

**NOTES:**

1. VERIFY ALL CONTROLLING FIELD DIMENSIONS AND PARAMETERS BEFORE ORDERING OR FABRICATING ANY MATERIAL.
2. ALL CONNECTIONS OF ARMORED CABLE (AC) TO JUNCTION BOXES OR ANY METALLIC ITEMS SHALL BE DONE USING CAST OR COPPER-FREE ALUMINUM JACKETED INTERLOCKED WATERTIGHT (FOR WET LOCATIONS) COMPOUNDED TYPE ARMORED CABLE CONNECTOR WITH STAINLESS STEEL SCREWS AND LOCKNUTS.
3. ALL ELECTRICAL ITEMS THAT USE ANCHORS TO ATTACH TO THE CONCRETE STRUCTURES SHALL USE STAINLESS STEEL POWER STUD ANCHORS-THREADED VERSION SIZED PER MANUFACTURER RECOMMENDATION AND EPOXY ANCHOR WITH A RATED LIFE OF 25 YEARS OR GREATER.
4. INSTALL PADLOCKS ON ALL JUNCTION BOXES, CABINETS, AND WIRE TROUGHS THAT ARE ACCESSIBLE FROM THE GROUND.
5. BEFORE COMPLETION OF ALL ELECTRICAL WORK, LABEL ALL CONDUCTORS AND CABLES BY TYPE AND CIRCUIT NUMBER, IN EACH PULL BOX, JUNCTION BOX, CABINET, AND WIRE TROUGH.
6. INSTALL FOR EACH TERMINAL BLOCK A PERMANENT LABEL FOR IDENTIFICATIONS. FOR EACH TERMINAL BLOCK, A MEDIUM VOLTAGE BREAKER COMPARTMENTS CABINET, OR JUNCTION BOX, IN WHICH WORK IS PERFORMED.
7. COVER HOLES IN CABINETS, CONDUIT BODIES OR JUNCTION BOXES WITH THE APPROPRIATE TYPE PLUG FOR THE APPLICATION AFTER ANY CONDUIT, CABLE OR DEVICE IS REMOVED
8. THE CONDUITS THAT CONTAIN COMMUNICATION, OR TELEPHONE CABLES OR CONDUCTORS MUST BE TYPE 1 OR TYPE 2 UNLESS OTHERWISE SPECIFIED.
9. IN ADDITION TO THE LATEST EDITION OF NATIONAL ELECTRICAL CODE (NEC), ADHERE TO THE LATEST EDITION OF NATIONAL ELECTRICAL SAFETY CODE (NESC) AND THE UTILITY COMPANIES REQUIREMENTS, AND IF THE CODES AND REQUIREMENTS ARE IN CONFLICT, THEN THE ENGINEER WILL DETERMINE WHICH CODE AND REQUIREMENTS APPLIES AT NO ADDITIONAL COST TO THE DEPARTMENT.
10. ALL CONNECTIONS OF TYPE 1 OR TYPE 2 CONDUITS TO JUNCTION OR PULL BOXES AND ANY METALLIC ITEM (EXCEPT FOR OUTLET BOXES) AND OPEN ENDED TYPE 1 OR TYPE 2 CONDUIT MUST BE DONE OR TERMINATED USING THREADED INSULATED BONDING BUSHING (PRESSURE TYPE LUG) WITH GASKETED SEALING LOCKNUT AND MOISTURE PROOF HUB WITH "O" RING.
11. THE MAXIMUM ARMORED CABLE DISTANCE BETWEEN SUPPORTS SHALL BE 4' OR LESS.
12. ARMOR CABLE SHALL BE SUPPORTED USING PVC-COATED GRS CHANNEL STRUTS.
13. WIREWAY SHALL BE SUPPORTED USING GRS CHANNEL STRUTS.
14. INSTALL STAINLESS STEEL MESH GRIP FOR 12 KV ARMORED CABLE AT EACH EXPANSION JOINT. INSTALL ARMORED CABLE WITH 10' SLACK AT EACH EXPANSION JOINT. SEE SHEET E-23 FOR DETAILS.
15. **SECURE CONDUITS EVERY 5' OR LESS USING CHANNEL STRUT OR CONDUIT STRAPS.**
- ~~15. SECURE ARMORED CABLES AND CONDUITS EVERY 5' USING CHANNEL STRUT OR CONDUIT STRAPS.~~



