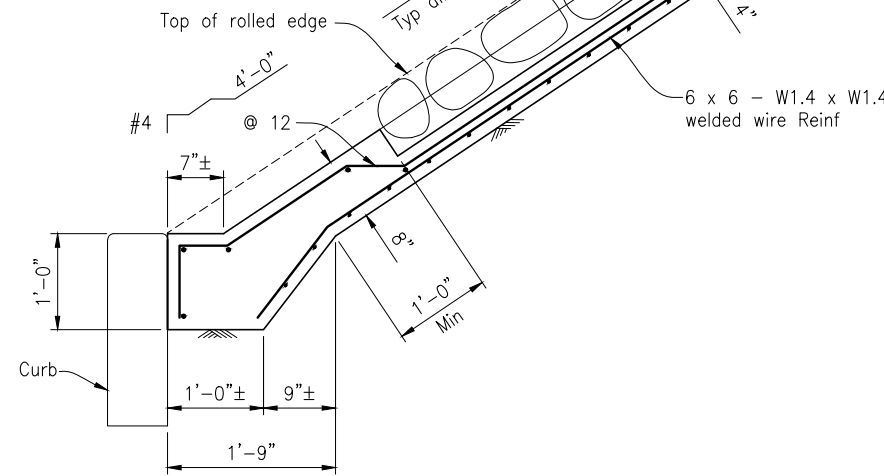
**DETAIL 3**  
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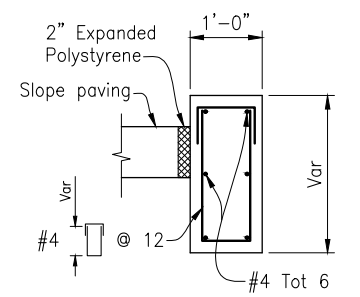
**PREFORMED GROOVE**  
1 1/2"=1'-0"



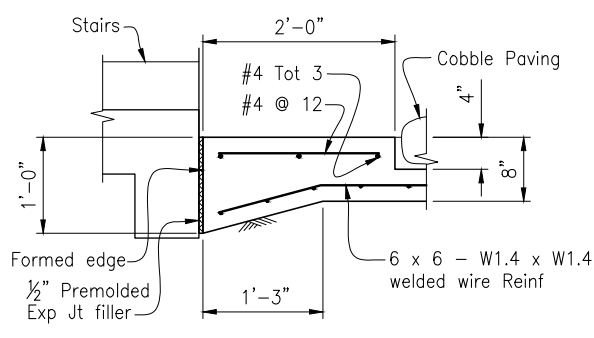
**DETAIL 2**  
1"=1'-0"



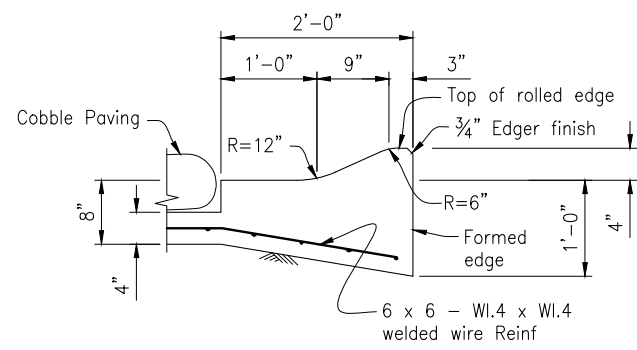
**DETAIL 4**  
1"=1'-0"



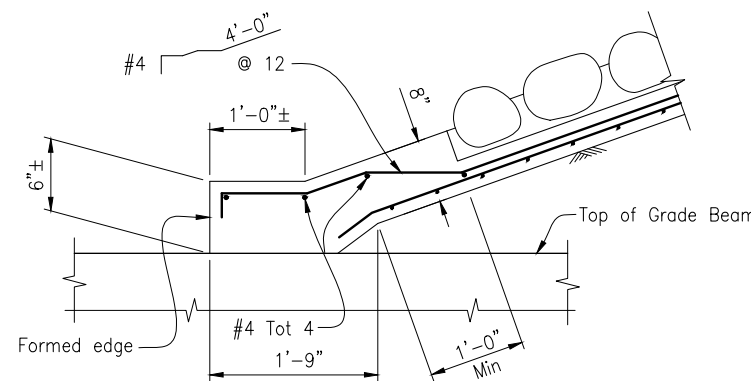
**SECTION H-H**  
3/4"=1'-0"



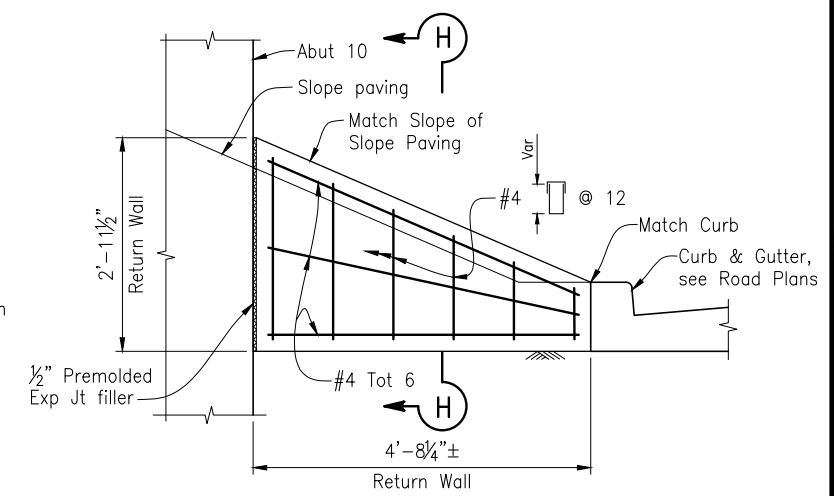
**SECTION E-E**  
1"=1'-0"



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



**DETAIL 5**  
1"=1'-0"



**VIEW G-G**  
3/4"=1'-0"

NOTE:  
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CAMERON J. PINKERTON  
 REGISTERED ENGINEER - CIVIL  
 No. 73288  
 Exp. 12-31-24  
 CIVIL  
 STATE OF CALIFORNIA

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

DESIGN	BY C. PINKERTON	CHECKED T. LAMBERT
DETAILS	BY G. IMBSEN	CHECKED T. LAMBERT
QUANTITIES	BY C. PINKERTON	CHECKED K. NEGORO
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1 2 3

**TRC**  
 MARK IMBRIANI  
 PROJECT MANAGER

BRIDGE NO.	36C0108
CONTRACT NO.	
EA NO.	

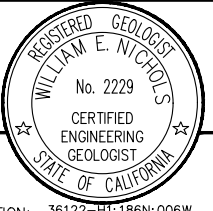
**MURRAY STREET BRIDGE**  
**SEISMIC RETROFIT AND BARRIER REPLACEMENT**  
**SLOPE PAVING - FULL SLOPE DETAILS NO. 3**

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY) 09-18-13 07-01-15 08-29-21 03-23-23 04-21-23
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SCALE	AS SHOWN
SHEET	182 OF 196
Vault No.	

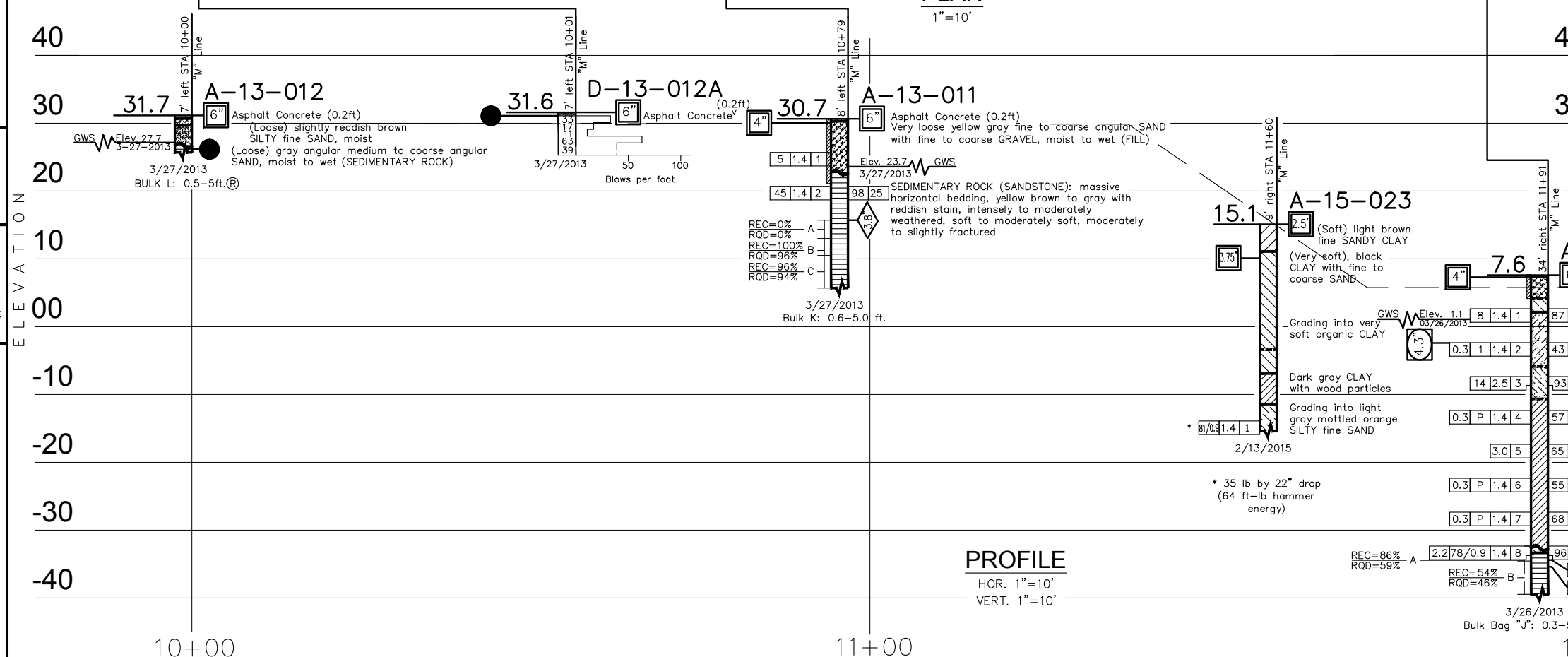
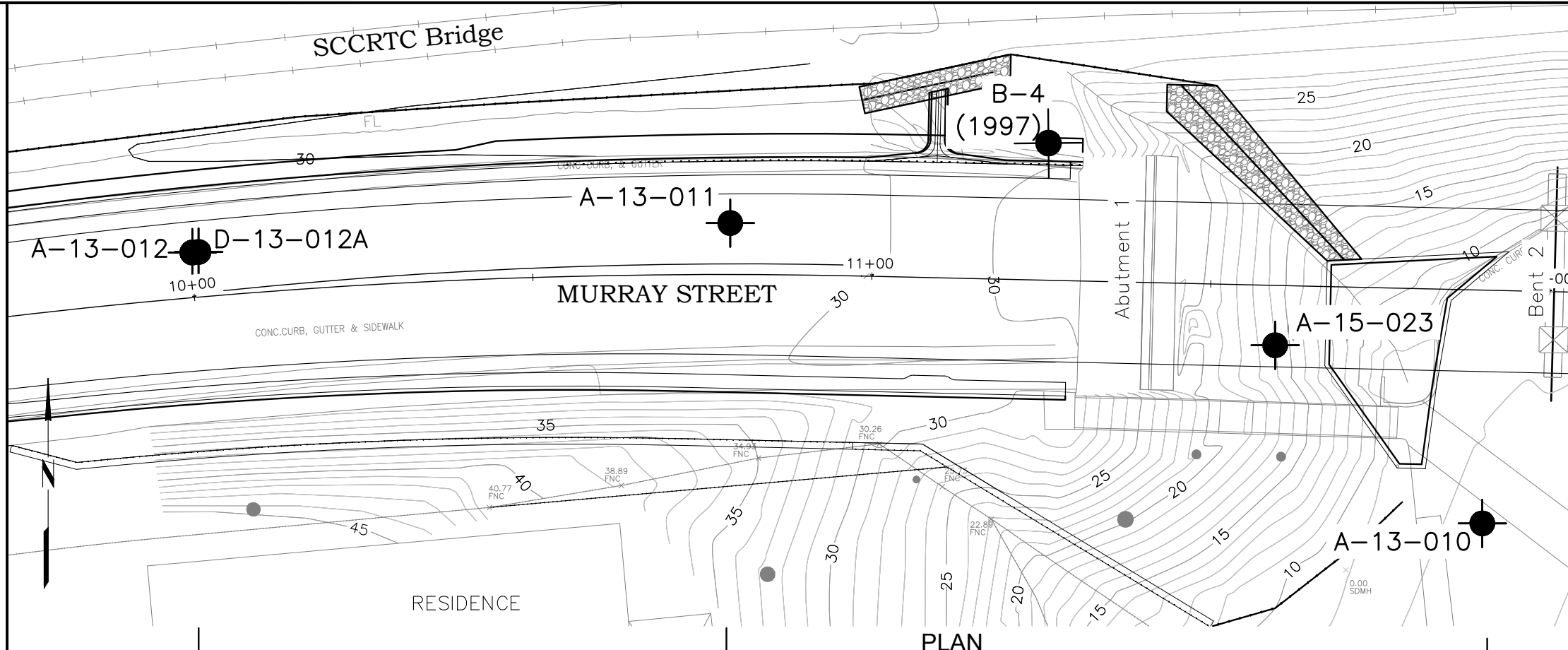
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		183	196

