STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

ENGINEER'S DAILY REPORT

LAN Engineering Consultant

REPORT NO.	DATE		
359 {7-day}	December 07, 2007	M T W T F S S (DAY)	
NORMAL WORK HOUR: START: 7:00AM STOP: 3:30PM		WEATHER: CLOUDY/SHOWERS	
LOCATION : Construction Field Office : 333 Burma Road, Oakland 94607 Working Drawing Campus Office : 375 Burma Road, Oakland 94607			

04-SF-80-13.2/13.9
Contract No. 04-0120F4
{SAS Superstructure}

Caltrans Supervisor:
Gary Lai
Senior Bridge Engineer

Office Work:

❖ **Contract Change Order Meeting (Caltrans-PB-T.Y. Lin)**
Subject: Status or CCO, RCC, New Items.

- Discussed the following key items in the meeting:
  - CCO #42 that was returned with comments – PB indicated that they will have the CCO reviewed / Corrected / checked by their design group by the 17th of December.
  - I was requested to review CCO# 44 and return my comments as soon as possible.
  - CCR#31 – The light poles are to be removed from the contract as far as supplying them. The poles will be state furnished for the contractor to install and connect. The 8 Belvedere poles will be included in the state furnish package.
  - CCR 32 Navigation lighting design will be submitted next week per PB Design Group.
  - CCR 46 –Fog, Bell and Horn per USCG design is being reviewed by the Engineer of record and will be submitted soon.
  - CCR 58- Grounding Issues - I transmitted the recommendation to Grady Hart and Bill Shedd today for review and processing.
  - CCR 45- FAA Lighting Issues- Discussed the outstanding issues involved in this CCR. The CCR covers the following issues:
    - The placement (location) of the FAA Obstruction Lighting on the Bridge Structure. The original FAA approved permit shows FAA Obstruction Lights in different locations than what the contract plans show.
    - The number and location of the FFA Obstruction lights shown on the contract plans do not cover the boom structure on the tower top.
    - The possible conflict with the marker lights located on the tower head diaphragm.
    - The routing of conduit and mounting of the FAA Observation light on the tower top. These details were not included in the contract plans.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

ENGINEER'S DAILY REPORT

LAN Engineering Consultant

REPORT NO.	DATE		
359	{7-day}	December 07, 2007	M T W T F S S (DAY)

❖ **Work Confrontation Issue with Saeed Shahmirzai.**

Subject: MEP CCO Meeting discussions over CCR 45 (FAA Lighting) and related issues.

- After the CCO meeting I reported the incident to my supervisors (Gary Lai & Bill Shedd) explaining what had transpired in the meeting and what I considered unresolved issues. I had explained that I was unable to provide information to Mr. Shahmirzai before he had made decisions and conclusions as to the way to proceed in the matter. He refused to listen to me and finally I stopped trying to provide the information because of the harsh demeanor at that point.
- Saeed came to me in the afternoon asking to talk to me in the afternoon about the incident. The following things were discussed:
  - During the conversation Saeed accused me of bashing PB Power (Electrical Design Group). I tried to explain to him that I am not here to bash anyone only to make sure the project gets completed with all issues resolved not only in a timely manner but properly done to prevent problem in the future during construction and beyond.
  - Saeed brought up the standard comment: "The plans were reviewed and signed off by Caltrans ". I told Saedd that I am very tired of hearing that statement all the time. That type of statement indicates to me that the most important issue is to place the blame on someone or group instead of trying to resolve the problem.
  - I tried to point out to Sadeed that I do not work for him but I am trying to work with him to get the issues resolved but he is making it very difficult to accomplish this task. I told him that I do not appreciate his demanding tone when he talks to me as if I am performing tasks for him. I told him that I am doing as much as I can to help PB and the other groups to make this project run more smoothly and get things back on line for construction. Sadeed indicated that he appreciated all that I am doing to help and he hopes that I continue to do that.
  - Sareed told me that he hopes that I didn't take what happen in the meeting personally. I told him that I do not take anything that deals with disagreements within the work environment personally that I have dealt with people with difference of opinions before. I informed sadeed that I am here to provide as much help as I can to make sure the issues get resolved properly and in a timely manner. I only recommend and express my opinions to the owner I do not accuse or blame or criticize (that would be counterproductive).
  - I also finally got a chance to explain what I was trying to bring up at the CCO meeting about the FAA Lighting Issues.
  - In conclusion: I told Saeed that I hope he has learned why I am here and what my goal in performing my job. I told him I hope he has learned something about this incident and can move on from here.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