**REPLACED PER ADDENDUM No. 2 DATED AUGUST 21, 2014**

**LEGEND:**

1. INSTALL POWER SUPPLY AND BATTERY CHARGER
2. INSTALL 18" W x 24" L x 8" D STAINLESS STEEL NEMA TYPE 4x JUNCTION BOX (JB)
3. INSTALL 1-#3 1/0 MEDIUM VOLTAGE ARMORED CABLE
4. INSTALL ARMORED CABLE AT THE SOUTHSIDE OF CATWALK
5. INSTALL 48" W x 48" L x 12" D STAINLESS STEEL NEMA TYPE 4X JUNCTION BOX (JB)
6. INSTALL 4"C, 3-1/0 MEDIUM VOLTAGE CABLE
7. SPLICE 3-1/0 MEDIUM VOLTAGE CABLES TO 1-3#1/0 MEDIUM VOLTAGE ARMORED CABLE
8. INSTALL 3/4"C, 3#10 CONDUCTOR
9. INSTALL 6" W x 72" L x 6" D NEMA TYPE 3R WIRE TROUGH
10. INSTALL INVERTER
11. INSTALL DC SWITCH
12. INSTALL PENDANT LIGHT FIXTURE AND CONNECT AS SHOWN ON THE PLANS
13. INSTALL 3/4"C, 3#12 CONDUCTORS
14. USE CHANNEL STRUT TO ATTACH 1-3#1/0 MEDIUM VOLTAGE ARMORED CABLE ALONGSIDE THE CATWALK (SEE SHEET E-21 FOR DETAIL)
15. INSTALL THE 1-3#1/0 MEDIUM VOLTAGE ARMORED CABLE WITH THE MAXIMUM SLACK POSSIBLE BETWEEN THE SUPPORTS ACROSS THE EXPANSION JOINT. SEE DETAILS ON SHEETS E-17 TO E-25
16. INSTALL 1/2"C, 3#6 CONDUCTORS
17. INSTALL 3/4"C, 1-1P#16 CONDUCTOR CABLE,  THE (E) BATTERY CHARGER, CONDUIT CONNECTED TO THE (E) BATTERY CHARGER, (E) OR LIGHTS, (E) DC LIGHT SWITCH AND CONDUITS AND CONDUCTORS CONNECTED TO THE LIGHTS AND SWITCH FOR ALL SUBSTATION EXCEPT FOR SUBSTATION 1 AND 3, AND (E) DC JUNCTION BOX
18. INSTALL 3/4"C, TEMPERATURE PROBE CABLE
19. INSTALL EMERGENCY LIGHT SWITCH AND CONNECT AS SHOWN ON THE PLANS
20. INSTALL 15 A POWER OUTLET
21. INSTALL 3/4"C, 3#12 CONDUCTORS
22. SEE SHEET E-22 FOR DETAILS OF TYPICAL MULTIPLE HANGER
23. INSTALL 1"C, 3#4 RHW-2 CONDUCTORS FROM DC POWER JUNCTION BOX TO 60 A DC FUSED. DISCONNECT SWITCH AND CONNECT AS SHOWN ON THE PLANS
24.  THE (E) CONDUIT AND CONDUCTORS USE FOR THE (E) DC PANEL FROM THE (E) DC POWER JUNCTION BOX AND INSTALL (3/4)"C, 3#10 CONDUCTOR FROM THE NEW DC POWER JUNCTION BOX TO THE (E) DC PANEL
25. INSTALL 1"C, 3#4 RHW-2 CONDUCTORS
26.  THE (E) CONDUIT CONDUCTORS USE FOR THE AC POWER OF THE BATTERY CHARGER AND INSTALL #10 CONDUCTORS FROM AC PANEL TO DC POWER JUNCTION BOX IN THE (E) CONDUITS
27.  THE (E) CONDUCTORS AND CONDUITS (E) USE FOR THE DC PANEL FROM THE DC POWER JUNCTION BOX AND INSTALL 3/4"C, 3#10 CONDUCTORS FROM THE DC POWER JUNCTION BOX TO NEW POWER SUPPLY AND BATTERY CHARGER