5/6/2024  
 CERTIFIED ENGINEERING GEOLOGIST  
 PLANS APPROVAL DATE  
 Crawford & Associates, Inc.  
 4701 Freepoint Blvd  
 Sacramento, CA 95822  
 (916) 455-4225  
 JOB No. 2009-272-2 LOCATION: 36122-HI:186N:006W



TRC Companies, Inc.  
 10680 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 366-0632

- NOTES:
- Field classification of soils was in accordance with ASTM D 2488-09a "Description and Identification of Soils (Visual-Manual Procedure)".
  - For 2013 and 2015 borings Standard Penetration tests (SPTs) were performed in accordance with ASTM D 1586-11 using hammer operated with an automated drop system. Drill rods were 1 5/8-inch diameter "A"-rods; sampler was driven with brass liners. SPT hammer energy ratio (ETR) measurements indicate an ETR=87% as of 4/09/2012 (2013 borings); ETR=104% (2015 borings).
  - The length of each sampled interval is shown graphically on the boring log. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with ASTM D1586-11. Where less than 1 foot of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated. Where indicated by an asterisk (\*) the number of blows shown is for only that fraction of the initial 0.5 ft "seating drive" interval penetration. Material characteristics shown in ( ) were estimated.
  - Rock classification according to Bureau of Reclamation, U.S. Department of the Interior (USBR), "Engineering Geology Field Manual", and "Manual of Field Geology", (Compton, Robert R.). USBR field descriptor sheet is attached. Rock Quality Designation (RQD), Weathering, Rock Hardness/Strength, Bedding, and Fracture Density, as shown on this sheet, were used to describe all rock core from borings B-5, B-9, B-10, B-11, B-13 and B-15, drilled in 2013. Descriptors were determined in the field. REC = Core Recovered (percent). RQD = Rock Quality Designation (percent).
  - Groundwater surface elevations in the borings indicated on the "Log of Test Borings" sheets reflect the fluid level in the borings on the specified date. Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at any particular time.
  - All CPTs were advanced per ASTM D 5778 procedures. Cones used for CPTs were Vertek 1.4 in diameter (10 cm<sup>2</sup>) pushed from a 20-ton rig or from a CME 55 Track Mounted rig (using auger anchors to provide a 20-ton reaction), respectively.
  - Probes were conducted in the channel by manually pushing a 1/4-inch steel probe through the alluvium until essential "refusal" was realized.
  - Approximate boring elevations were surveyed by Taber Consultants in the field at the time of subsurface exploration and correlated to topographic survey provided by TRC. Boring B-8 thru 16 elevation was estimated based on topography provided by TRC.
  - Electronic media for plan view provided by TRC.
  - Ground line profile is estimated from topography provided by TRC.



**LEGEND OF BORING OPERATIONS**

**PLAN OF ANY BORING**

- 2.5 INCH CONE
- AIR ROTARY BORING (DRY)
- AUGER BORING (DRY)
- HOLLOW AUGER BORING (DRY)
- TEST PIT
- WELINE BORING
- ELECTRONIC CONE PENETROMETER
- CONIC PENETROMETER

**LEGEND OF EARTH MATERIALS**

- GRAVEL
- SAND
- SILT
- CLAY
- SANDY CLAY or CLAY SAND
- SANDY SILT or SILTY SAND
- SILT CLAY or CLAYEY SILT
- PEAT and/or ORGANIC MATERIAL
- FILL MATERIAL
- SEDIMENTARY ROCK
- CLAYEY SAND or SILTY SAND
- CLAYEY SILT or SILTY CLAY
- CLAYEY SAND or SILTY SAND
- CLAYEY SILT or SILTY CLAY
- CLAYEY SAND or SILTY SAND
- CLAYEY SILT or SILTY CLAY
- CLAYEY SAND or SILTY SAND
- CLAYEY SILT or SILTY CLAY

**CONSISTENCY CLASSIFICATION FOR SOILS**

Standard Penetration Test "N"-Value	Cohesive	Very soft	Soft	Silty	Stiff	Very stiff	Hard	Very hard
0-5	Very loose							
6-10	Loose							
11-20	Semi-compact							
21-30	Compact							
31-40	Dense							
41-50	Very dense							
51-60								
61-70								
>70								

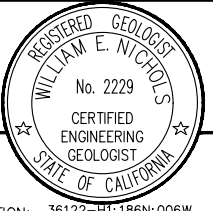
**NOTE:** Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

DESIGN OVERSIGHT	DRAWN BY	X. Vang	G. Wade, P.G., A. Kahn FIELD INVESTIGATOR	PREPARED FOR	EXIS. BRIDGE NO.	36C-0108
SIGN OFF DATE	CHECKED BY	A. Kahn	DATE Mar. 2013, Feb. 2015	CITY OF SANTA CRUZ DEPARTMENT OF PUBLIC WORKS	PROJECT ENGINEER	
						Murray Street Bridge at Woods Lagoon
						<b>LOG OF TEST BORINGS No. 1 of 7</b>
				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES
				0 1 2 3		REVISION DATES (PRELIMINARY STAGE ONLY)
						7/13/23
						SHEET 183 OF 196



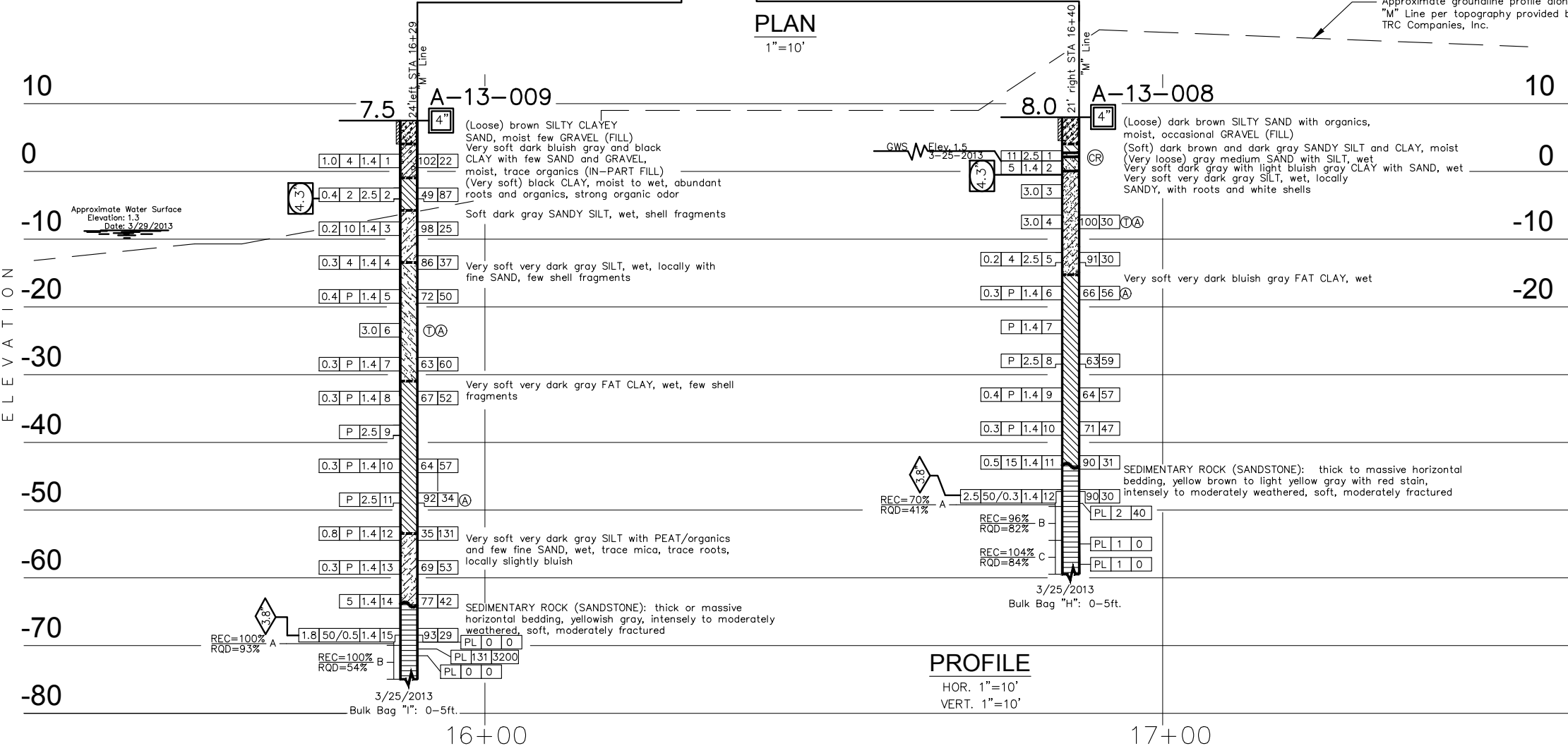
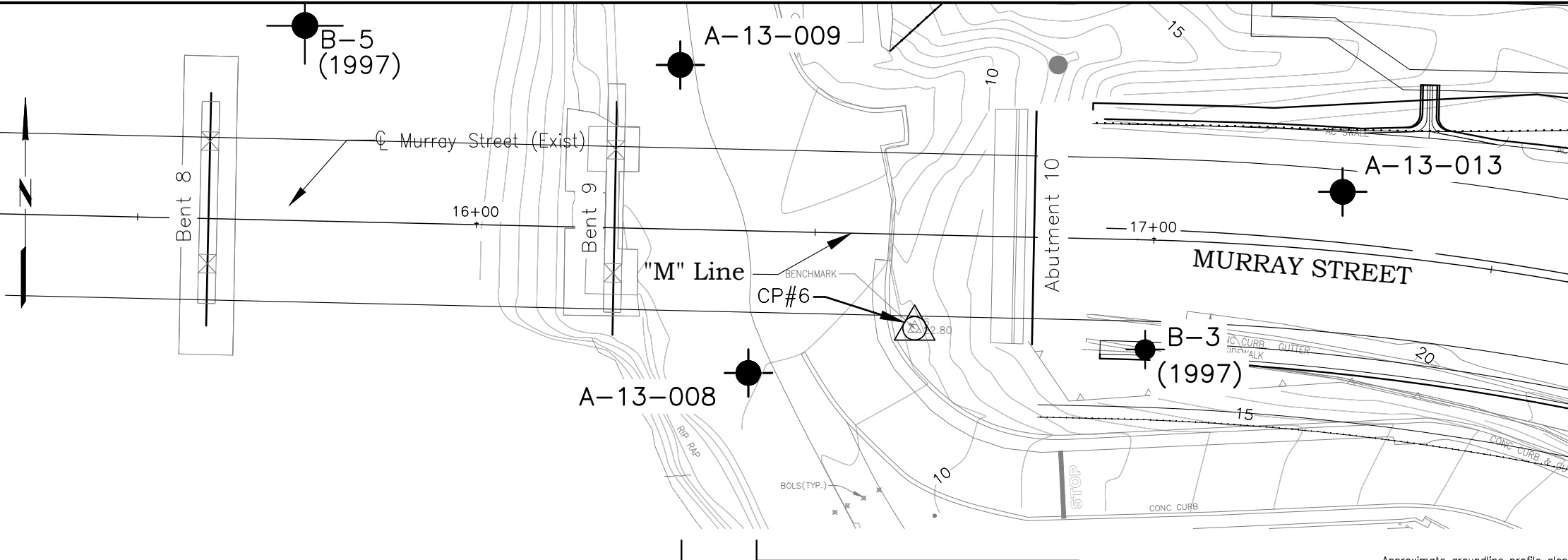
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		185	196

5/6/2024  
 CERTIFIED ENGINEERING GEOLOGIST  
 PLANS APPROVAL DATE  
 Crawford & Associates, Inc.  
 4701 Freeport Blvd  
 Sacramento, CA 95822  
 (916) 455-4225  
 JOB No. 2009-272-2 LOCATION: 36122-HI:186N:006W



TRC Companies, Inc.  
 10680 White Rock Road  
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- NOTES:
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  - Electronic media for plan view provided by TRC.
  - Ground line profile is estimated from topography provided by TRC.