ENGINEER'S DAILY REPORT

LAN Engineering Consultant

REPORT NO.	DATE		
359	{7-day}	December 07, 2007	M T W T F S S (DAY)

- **Proposed Recommended Change on grounding issues in the contract.**
  Subject: Grounding issues.
  - Submitted a recommendation to correct conflicts, provide proper protection, update to changes to other contract changes that affect the grounding system in the SAS contract.
  - See attachment.

- **Fused splice connects for Luminaire.**
  Subject: Fused splice connector Information.
  - Sent a copy of the standard specifications covering the fused splice connector requirement for the fixtures in the contract.
  - See attachment.

- **CCR #45 FAA Lighting Issues.**
  Subject: Response from T.Y. Lin and PB for CCR #45.
  - PB and T.Y. Lin had submitted a recommendation for the mounting of the FAA Obstruction fixture on the tower top. This recommendation does address all the requirements as well as providing other issues as to maintainability of the fixture. This proposal needs to be reevaluated before approval.
  - See attachment.

Any questions or comments you can reach me at (916) 919-7158. My E-Mail address is Mike.Travis@LANEngineering.com or Michael_Travis@dot.ca.gov

END OF REPORT

ATTACHMENTS:

1. **CCR #58 Grounding Issues Recommendations.**
2. **Fusing for each Luminaire Email.**
3. **CCR 45 FAA Lighting Email.**

SIGNATURE

Name	TITLE
Michael F. Travis	Electrical Engineer – LAN Engineering

Attachment #1 (1/17)

Michael
Travis/HQ/Caltrans/CAGov
12/07/2007 08:04 AM

To Bill Shedd/D04/Caltrans/CAGov@DOT, Grady Hart/HQ/Caltrans/CAGov@DOT, Gary J Lai/D04/Caltrans/CAGov@DOT
cc SAS - Caltrans
bcc
Subject Recommended Changes to the SAS Grounding System

Bill / Gary / Grady

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.

The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors outside the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

I would also suggest that the modifications made in the contracts that the SAS grounding connects to be verified and updated in the changes.

Attached is the plan sheets with my comments for this proposed CCR # 58.

Attached Contract Plans with Comments : Grounding Issues - Comments by Michael Travis 12_07_2007.pdf

Any questions or comments please let me know.

Michael Travis
SFOBB Construction Offices
Design Campus Building
375 Burma Road
Oakland Ca. 94607
Phone: 510-808-4618

TRAFFIC OPERATIONS SYSTEMS (TOS)

AVO	Analog Video Output
CCR	Camera Control Receiver
CCU	Camera Control Unit
CIA	Controller Interface Assembly
COMM	Communication
FDU	Fiber Distribution Unit
F/O	Fiber Optic
FODM	Fiber Optic Data Modem
FDC	Fiber Optic Drop Cable
FPC	Fiber Optic Pigtail Cable
FSC	Fiber Splice Closure
FTC	Fiber Optic Trunkline Cable
IF	Input File
MVDS	Microwave Vehicle Detection Sensor
PDA	Power Distribution Assembly
PL	Preformed Loop Detection Station
SCA	Serial Cable Assembly
SMFO	Single Mode Fiber Optic
TB	Terminal Box
TSC	Trunkline Splice Closure
TVCP	CCTV Camera Control Power Cable
TVC	CCTV Camera Control Cable
TVL	CCTV Camera Video Cable
TVP	CCTV Camera Power Cable
VTDD	Video Transmitter Duplex Data