28.  THE (E) CONDUCTORS USE FOR THE (E) DC PANEL AND INSTALL 4#10 CONDUCTORS FROM THE DC POWER JUNCTION BOX TO THE (E) DC PANEL IN THE (E) CONDUIT
29. INSTALL 3/4"C, 3#10 RHW-2 CONDUCTORS FROM THE POWER SUPPLY AND BATTERY CHARGER TO THE DC POWER JUNCTION BOX FOR DC POWER
30. INSTALL 3/4"C, 3#10 CONDUCTORS FROM THE POWER SUPPLY AND BATTERY CHARGER TO THE DC POWER JUNCTION BOX FOR THE AC POWER
31. INSTALL 1"C, 3#4 RHW-2 CONDUCTORS FROM THE DISCONNECT SWITCH TO THE BATTERIES IN SERIES AND CONNECT AS SHOWN ON THE PLANS
32. INSTALL 3/4"C, 3#12 CONDUCTORS FOR LIGHTING
33.  THE (E) SUBSTATION TRANSFORMER AND INSTALL 200 KVA SUBSTATION TRANSFORMER
34.  THE (E) CONDUIT AND CONDUCTORS USE FOR THE SWITCHGEAR AND INSTALL 3/4"C, 3#12 CONDUCTOR TO THE SWITCHGEAR
35.  THE (E) CONDUIT AND CONDUCTORS USE FOR AC POWER BETWEEN THE BATTERY CHARGER AND (E) AC PANEL AND INSTALL 3/4"C, 3#10 CONDUCTORS FROM THE POWER SUPPLY AND BATTERY CHARGER TO THE (E) AC PANEL
36. INSTALL 12" W x 12" L x 6" D STAINLESS STEEL NEMA TYPE 4X JUNCTION BOX (JB)
37.  THE (E) SUBSTATION TRANSFORMER AND INSTALL 500 KVA SUBSTATION TRANSFORMER
38.  THE (E) LOW VOLTAGE CONTROL CENTER LVCC AND INSTALL NEW LOW VOLTAGE CONTROL CENTER LVCC
39. INSTALL WIREWAY
40.  THE (E) SUBSTATION TRANSFORMER AND INSTALL 300 KVA SUBSTATION TRANSFORMER
41. SEE DETAILS ON SHEET E-21 AND E-22 FOR INSTALLATION OF ARMORED CABLE
42. INSTALL 10"W x 30"L x 6"D MODIFIED TYPE 9A PULL BOX WITH STEEL DIVIDER BETWEEN COMMUNICATION AND POWER CABLE. THE PULL BOX SHOULD BE RATED NEMA 4X
43. INSTALL 12" W x 72" L x 12" D NEMA TYPE 3R WIRE TROUGH SEE DETAILS OF INSTALLATION ON E-22
44. SPLICE CABLES IN JUNCTION BOX
45. INSTALL 3/4"C, 1-2P#16 CONDUCTOR CABLE FOR SCADA
46. RELOCATED METER
47. INSTALL BUILDING TRANSFORMER
48. INSTALL SWITCHBOARD
49.  EXISTING MV CONDUCTORS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM,Ala	92	R14.4/R18.8, RO.0/R2.6	19	117

3/4/14  
REGISTERED ELECTRICAL ENGINEER DATE

5-27-14  
PLANS APPROVAL DATE

Gizachew Merid  
No. 18216  
Exp. 2-31-15  
ELECT

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - ELECTRICAL

GIZACHEW MERID

BEHZAD GOLEMOHAMMADI

BEHZAD GOLEMOHAMMADI

CM

11/21/13

REVISOR

DATE

CALCULATED/DESIGNED BY

CHECKED BY

FUNCTIONAL SUPERVISOR

BEHZAD GOLEMOHAMMADI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 ELECTRICAL

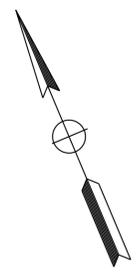
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 REVISIONS:  
 CM: 11/21/13  
 REVISED BY: BEHZAD GOLEMOHAMMADI  
 DATE REVISED: 11/21/13  
 GIZACHEW MERID  
 BEHZAD GOLEMOHAMMADI  
 CALCULATED/DESIGNED BY: BEHZAD GOLEMOHAMMADI  
 CHECKED BY: BEHZAD GOLEMOHAMMADI

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM,Ala	92	R14.4/R18.8, RO.0/R2.6	36	117