**LEGEND OF BORING OPERATIONS**

**LEGEND OF EARTH MATERIALS**

**CONSISTENCY CLASSIFICATION FOR SOILS**

**PLAN OF ANY BORING**

**ATEMBLING LIMITS**

**LEGEND OF BORING OPERATIONS (continued)**

**LEGEND OF EARTH MATERIALS (continued)**

**CONSISTENCY CLASSIFICATION FOR SOILS (continued)**

DESIGN OVERSIGHT	DRAWN BY X. Vang	G. Wade, P.G. FIELD INVESTIGATOR	PREPARED FOR <b>CITY OF SANTA CRUZ</b> DEPARTMENT OF PUBLIC WORKS	PROJECT ENGINEER	EXIS. BRIDGE NO. 36C-0108	<b>Murray Street Bridge at Woods Lagoon</b>	
SIGN OFF DATE	CHECKED BY A. Kahn	DATE Mar. 2013			POST MILE	<b>LOG OF TEST BORINGS No. 3 of 7</b>	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			0 1 2 3	CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 185 OF 196

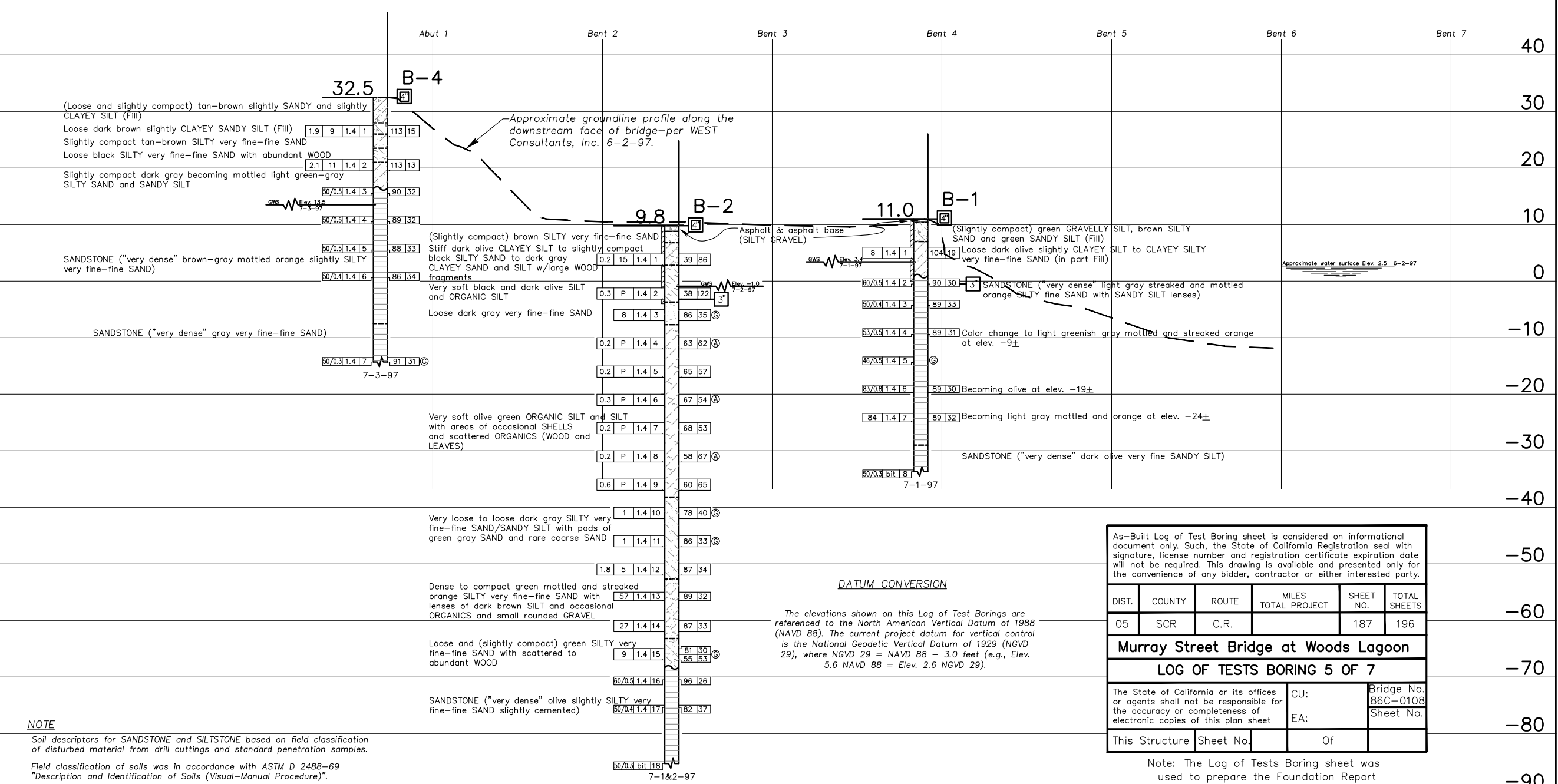
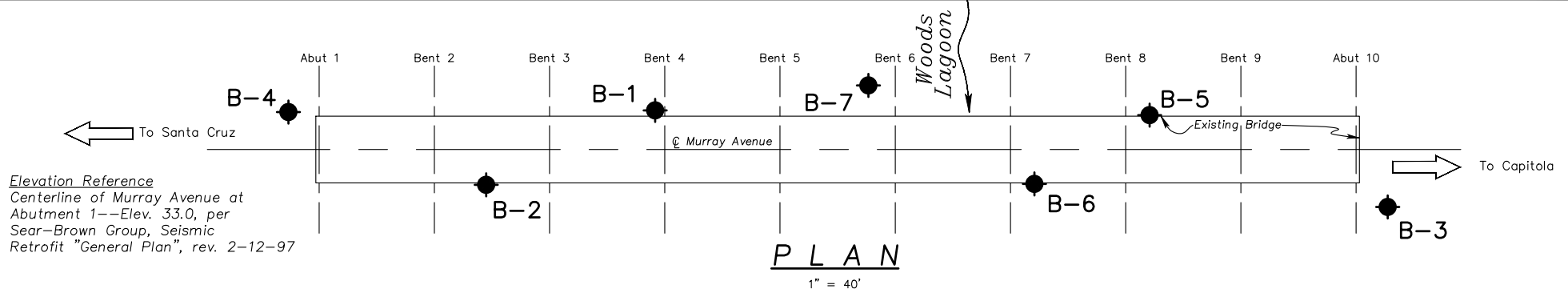


DIST.	COUNTY	ROUTE	MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		187	196

REGISTERED PROFESSIONAL ENGINEER  
 No. 816  
 EXP. 3-31-10  
 GEOTECHNICAL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_  
**Crawford & Associates, Inc.**  
 4701 Freeport Blvd  
 Sacramento, CA 95822  
 JOB No. 1R2/396/66-9 LOCATION: 36122-H1:186N:006W

C+D Consulting Engineers  
 170 Columbus Avenue #240  
 San Francisco, CA 94133



**LEGEND OF BORING OPERATIONS**

**PLAN OF ANY BORING**

**2.5 INCH CONE PENETROMETER**

**3/8" SAMPLE BORING (DRY)**

**3/8" SAMPLE BORING (WET)**

**3/8" ALIQUOT BORING (DRY)**

**TEST PIT**

**DIAMOND CORE BORING**

**LET BORING**

**1 INCH CONE PENETROMETER**

**REFRACTION SEISMIC LINE**

**LEGEND OF EARTH MATERIALS**

**CONSISTENCY CLASSIFICATION FOR SOILS**

According to the Standard Penetration Test

Standard Penetration Test Value	Consistency
0-4	Very soft
5-9	Soft
10-19	Slightly compact
20-34	Compact
35-69	Dense
>70	Very hard

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

**Elevation Reference**  
 Centerline of Murray Avenue at Abutment 1--Elev. 33.0, per Sear-Brown Group, Seismic Retrofit "General Plan", rev. 2-12-97

As-Built Log of Test Boring sheet is considered an informational document only. Such, the State of California Registration seal with signature, license number and registration certificate expiration date will not be required. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		187	196

**Murray Street Bridge at Woods Lagoon**  
**LOG OF TESTS BORING 5 OF 7**

The State of California or its offices or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet	CU: _____	Bridge No. 86C-0108
	EA: _____	Sheet No. _____

This Structure Sheet No. \_\_\_\_\_ Of \_\_\_\_\_

Note: The Log of Tests Boring sheet was used to prepare the Foundation Report

James J. Accinelli DESIGN OVERSIGHT	DRAWN BY M. D. Robertson	E. A. Hilmer FIELD INVESTIGATOR
SIGN OFF DATE _____	CHECKED BY H. C. Valencia	DATE July 1997

PREPARED FOR THE  
**CITY OF SANTA CRUZ**  
 PUBLIC WORKS DEPARTMENT

Mark Salmon  
 PROJECT ENGINEER

BRIDGE NO.  
 36C-0108

POST MILES \_\_\_\_\_

CONTRACT: 59Y019

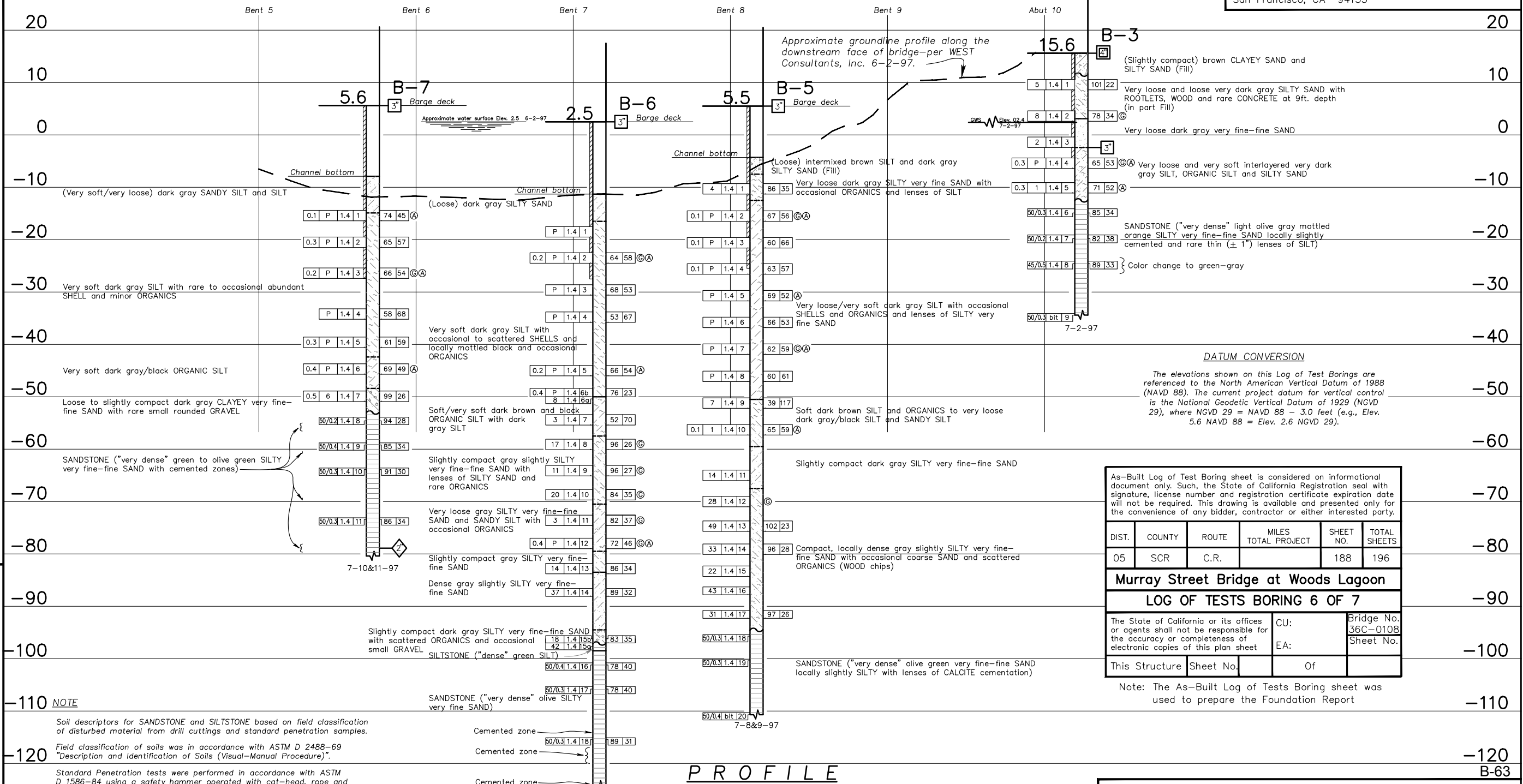
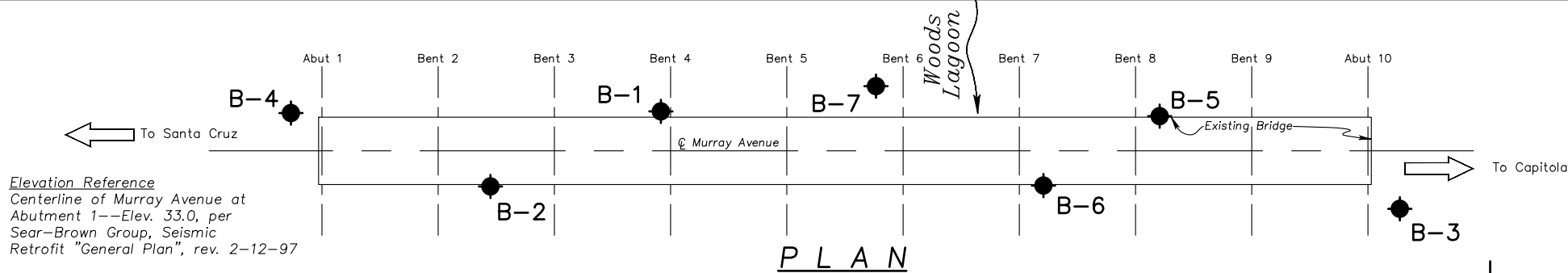
**EARTHQUAKE RETROFIT**  
**WOODS LAGOON BRIDGE**  
**LOG OF TEST BORINGS No. 1 of 3**