PROJECT NOTES

1. 27C, 2#12 + #12 G.
2. 27C, 2#10 + #10 G.
3. 27C, 4#10 + #10 G.
4. 27C, 3#10 + #10 G.
5. 27C (Type 4), 2#12 + #12 G.
6. 27C (Type 4), 2#10 + #10 G.
7. 41C, 2-6 pairs #18, IS/OA.
8. 78C, 50 Pairs #18, IS/OA.
9. 27C, 3/C #6 + G.
10. 21C, 2-1 pair #18 (for Call Box signal) shielded pairs and overall shield.
11. 21C, 3#12 (for Call Box power).
12. 21C, (4) 1 pair #18 (for Call Box signal). Part of (2) 1-2 pairs #18, shielded pairs and overall shield.
13. 78C, 2#2 + #6 G and 2#10 + #10 G (for CMS Power).
14. 78C, Harness #4 and Harness #5 (for CMS Signal).
15. 41C, Cable type TVP and TVCP (for CCTV Power).
16. 41C, Cable type TVC and TVL (for CCTV Control Signal).
18. 78C, Cable type MVDS DLC (for MVDS Signal).
20. 78C, Cable type 10 DLC (for Preformed Loop Signal).
21. 27C (Flexible Conduit) 6#10 + #10 G.
22. 27C (Flexible Conduit) 3#10 + #10 G.
23. 27C, 7#10 + #10 G.
24. 27C, 6#10 + #10 G.

PROJECT NOTES (Continuation)

25. 27C, 7#10 + #10 G.
26. 41C, 3#6 + #8 G.
27. 41C, 3#6 + #10 G.
28. 21C, PVC coated - 2#10 + #10 G.
29. 21C, PVC coated, 3#12 (for Call Box Power).
30. 500 kcmil Bare Copper Wire.
31. 250 kcmil Bare Copper Wire.
32. #4/0 Bare Copper Wire.
33. #2 Bare Copper Wire.
34. 41C, 3#6 + #8 G, 3#8 + #10 G.
35. 41C, 6#8 + #10 G.
36. 21C, PVC coated, 1-2 pairs #18 (For Call Box signal).
37. Metal clad type cable with PVC overall jacket 3/C #10 (for Bike Path lighting).
38. Metal clad type cable with PVC overall jacket 1-2 pairs #18, shielded pairs and overall shield (for Call Box signal).
39. Metal clad type cable with PVC overall jac
40. 78C, Cable Type A Fiber Optic.
41. 21C, (Flexible Conduit) 2#10 + 10 G.
42. 27C, 2#12 + #12G, 2#10 + #10G.
43. 21C, (Flexible conduit) 2#12 + 12 G.
44. 41C, 2#12 + #12 G, 6#10 + #10 G.
45. 27C, 2#12 + #12 G, 4#10 + #10 G.

Attachment #1 (2/17)

INFORMATION ONLY

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

GENERAL NOTES

1. Conduit routing is diagrammatic. Pull box locations shall be located as shown on plan drawings. The Contractor shall provide additional pull boxes as required. Exact locations of equipment and devices may be adjusted depending on field conditions or by the Engineer.
2. Minimum size of conduits shall be 21 mm. Exposed conduits shall be PVC coated rigid galvanized steel, and conduits located inside girder shall be rigid galvanized steel.
3. Conduit fittings for 78 mm conduits and larger shall have a 610 mm minimum bending radius.
4. All conduits, including spares, shall be provided with pull wires prior to cable installations.
5. All equipment and devices shall be provided with nameplate tags per drawings.
6. All feeders and branch circuits shall be provided with ground wire.
7. 15 kV splice boxes shall be installed as shown and permanently marked "DANGER-HIGH VOLTAGE-KEEP OUT". The letters shall be block type and at least 50 mm in height.
8. The Contractor shall label all conductors and cables per wiring diagrams.
9. Padlocks shall be installed on all cabinets located on the platforms to prevent unauthorized access.
10. Call boxes will be State-furnished. (The Contractor shall install and terminate conductors per wiring diagram.
11. Ladder type cable trays shall be installed for each 15 kV and 600 V systems.
12. Solid bottom cable trays shall be installed for each low level signals, CALTRANS communications, fiber optic systems, and for Non-Caltrans utilities.
13. For Strong Motion Detection System general notes, see sheet E-361.
14. All E sheets are accurate for electrical work only.
15. All dimensions are in millimeters unless otherwise shown.
16. All unused conductors inside pull boxes shall be taped and coiled.
17. "Similar" when shown on the plans means this detail is applicable to different structure and conduit sizes.
18. Electrical fixtures shall not be field welded to the box girders or crossbeams. All welding to the box girders and crossbeams shall be shown on the box girder and crossbeam shop drawings for review and approval by the Engineer.
19. All welding of electrical fixtures to the tower shall be shown on the tower shop drawings for review and approval by the Engineer.
20. All connections to steel elements of the self-anchored suspension bridge superstructure of electrical equipment and fixtures, including conduits, pull boxes, lighting fixtures, messenger cables and others, shall be shop welded or bolted. All connection details shall appear on the working drawings for review and approval by the Engineer.
21. Prior to ordering any cable tray support structures, the Contractor shall:
    - Refer to Structural sheets to determine the locations of cable tray support structures.
    - Determine, based upon field conditions, when and where to use cable tray vertical or horizontal bends, horizontal tees or reducers.
    - Refer to AS-sheets to determine the type of cable tray support to use based on field conditions.
    - Cable tray support structures shown on the AS-sheets are generic and may have to be adapted to suit field conditions.
    - All modifications to the cable tray support structures as shown on the AS-sheets shall be approved by the Resident Engineer.
22. All installation of electrical conduit, equipment or pull boxes shall be either shop welded or bolted.