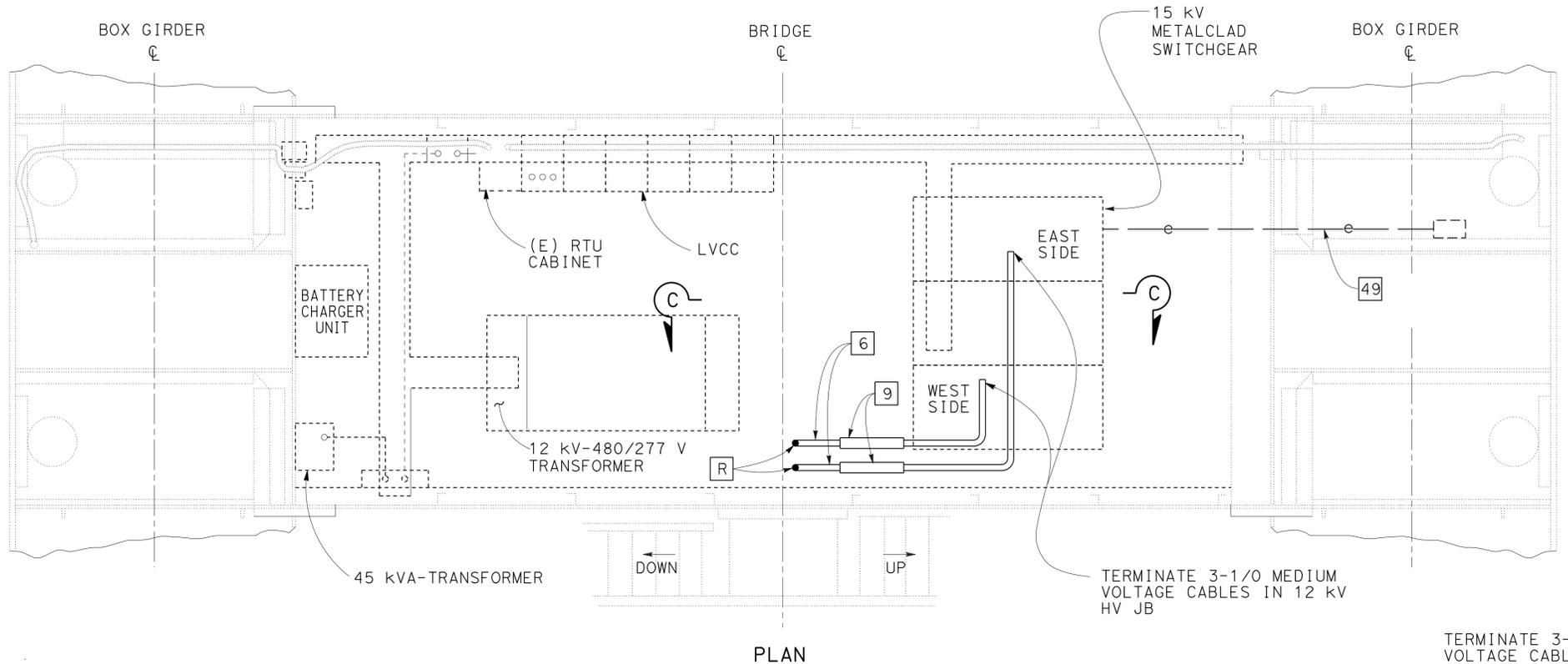
REGISTERED ELECTRICAL ENGINEER DATE: 3/4/14  
 GIZACHEW MERID  
 No. 18216  
 Exp. 2-31-15  
 ELECT