DIST.	COUNTY	ROUTE	MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		188	196

REGISTERED PROFESSIONAL ENGINEER  
 No. 816  
 EXP. 3-31-10  
 GEOTECHNICAL  
 STATE OF CALIFORNIA

PLANS APPROVAL DATE \_\_\_\_\_  
**Crawford & Associates, Inc.**  
 4701 Freeport Blvd  
 Sacramento CA, 95822  
 JOB No. 1R2/396/66-9 LOCATION: 36122-H1:186N:006W

C+D Consulting Engineers  
 170 Columbus Avenue #240  
 San Francisco, CA 94133



As-Built Log of Test Boring sheet is considered on informational document only. Such, the State of California Registration seal with signature, license number and registration certificate expiration date will not be required. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		188	196

**Murray Street Bridge at Woods Lagoon**  
**LOG OF TESTS BORING 6 OF 7**

The State of California or its offices or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet	CU: EA:	Bridge No. 36C-0108 Sheet No.
--	------------	----------------------------------

This Structure Sheet No. \_\_\_\_\_ Of \_\_\_\_\_

Note: The As-Built Log of Tests Boring sheet was used to prepare the Foundation Report

**LEGEND OF BORING OPERATIONS**

**LEGEND OF EARTH MATERIALS**

**CONSISTENCY CLASSIFICATION FOR SOILS**

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

James J. Accinelli DESIGN OVERSIGHT	DRAWN BY M. D. Robertson	E. A. Hilmer FIELD INVESTIGATOR	PREPARED FOR THE CITY OF SANTA CRUZ PUBLIC WORKS DEPARTMENT	Mark Salmon PROJECT ENGINEER	BRIDGE NO. 36C-0108
SIGN OFF DATE _____	CHECKED BY H. C. Valencia	DATE July 1997	CONTRACT: 59Y019	CU 05-152 EA L01904	POST MILES _____

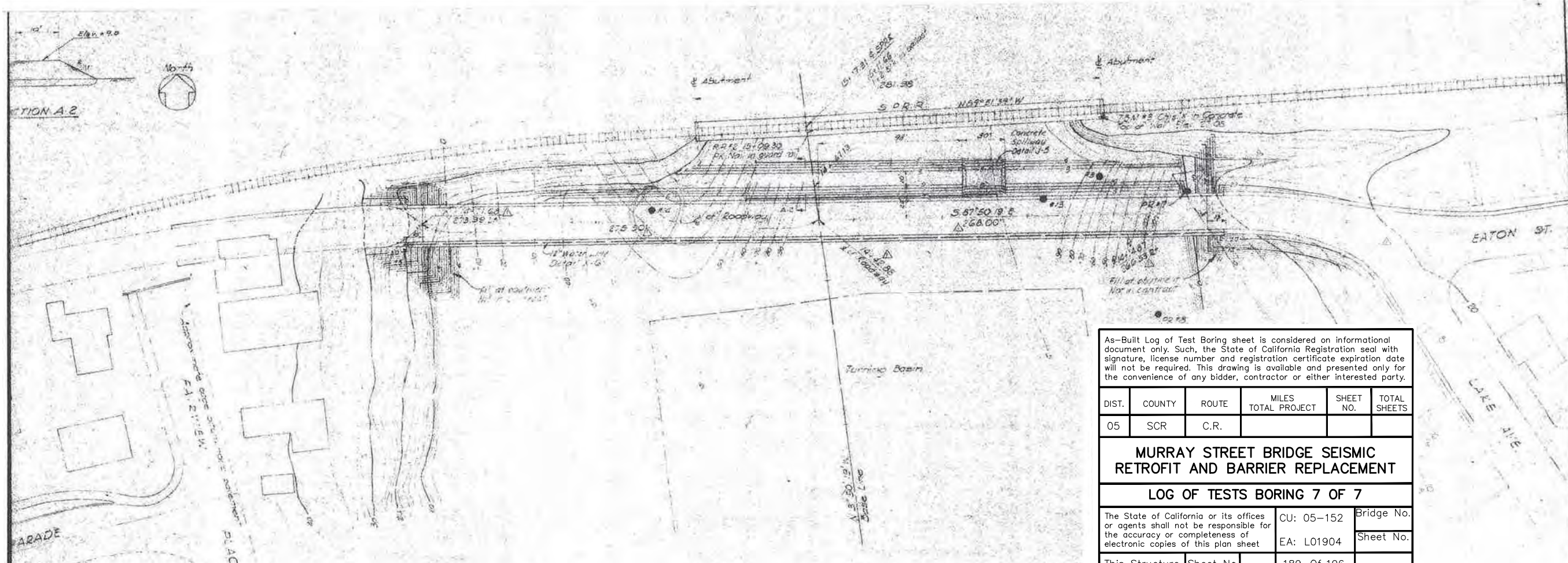
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

1" = 10' Vertical  
 1" = 20' Horizontal

**EARTHQUAKE RETROFIT  
 WOODS LAGOON BRIDGE  
 LOG OF TEST BORINGS No. 2 of 3**

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET	OF
8/14/98 (4/21/99)	188	196



As-Built Log of Test Boring sheet is considered on informational document only. Such, the State of California Registration seal with signature, license number and registration certificate expiration date will not be required. This drawing is available and presented only for the convenience of any bidder, contractor or other interested party.

DIST.	COUNTY	ROUTE	MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.			

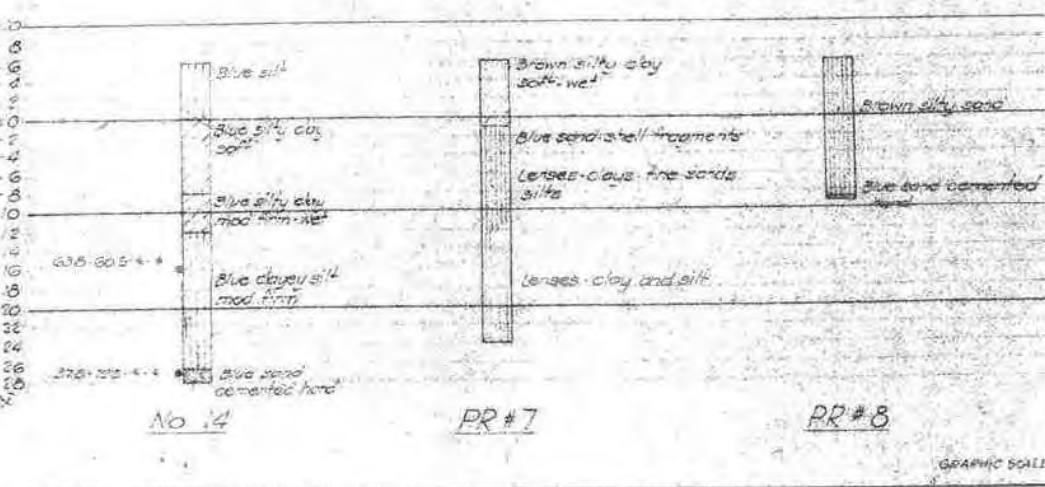
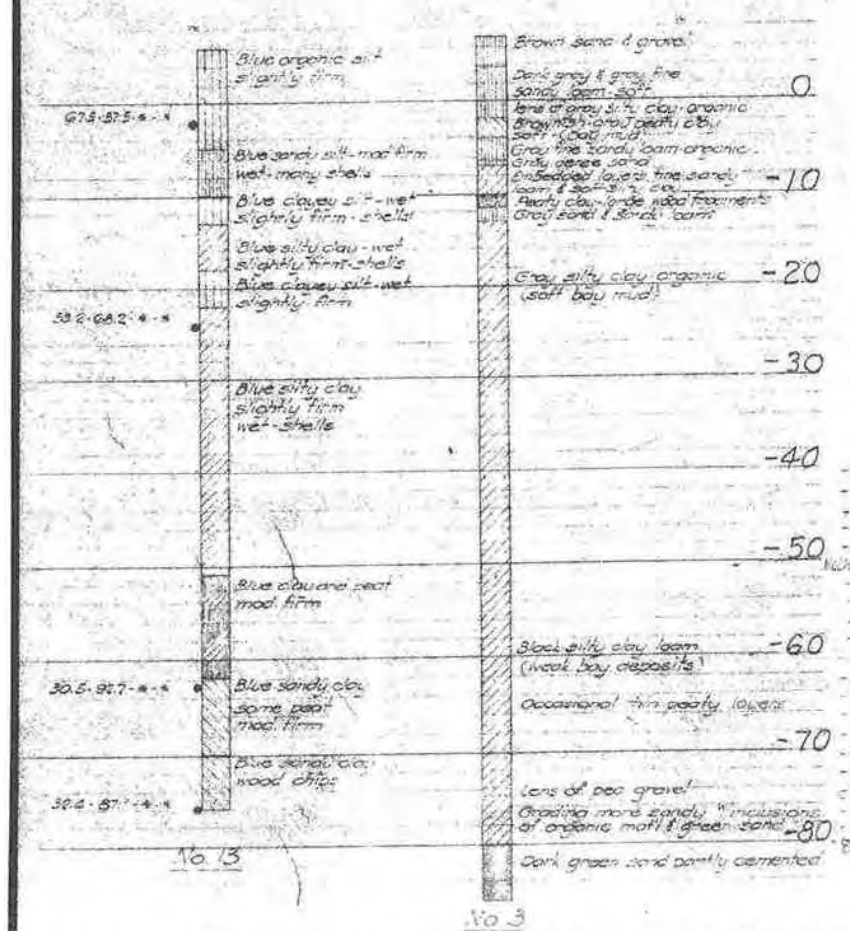
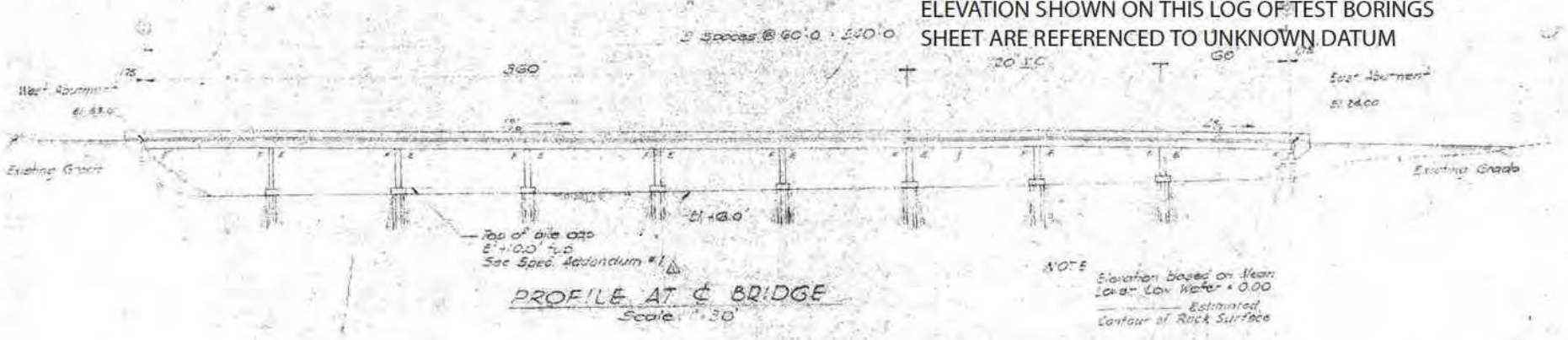
**MURRAY STREET BRIDGE SEISMIC RETROFIT AND BARRIER REPLACEMENT**

**LOG OF TESTS BORING 7 OF 7**

The State of California or its offices or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet	CU: 05-152	Bridge No.
	EA: L01904	Sheet No.
This Structure	Sheet No.	189 Of 196

Note: The Log of Tests Boring sheet was used to prepare the Foundation Report

**ELEVATION SHOWN ON THIS LOG OF TEST BORINGS SHEET ARE REFERENCED TO UNKNOWN DATUM**



**BORING LEGEND**

- silt sand - sand-silt mixtures
- Clayey sand - sand-clay mixtures
- Cemented sand Sandstone
- Silt clayey silt
- Clay silty clay
- Organic clay peat

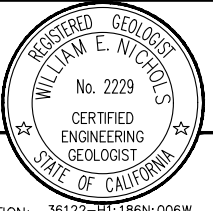
**B-64**

<p>REVISION: 01/15/04</p> <p>REVISION: 02/15/04</p>	
<p><b>SANTA CRUZ PORT DISTRICT</b></p> <p>CIVIC AUDITORIUM SANTA CRUZ, CALIF.</p>	
<p><b>SANTA CRUZ SMALL CRAFT HARBOR</b></p> <p>PROJECT II</p> <p><b>GENERAL PLAN</b></p>	
<p><b>EARL AND WRIGHT INC. CONSULTING ENGINEERS</b></p> <p>47 TRENCH STREET SAN FRANCISCO 3, CALIFORNIA</p>	
<p>DRAWING NO. II-2</p> <p>JOB NO. 2390</p>	<p>DESIGNED BY: [Signature]</p> <p>DRAWN BY: [Signature]</p> <p>CHECKED BY: [Signature]</p> <p>DATE: 2-15-04</p> <p>SCALE: 1"=30'</p>

6018

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		190	196

5/6/2024  
 CERTIFIED ENGINEERING GEOLOGIST  
 PLANS APPROVAL DATE  
 Crawford & Associates, Inc.  
 4701 Freepoint Blvd  
 Sacramento, CA 95822  
 (916) 455-4225  
 JOB No. 2009-272-2 LOCATION: 36122-HI:186N;006W



TRC Companies, Inc.  
 10680 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 366-0632

- NOTES:
- Field classification of soils was in accordance with ASTM D 2488-09a "Description and Identification of Soils (Visual-Manual Procedure)".
  - Standard Penetration tests (SPTs) were performed in accordance with ASTM D 1586-11 using hammer operated with an automated drop system. Drill rods were 1 5/8-inch diameter "A"-rods; sampler was driven with brass liners. SPT hammer energy ratio (ETR) measurements indicate an ETR=87% as of 4/09/2012 (2013 borings); ETR = 104% (2015 borings)
  - The length of each sampled interval is shown graphically on the boring log. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with ASTM D1586-11. Where less than 1 foot of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated. Where indicated by an asterisk (\*) the number of blows shown is for only that fraction of the initial 0.5 ft "seating drive" interval penetration. Material characteristics shown in ( ) were estimated.
  - Rock classification according to Bureau of Reclamation, U.S. Department of the Interior (USBR), "Engineering Geology Field Manual", and "Manual of Field Geology", (Compton, Robert R.). USBR field descriptor sheet is attached. Rock Quality Designation (RQD), Weathering, Rock Hardness/Strength, Bedding, and Fracture Density, as shown on this sheet, were used to describe all rock core from borings B-8, B-9, B-10, B-11, B-13 and B-15, drilled in 2013. Descriptors were determined in the field. REC = Core Recovered (percent). RQD = Rock Quality Designation (percent).
  - Groundwater surface elevations in the borings indicated on the "Log of Test Borings" sheets reflect the fluid level in the borings on the specified date. Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at any particular time.
  - All CPTs were advanced per ASTM D 5778 procedures. Cones used for CPTs were Vertek 1.4 in diameter (10 cm<sup>2</sup>) pushed from a 20-ton rig or from a CME 55 Track Mounted rig (using auger anchors to provide a 20-ton reaction), respectively.
  - Probes were conducted in the channel by manually pushing a 1/4-inch steel probe through the alluvium until essential "refusal" was realized.
  - Approximate boring elevations were surveyed by Taber Consultants in the field at the time of subsurface exploration and correlated to topographic survey provided by TRC. Boring B-8 thru 16 elevation was estimated based on topography provided by TRC.
  - Electronic media for plan view provided by TRC.
  - Ground line profile is estimated from topography provided by TRC.

**LEGEND OF BORING OPERATIONS**

B-No. [Symbol] Top Hole Elev. [Symbol] Pressure measured element (150 cm<sup>2</sup> area) divided by pressure element on tip [Symbol] Friction Ratio (k) Tip Bearing (PSF) [Symbol] Blows per foot [Symbol] Boring Date [Symbol] PENETROMETER TEST [Symbol] Cone Penetration Test (ASTM D5778-07, or its update)

B-No. [Symbol] Top Hole Elev. [Symbol] No. count recorded [Symbol] Blows per foot (Using 140 lb hammer with 30" drop) [Symbol] Boring Date [Symbol] PENETROMETER TEST [Symbol] Cone Penetration Test (ASTM D5778-07, or its update)

B-No. [Symbol] Top Hole Elev. [Symbol] Description of material by moisture [Symbol] Sample number [Symbol] Size of Sampler (Using a 1.40 lb. hammer or notes) [Symbol] Penetration on notes [Symbol] 50/0.5 indicates 50 blows for 0.5 ft. penetration strength (1/4 in ft) [Symbol] Estimated material change [Symbol] Estimated material change [Symbol] Boring Date [Symbol] Boring Date [Symbol] Vertical Compressive Strength (psi) [Symbol] Point Load Index (psi) [Symbol] Test [Symbol] Test

**LEGEND OF EARTH MATERIALS**

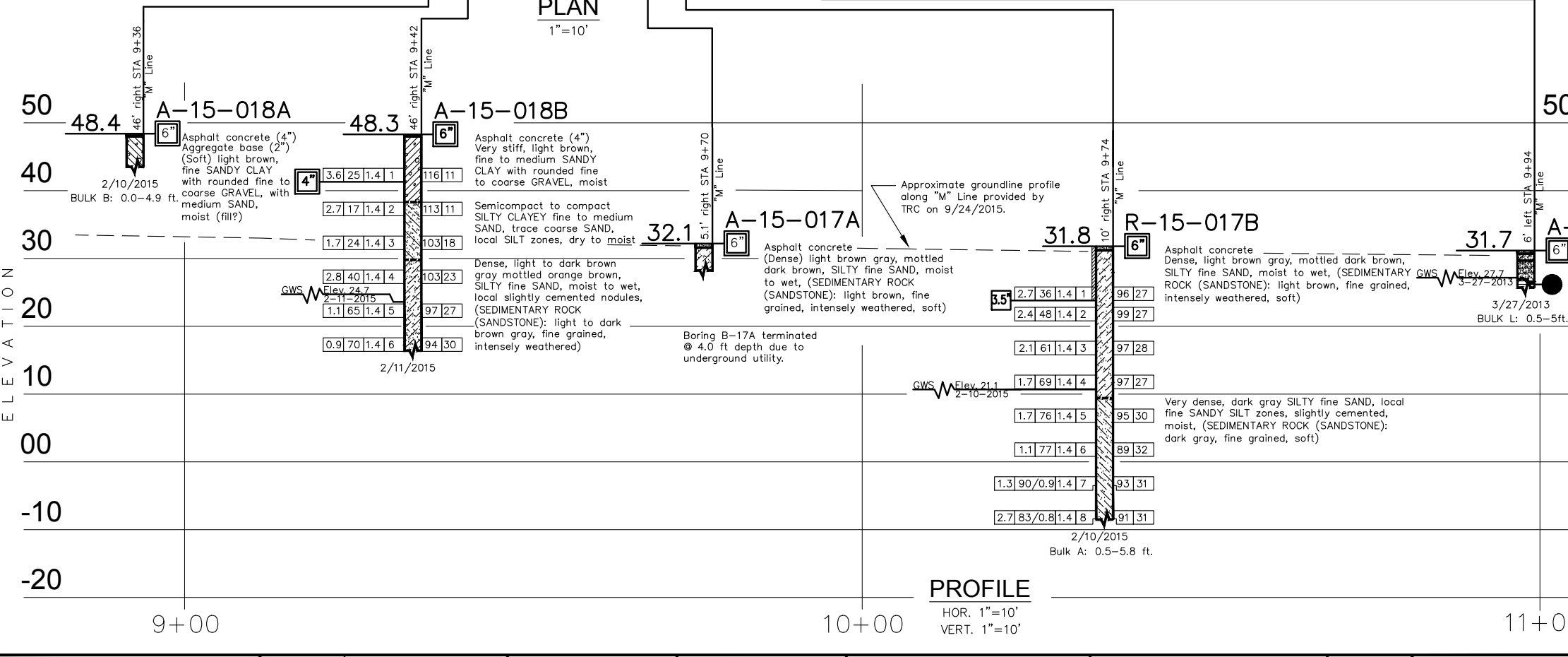
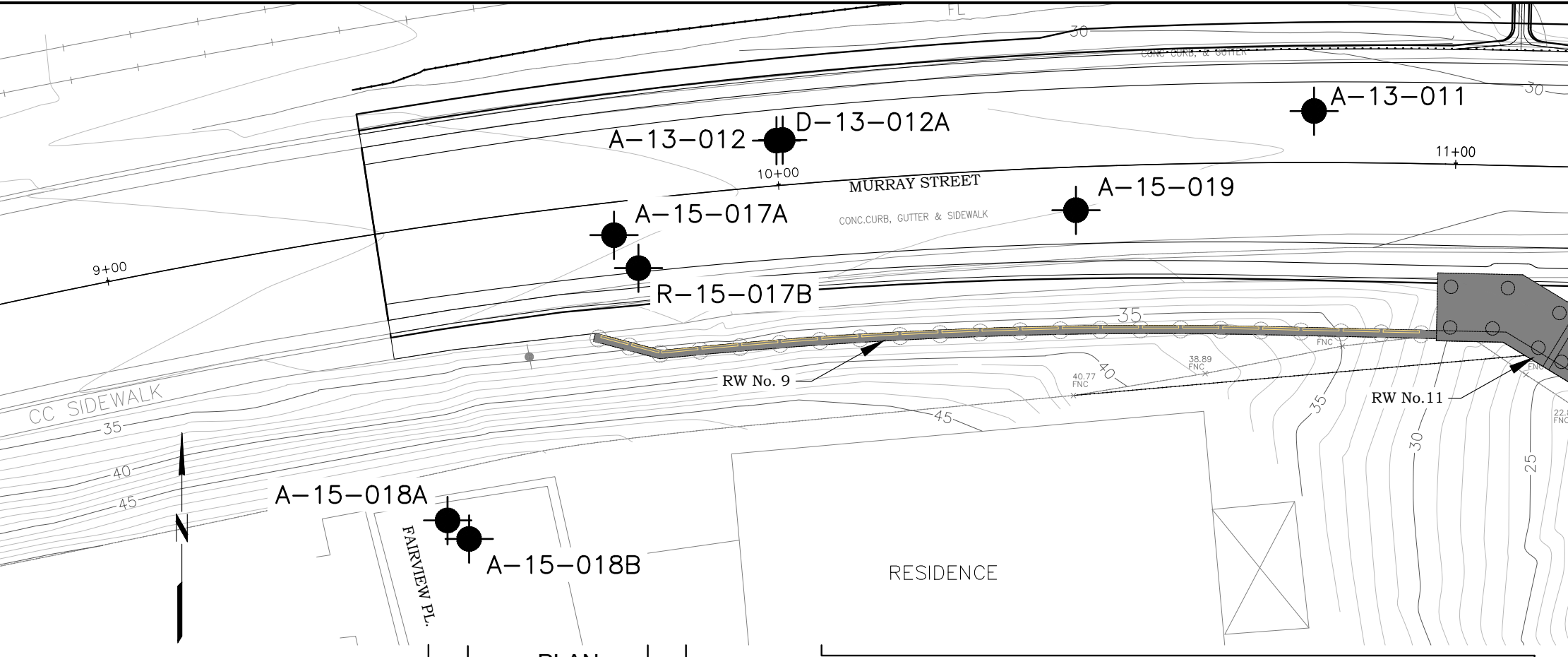
PEAT and/or ORGANIC MATERIAL [Symbol]  
 FILL MATERIAL [Symbol]  
 SEDIMENTARY ROCK [Symbol]  
 METAMORPHIC ROCK [Symbol]  
 SANDY CLAY or CLAYEY SAND [Symbol]  
 SILTY SAND or SANDY SILT [Symbol]  
 SILTY CLAY or CLAYEY SILT [Symbol]

GRAVEL [Symbol]  
 SAND [Symbol]  
 SILT [Symbol]  
 CLAY [Symbol]

**CONSISTENCY CLASSIFICATION FOR SOILS**

According to the Standard Penetration Test

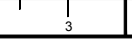
Standard Penetration Test "N"-Value	Cohesive	Non-cohesive
0-5	Very soft	Very loose
6-10	Soft	Loose
11-20	Slightly stiff	Semicompact
21-30	Stiff	Dense
31-40	Very stiff	Very dense
>70	Very hard	



DESIGN OVERSIGHT	DRAWN BY X. Vang	G. Wade, P.G., A. Kahn FIELD INVESTIGATOR	PREPARED FOR CITY OF SANTA CRUZ DEPARTMENT OF PUBLIC WORKS	PROJECT ENGINEER	EXIS. BRIDGE NO. 36C-0108	Murray Street Bridge at Woods Lagoon
SIGN OFF DATE	CHECKED BY A. Kahn	DATE Mar. 2013, Feb. 2015			POST MILE	LOG OF TEST BORINGS RW No. 9-1

DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	7/13/23	SHEET 190 OF 196
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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