PLANS APPROVAL DATE: 5-27-14

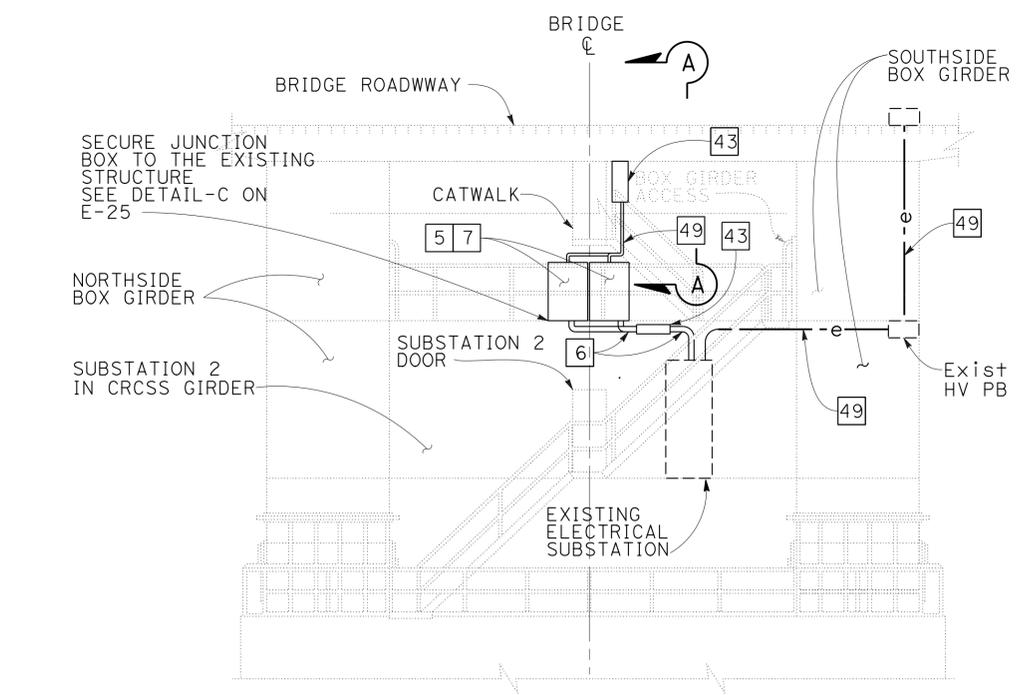
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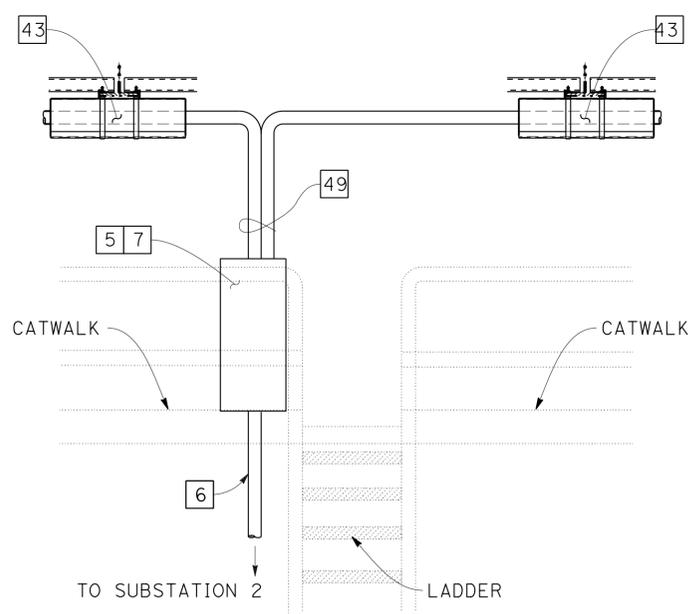
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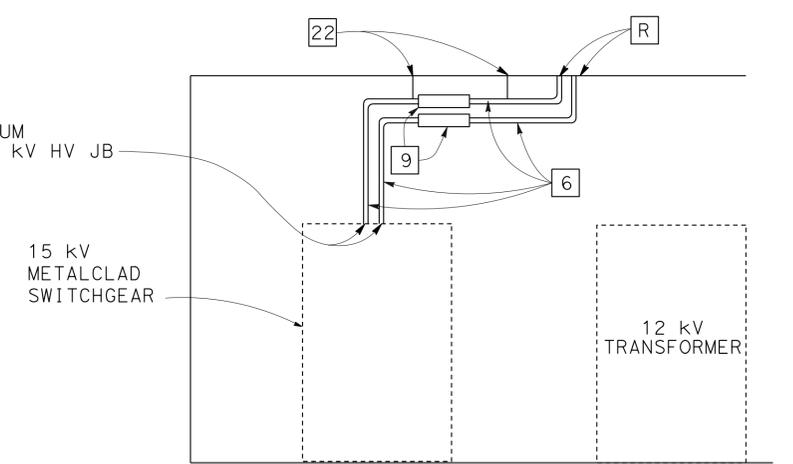
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ELEVATION  
PIER 19