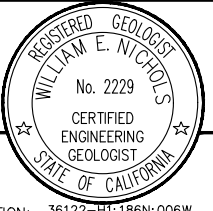


CU EA

B-65

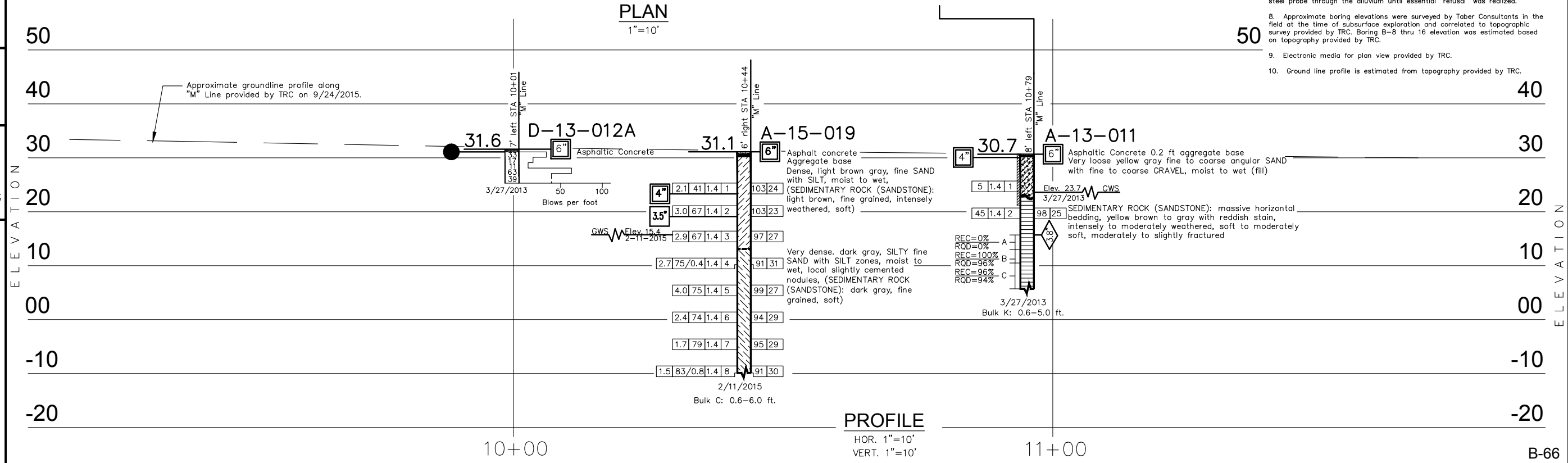
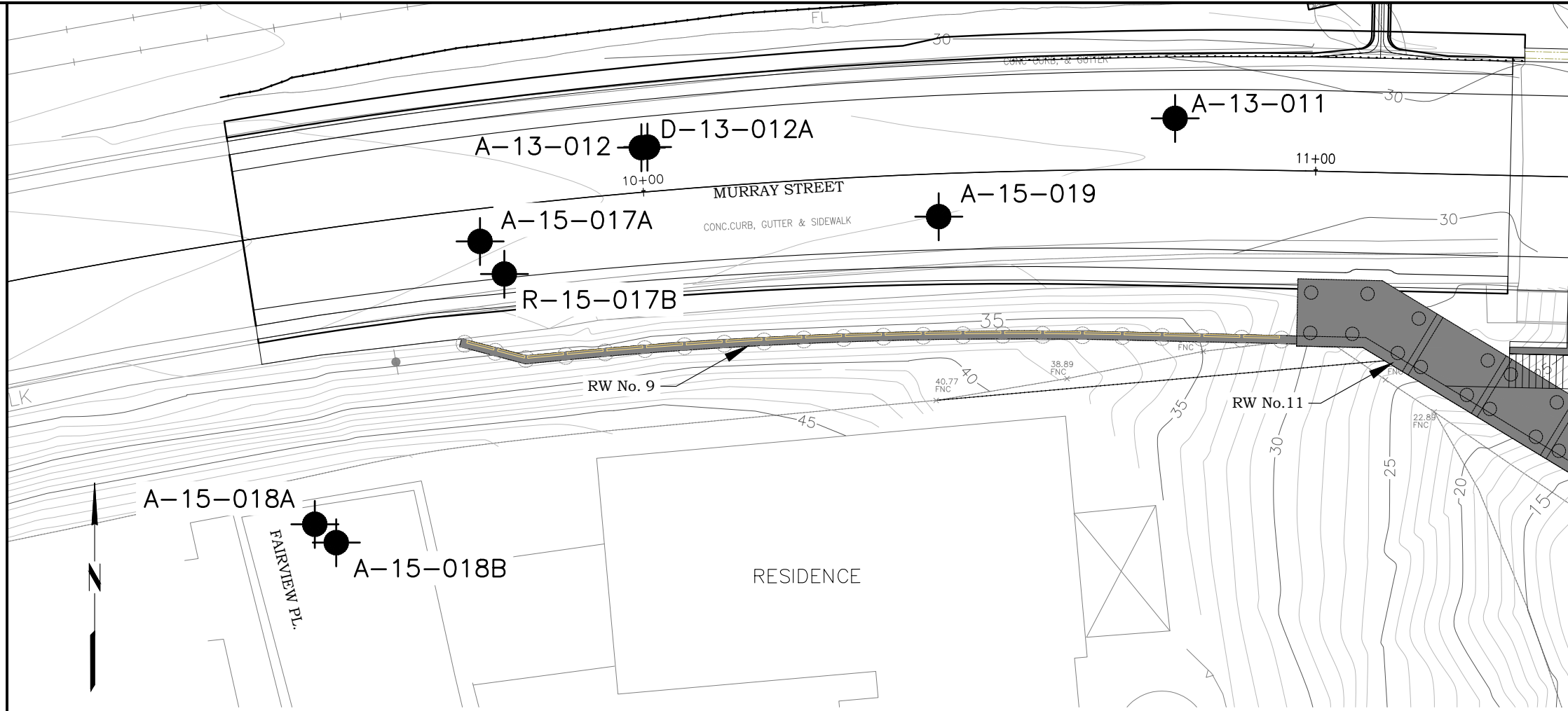
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		191	196

5/6/2024  
 CERTIFIED ENGINEERING GEOLOGIST  
 PLANS APPROVAL DATE  
 Crawford & Associates, Inc.  
 4701 Freepoint Blvd  
 Sacramento, CA 95822  
 (916) 455-4225  
 JOB No. 2009-272-2 LOCATION: 36122-HI:186N:006W



TRC Companies, Inc.  
 10680 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 366-0632

- NOTES:
- Field classification of soils was in accordance with ASTM D 2488-09a "Description and Identification of Soils (Visual-Manual Procedure)".
  - Standard Penetration tests (SPTs) were performed in accordance with ASTM D 1586-11 using hammer operated with an automated drop system. Drill rods were 1 5/8-inch diameter "A"-rods; sampler driven with brass liners. SPT hammer energy ratio (ETR) measurements indicate an ETR=87% as of 4/09/2012 (2013 borings); ETR = 104% (2015 borings).
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  - Rock classification according to Bureau of Reclamation, U.S. Department of the Interior (USBR), "Engineering Geology Field Manual", and "Manual of Field Geology", (Compton, Robert R.). USBR field descriptor sheet is attached. Rock Quality Designation (RQD), Weathering, Rock Hardness/Strength, Bedding, and Fracture Density, as shown on this sheet, were used to describe all rock core from borings B-8, B-9, B-10, B-11, B-13 and B-15, drilled in 2013. Descriptors were determined in the field. REC = Core Recovered (percent). RQD = Rock Quality Designation (percent).
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  - All CPTs were advanced per ASTM D 5778 procedures. Cones used for CPTs were Vertek 1.4 in diameter (10 cm<sup>2</sup>) pushed from a 20-ton rig or from a CME 55 Track Mounted rig (using auger anchors to provide a 20-ton reaction), respectively.
  - Probes were conducted in the channel by manually pushing a 1/4-inch steel probe through the alluvium until essential "refusal" was realized.
  - Approximate boring elevations were surveyed by Taber Consultants in the field at the time of subsurface exploration and correlated to topographic survey provided by TRC. Boring B-8 thru 16 elevation was estimated based on topography provided by TRC.
  - Electronic media for plan view provided by TRC.
  - Ground line profile is estimated from topography provided by TRC.



**LEGEND OF BORING OPERATIONS**

**LEGEND OF EARTH MATERIALS**

**CONSISTENCY CLASSIFICATION FOR SOILS**

**NOTE:** Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

DESIGN OVERSIGHT	DRAWN BY X. Vang	G. Wade, P.G., A. Kahn FIELD INVESTIGATOR	PREPARED FOR <b>CITY OF SANTA CRUZ</b> DEPARTMENT OF PUBLIC WORKS	PROJECT ENGINEER	EXIS. BRIDGE NO. 36C-0108	<b>Murray Street Bridge at Woods Lagoon</b>	
SIGN OFF DATE	CHECKED BY A. Kahn	DATE Mar. 2013, Feb. 2015			POST MILE	<b>LOG OF TEST BORINGS RW No. 9-2</b>	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			0 1 2 3	CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 191 OF 196

**LEGEND OF BORING OPERATIONS**

**LEGEND OF EARTH MATERIALS**

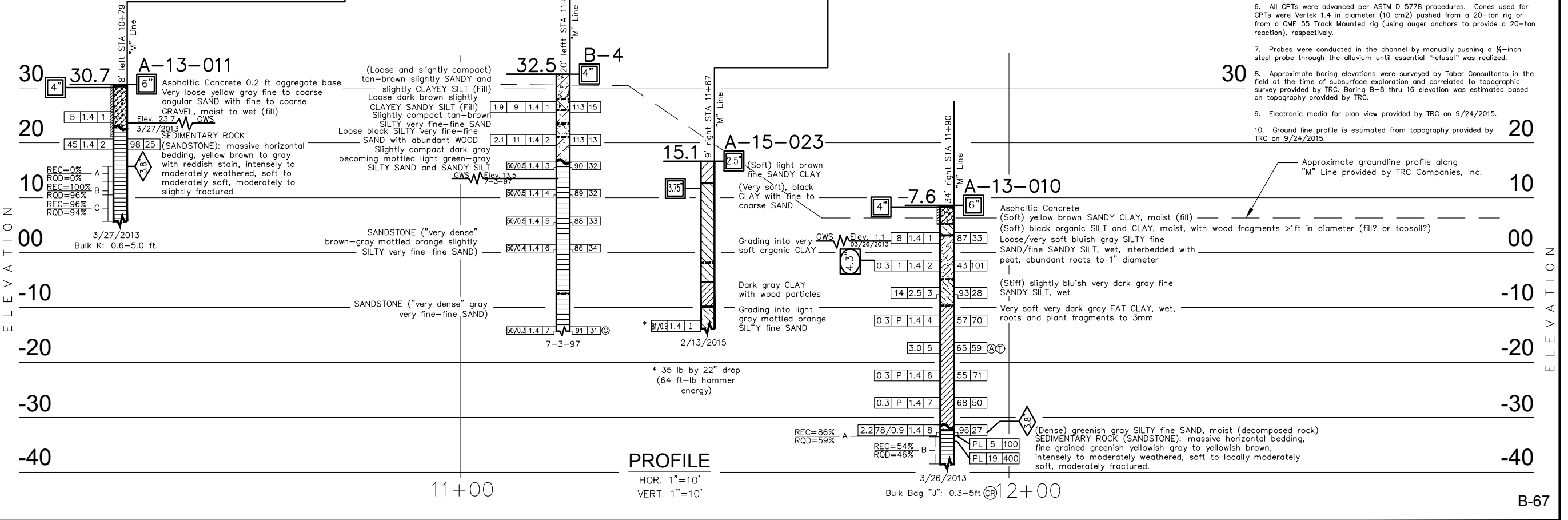
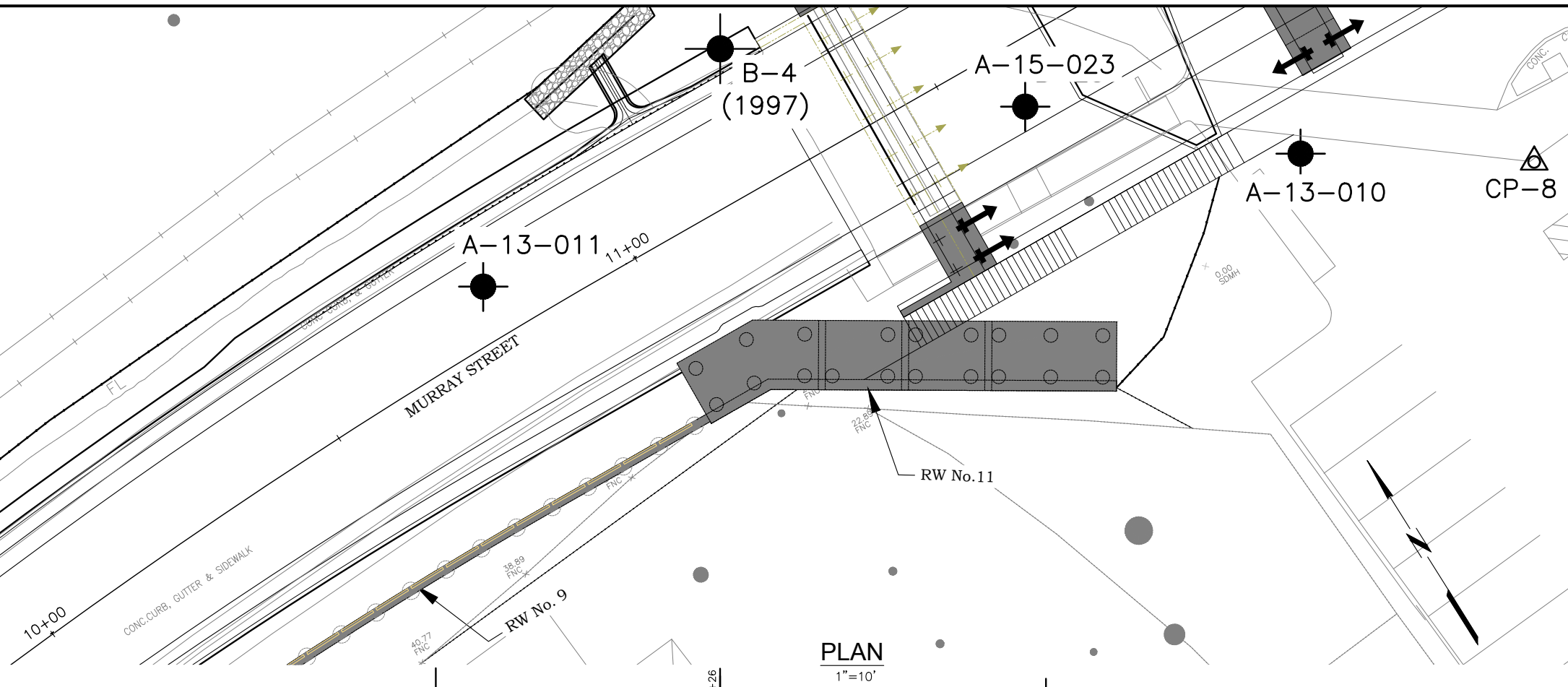
**CONSISTENCY CLASSIFICATION FOR SOILS**

**NOTE:** Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

**LEGEND OF BORING OPERATIONS (continued):**

**LEGEND OF EARTH MATERIALS (continued):**

**CONSISTENCY CLASSIFICATION FOR SOILS (continued):**



DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		192	196

5/6/2024  
CERTIFIED ENGINEERING GEOLOGIST  
WILLIAM E. NICHOLS  
No. 2229  
STATE OF CALIFORNIA

PLANS APPROVAL DATE  
Crawford & Associates, Inc.  
4701 Freeport Blvd  
Sacramento, CA 95822  
(916) 455-4225  
Job No. 2009-272-2  
LOCATION: 36122-HI:186N:006W

TRC Companies, Inc.  
10680 White Rock Road  
Rancho Cordova, CA 95670  
(916) 366-0632

- NOTES:**
- Field classification of soils was in accordance with ASTM D 2488-09a "Description and Identification of Soils (Visual-Manual Procedure)".
  - Standard Penetration tests (SPTs) were performed in accordance with ASTM D 1586-11 using hammer operated with an automated drop system. Drill rods were 1 5/8-inch diameter "A"-rods; sampler was driven with brass liners. SPT hammer energy ratio (ETR) measurements indicate an ETR=87% as of 4/09/2013. For 1997 borings, Standard Penetration tests were performed in accordance with ASTM D 1586-84 using a safety hammer operated with cat-head, rope and pulley. Drill rods were 1-5/8" diameter "A"-rods; sampler was driven with brass liners.
  - The length of each sampled interval is shown graphically on the boring log. Whole number blow counts ('N') represent the "standard penetration resistance" interval in accordance with ASTM D1586-11. Where less than 1 foot of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated. Where indicated by an asterisk (\*) the number of blows shown is for only that fraction of the initial 0.5 ft "seating drive" interval penetration. Material characteristics shown in ( ) where estimated.
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  - Approximate boring elevations were surveyed by Taber Consultants in the field at the time of subsurface exploration and correlated to topographic survey provided by TRC. Boring B-8 thru 16 elevation was estimated based on topography provided by TRC.
  - Electronic media for plan view provided by TRC on 9/24/2015.
  - Ground line profile is estimated from topography provided by TRC on 9/24/2015.

DESIGN OVERSIGHT	DRAWN BY	X. Vang	G. Wade, P.G., A. Kahn FIELD INVESTIGATOR	PREPARED FOR CITY OF SANTA CRUZ DEPARTMENT OF PUBLIC WORKS	PROJECT ENGINEER	EXIS. BRIDGE NO. 36C-0108	Murray Street Bridge at Woods Lagoon
SIGN OFF DATE	CHECKED BY	A. Kahn	DATE Mar. 2013, Feb. 2015			POST MILE	<b>LOG OF TEST BORINGS RW No. 11</b>
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS				0 1 2 3	CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)
						7/13/23	SHEET 192 OF 196

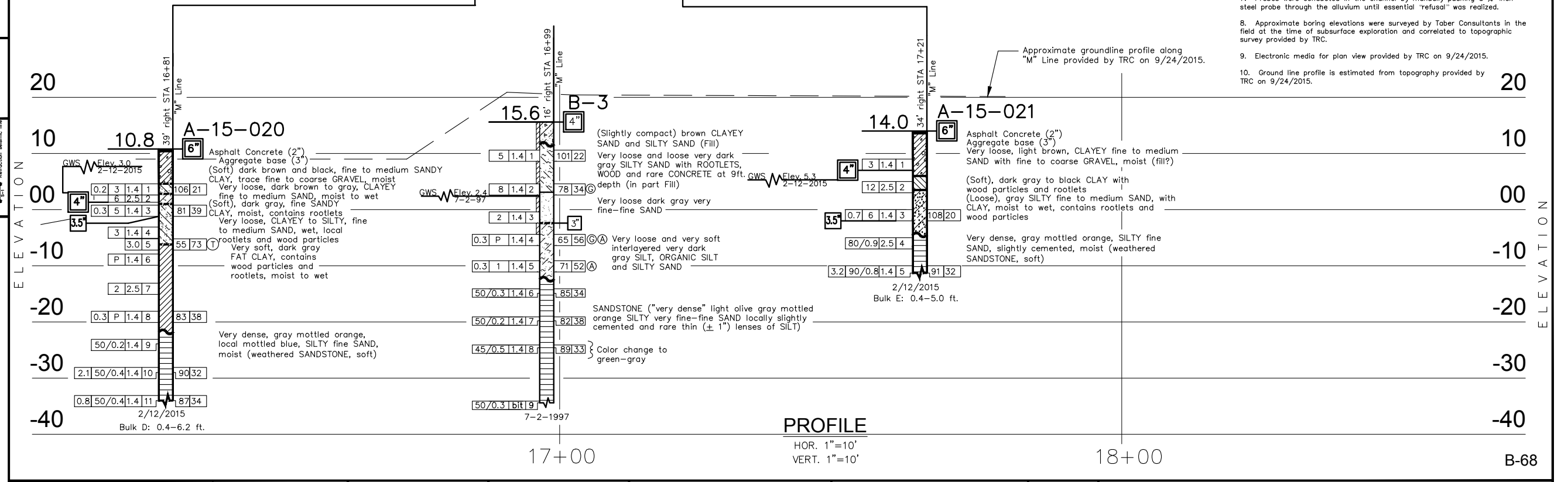
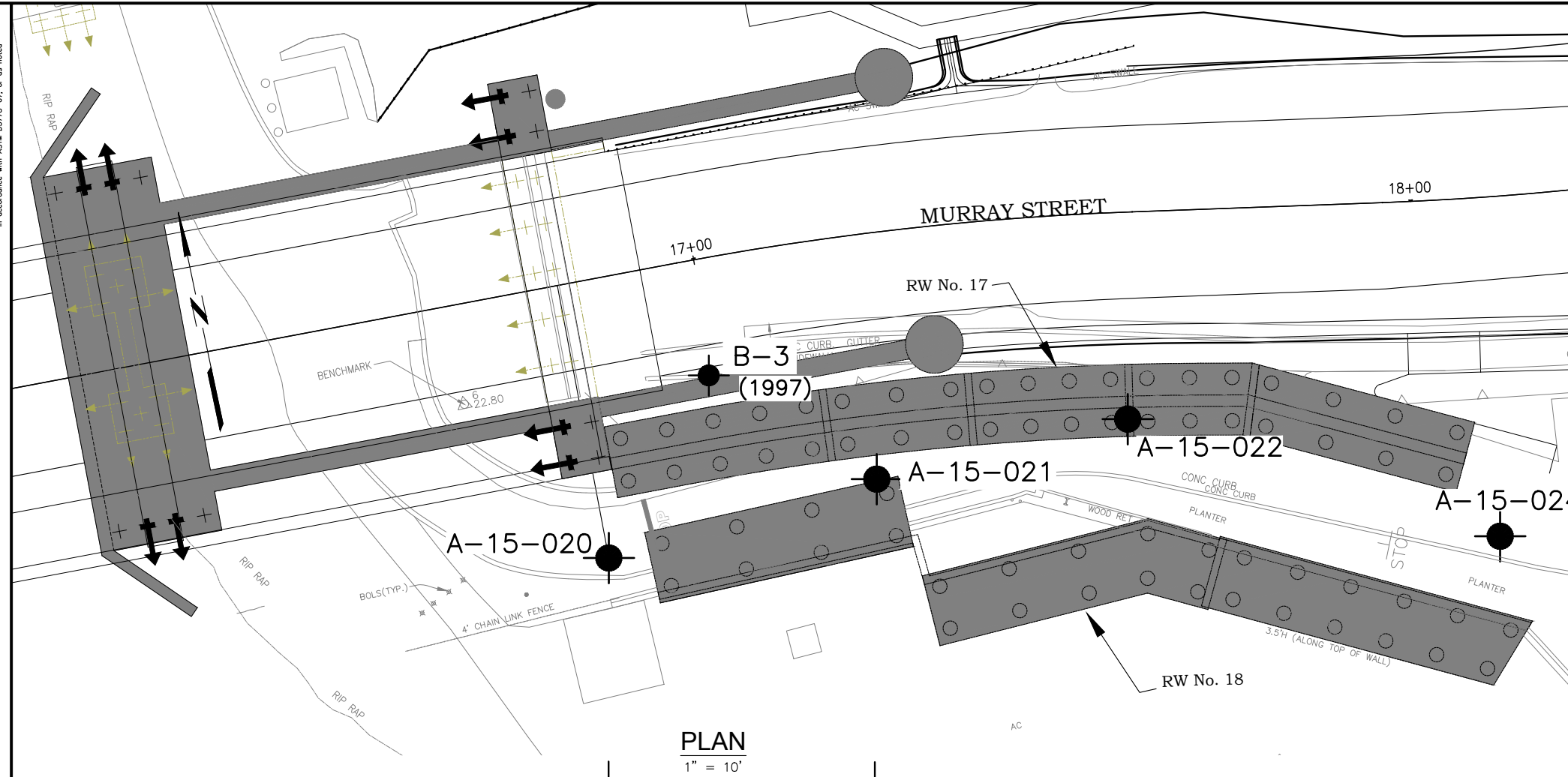
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		193	196

5/6/2024  
 CERTIFIED ENGINEERING GEOLOGIST  
 PLANS APPROVAL DATE  
 Crawford & Associates, Inc.  
 4701 Freepoint Blvd  
 Sacramento, CA 95822  
 (916) 455-4225  
 JOB No. 2009-272-2 LOCATION: 36122-HI-186N;006W

REGISTERED GEOLOGIST  
 WILLIAM E. NICHOLS  
 No. 2229  
 CERTIFIED ENGINEERING GEOLOGIST  
 STATE OF CALIFORNIA

TRC Companies, Inc.  
 10680 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 366-0632

- NOTES:
- Field classification of soils was in accordance with ASTM D 2488-09a "Description and Identification of Soils (Visual-Manual Procedure)".
  - Standard Penetration tests (SPTs) were performed in accordance with ASTM D 1586-11 using hammer operated with an automated drop system. Drill rods were 1 5/8-inch diameter "A"-rods; sampler was driven with brass liners. SPT hammer energy ratio (ETR) measurements indicate an ETR=104% as of 11/18/2014. For 1997 borings, Standard Penetration tests were performed in accordance with ASTM D 1586-84 using a safety hammer operated with cat-head, rope and pulley. Drill rods were 1-5/8" diameter "A"-rods; sampler was driven with brass liners.
  - The length of each sampled interval is shown graphically on the boring log. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with ASTM D1586-11. Where less than 1 foot of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated. Where indicated by an asterisk (\*) the number of blows shown is for only that fraction of the initial 0.5 ft "seating drive" interval penetration. Material characteristics shown in ( ) where estimated.
  - Rock classification according to Bureau of Reclamation, U.S. Department of the Interior (USBR), "Engineering Geology Field Manual", and "Manual of Field Geology", (Compton, Robert R.), USBR field descriptor sheet is attached. Weathering, Rock Hardness/Strength, Bedding, and Fracture Density, as shown on this sheet, were used to describe all rock core from borings B-17B, B-18B, B-19, B-21, B-22, B-23, and B-25, drilled in 2015. Descriptors were determined in the field. REC = Core Recovered (percent). ROD = Rock Quality Designation (percent).
  - Groundwater surface elevations in the borings indicated on the "Log of Test Borings" sheets reflect the fluid level in the borings on the specified date. Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at any particular time.
  - All CPTs were advanced per ASTM D 5778 procedures. Cones used for CPTs were Vertek 1.4 in diameter (10 cm<sup>2</sup>) pushed from a 20-ton rig or from a CME 55 Track Mounted rig (using auger anchors to provide a 20-ton reaction), respectively.
  - Probes were conducted in the channel by manually pushing a 1/4-inch steel probe through the alluvium until essential "refusal" was realized.
  - Approximate boring elevations were surveyed by Taber Consultants in the field at the time of subsurface exploration and correlated to topographic survey provided by TRC.
  - Electronic media for plan view provided by TRC on 9/24/2015.
  - Ground line profile is estimated from topography provided by TRC on 9/24/2015.