SECTION A-A



SECTION C-C

**EXISTING ELECTRICAL FACILITIES AND PROPOSED MODIFICATIONS, SUBSTATION 2**

**12 kV SYSTEM (SAN MATEO-HAYWARD BRIDGE) NO SCALE**

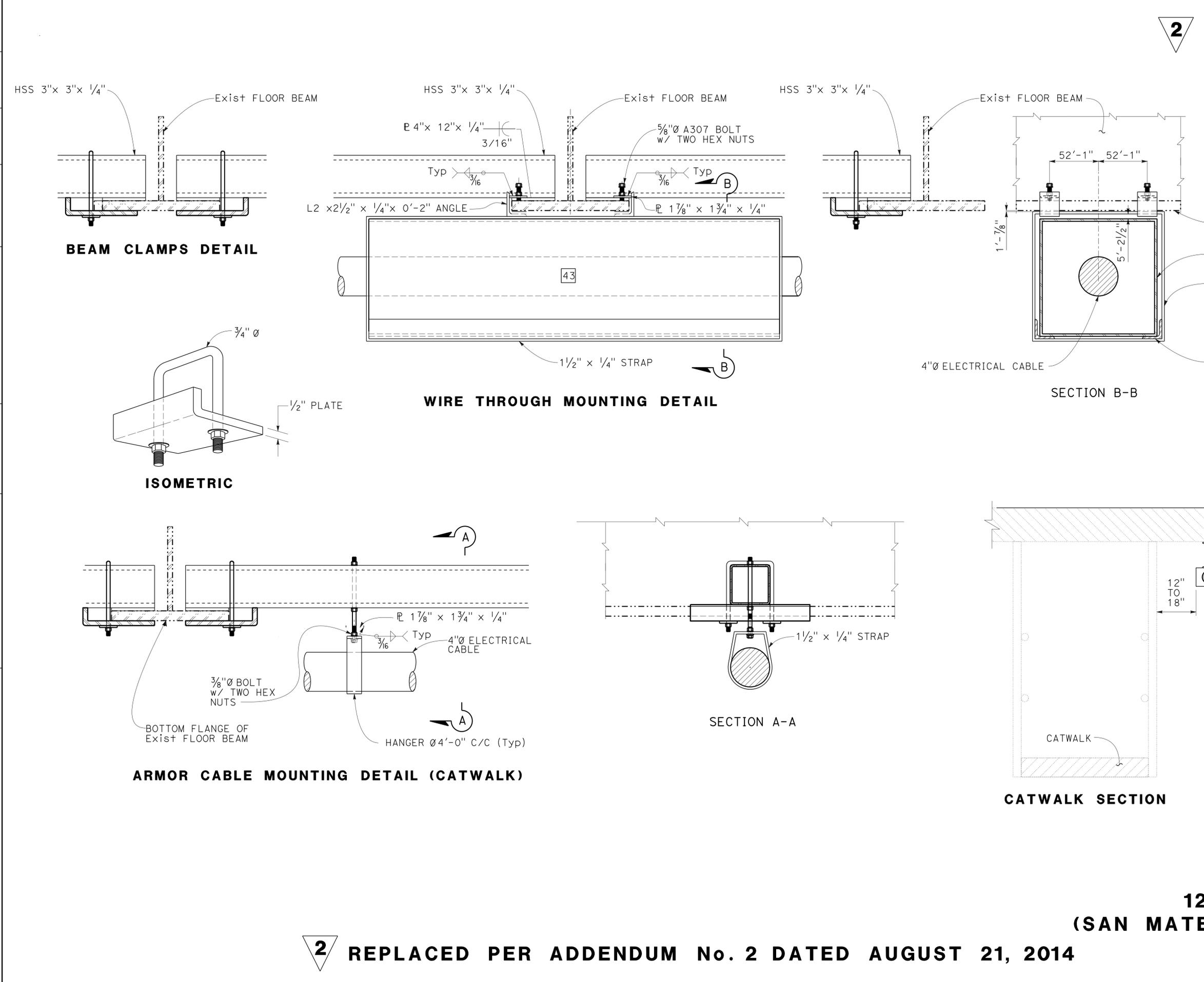
**REPLACED PER ADDENDUM No. 2 DATED AUGUST 21, 2014**

APPROVED FOR ELECTRICAL WORK ONLY

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET E-1 AND E-2

**E-18**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 ELECTRICAL



**2**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM,Ala	92	R14.4/R18.8, RO.0/R2.6	39	117
8-19-14 REGISTERED CIVIL ENGINEER DATE			5-27-14 PLANS APPROVAL DATE		
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**2**

**REPLACED PER ADDENDUM No. 2 DATED AUGUST 21, 2014**

**12 kV SYSTEM  
 (SAN MATEO-HAYWARD BRIDGE)**

NO SCALE

**E-21**