**LEGEND OF BORING OPERATIONS**

Pressure measured on lb. element divided by pressure element (10 cm<sup>2</sup> area)  
 Friction Ratio (%) Tip Bearing (TSF)  
 Boring Date  
 ELECTRONIC CONE PENETRATION TEST  
 Cone Penetrometer dimensions and testing procedures are in accordance with ASTM D2978-07, or its modification

No count recorded  
 Blows per foot (Using 140 lb hammer with 30" drop)  
 Boring Date  
 CONE PENETRATION LOGGING

Description of material  
 Dry density (lb/cu ft)  
 Moisture (%)  
 Plasticity Index (PI)  
 Liquid Limit (LL)  
 Plastic Limit (PL)  
 Shrinkage (%)  
 Estimated material change  
 Unrecoverable material change  
 Point Load Index (psi)  
 Test

Coating driven  
 Sample Number  
 Size of Sampler (Using a 1.40 lb. hammer with a 30" drop)  
 50/0.5 indicates 50 blows for 0.5 ft. strength (1/4 in. dia.)

PLAN OF ANY BORING  
 2.5 INCH CONE PENETROMETER  
 MID ROTARY BORING (RVT)  
 AUGER BORING (RVT)  
 HOLLOW AUGER BORING (RVT)  
 TEST PIT  
 DIAMOND CORE BORING  
 WIRELINE BORING  
 ELECTRONIC CONE PENETROMETER  
 PENETROMETER

**LEGEND OF EARTH MATERIALS**

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

**CONSISTENCY CLASSIFICATION FOR SOILS**

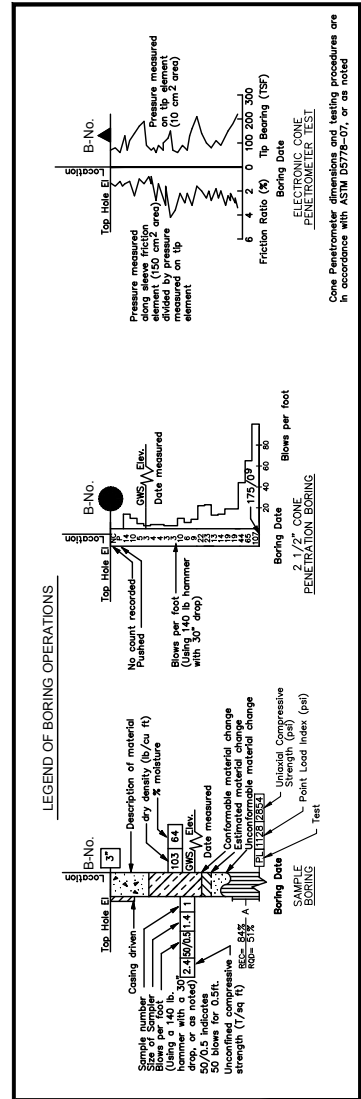
Standard Penetration "N"-Value	Cohesive
0-5	Very soft
6-10	Soft
11-20	Stiff
21-35	Very stiff
36-50	Hard
>70	Very hard

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

DESIGN OVERSIGHT	DRAWN BY X. Vang	Amanda Kahn FIELD INVESTIGATOR	PREPARED FOR <b>CITY OF SANTA CRUZ</b> DEPARTMENT OF PUBLIC WORKS	PROJECT ENGINEER	EXIS. BRIDGE NO. 36C-0108	<b>Murray Street Bridge at Woods Lagoon</b>	
SIGN OFF DATE	CHECKED BY A. Kahn	DATE July 1997, Fe. 2015			POST MILE	<b>LOG OF TEST BORINGS RW No. 17-1</b>	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			0 1 2 3	CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)	SHEET 193 OF 196





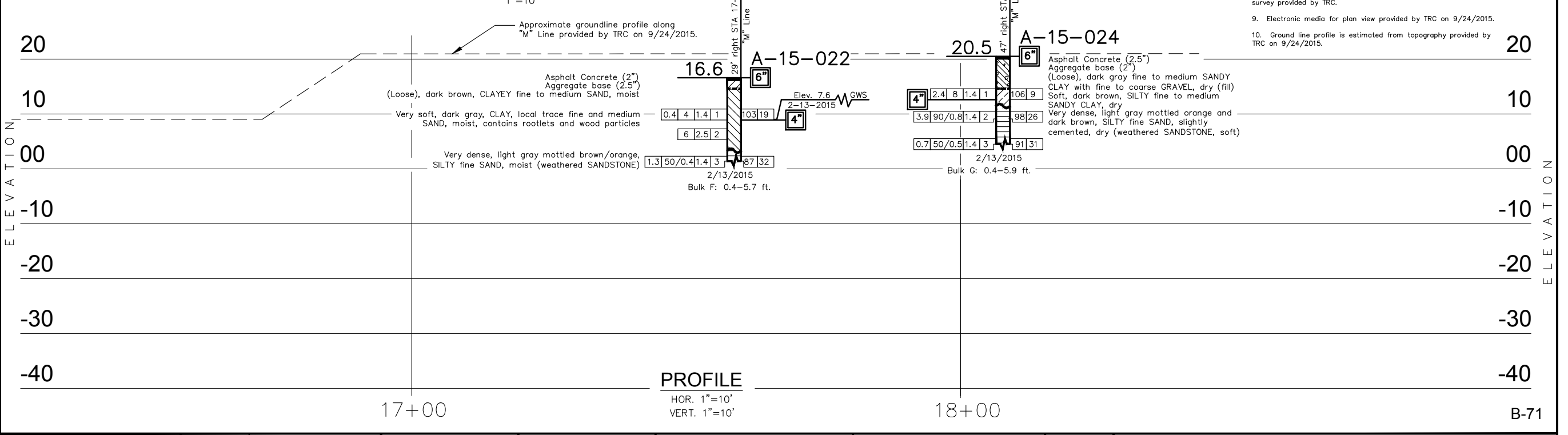
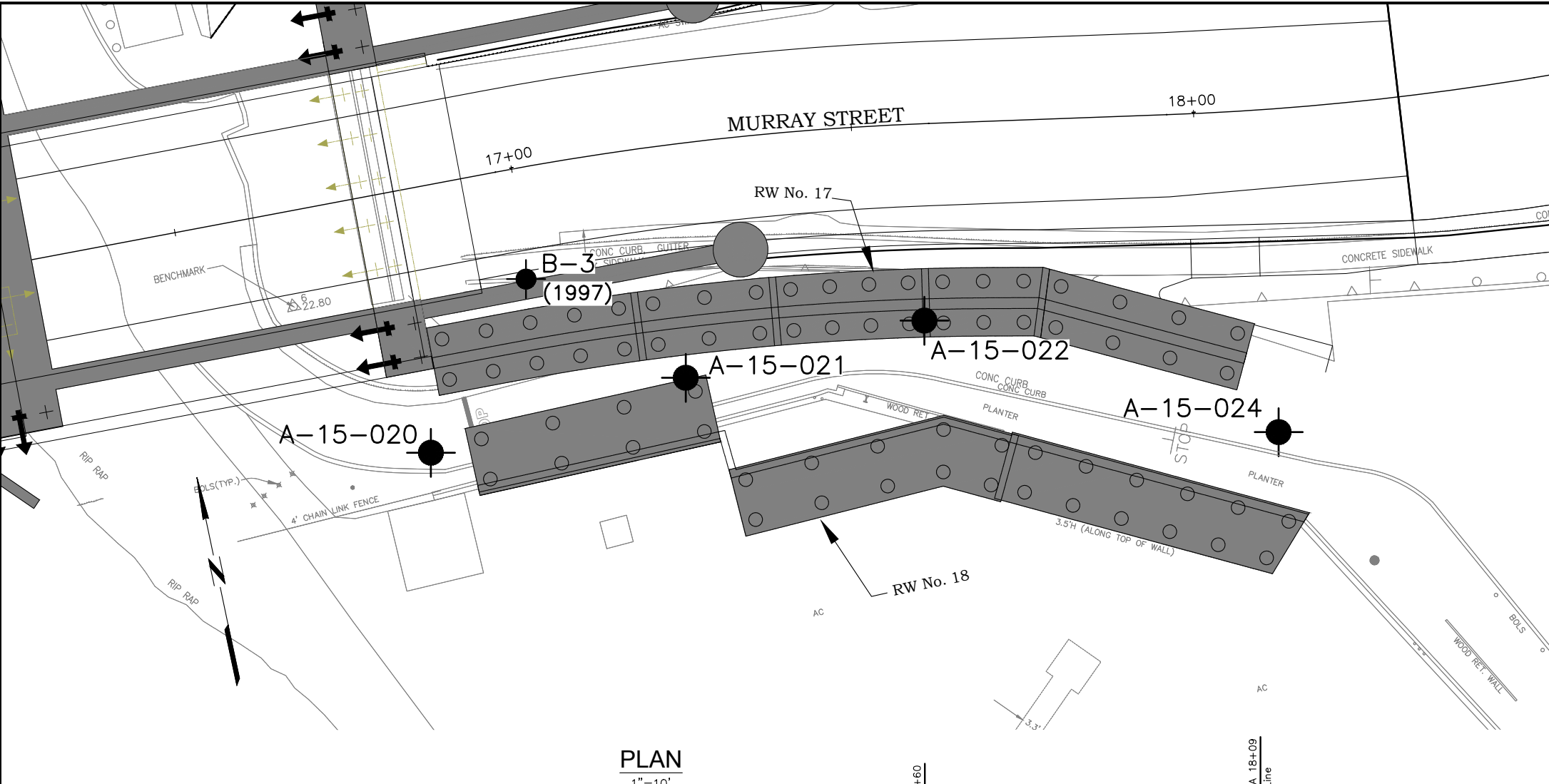


① ATTERBERG LIMITS	① PLAN OF ANY BORING
② CONSOLIDATION	② 2.5 INCH CONE PENETROMETER
③ EXPANSION INDEX	③ MUD ROTARY BORING (DRY)
④ GRADATION	④ BORING (WET)
⑤ HYDROMETER	⑤ MUD ROTARY BORING (WET)
⑥ MAXIMUM DRY DENSITY	⑥ MUD ROTARY BORING (DRY)
⑦ PERMEABILITY	⑦ MUD ROTARY BORING (DRY)
⑧ RESISTANCE VALUE	⑧ TEST PIT
⑨ SAND EQUIVALENT	⑨ DIAMOND CORE BORING
⑩ SPECIFIC GRAVITY	⑩ MEDIANE BORING
⑪ TRIAXIAL SHEAR	⑪ ELECTRONIC CONE PENETROMETER

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

CONSISTENCY CLASSIFICATION FOR SOILS	
According to the Standard Penetration Test	
Standard Penetration Test "N"-Value	Consistency
0-5	Very soft
6-10	Soft
11-20	Stiff
21-35	Very stiff
36-70	Hard
>70	Very hard

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.



DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCR	C.R.		196	196

5/6/2024  
CERTIFIED ENGINEERING GEOLOGIST

PLANS APPROVAL DATE

Crawford 7 Associates, Inc.  
4701 Freepoint Blvd  
Sacramento CA 95822  
(916) 455-4225  
JOB No. 2009-272-2

LOCATION: 36122-HI:186N;006W

REGISTERED GEOLOGIST  
WILLIAM E. NICHOLS  
No. 2229  
CERTIFIED ENGINEERING GEOLOGIST  
STATE OF CALIFORNIA

TRC Companies, Inc.  
10680 White Rock Road  
Rancho Cordova, CA 95670  
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- NOTES:
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  - Approximate boring elevations were surveyed by Taber Consultants in the field at the time of subsurface exploration and correlated to topographic survey provided by TRC.
  - Electronic media for plan view provided by TRC on 9/24/2015.
  - Ground line profile is estimated from topography provided by TRC on 9/24/2015.

DESIGN OVERSIGHT	DRAWN BY X. Vang	Amanda Kahn FIELD INVESTIGATOR	PREPARED FOR CITY OF SANTA CRUZ DEPARTMENT OF PUBLIC WORKS	PROJECT ENGINEER	EXIS. BRIDGE NO. 36C-0108	Murray Street Bridge at Woods Lagoon
SIGN OFF DATE	CHECKED BY A. Kahn	DATE February 2015			POST MILE	LOG OF TEST BORINGS RW No. 18-2
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS			0 1 2 3	CU EA	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES (PRELIMINARY STAGE ONLY)
					7/13/24	SHEET 196 OF 196