ELECTRICAL NOTES AND ABBREVIATIONS

E-8

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	SF	80	13.2/13.9	93	1204

12/19/02
REGISTERED ELECTRICAL ENGINEER DATE

12-6-04
PLANS APPROVAL DATE

JENS ERLINGSSON No. 8243 Exp. 3/31/04 ELECTRICAL

PB POWER, Inc.
A Parsons Brinckerhoff Company
303 Second St., Suite 700N
San Francisco, CA 94107-1517

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Caltrans Metric

	DATE	REVISED BY	DATE REVISED
AB	08/02	JM	09/02
		IAH	3/04

CALCULATED/DESIGNED BY
CHECKED BY

DESIGN OVERSIGHT
BEHZAD GOLEMOHAMMADI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

DATE PLOTTED = 09-DEC-2004 15:16
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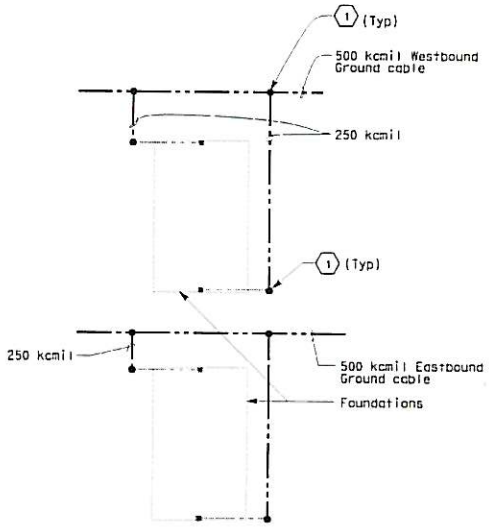
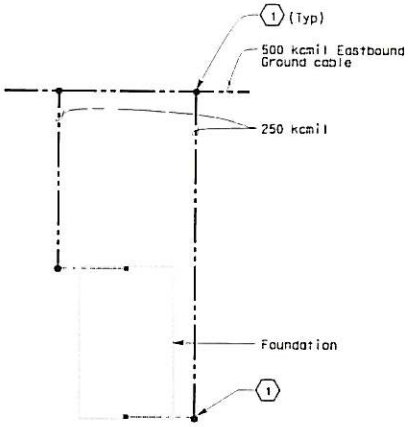


DETAIL 1
TYPICAL FOOTING GROUNDING
BENTS E2 AND W2



DETAIL 2
PIER T1 FOOTING GROUNDING

Attachment #1 (3/17)

INFORMATION ONLY

SHEET NOTE:

(1) Exothermic weld connection.

There is a conflict in the plans and there needs to be a clarification / correction.

All the plans except this sheet indicate a proper ground grid connection.

This plan not only excludes the connect to the westbound ground grid it does not show the possible indirect connect that should be made.

I recommend that his sheet be corrected to conform to the other contract sheets.

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

DETAILS
UNDERGROUND
FOUNDATION GROUNDING
NO SCALE

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	SF	80	13.2/13.9	105	1204

12/19/02
REGISTERED ELECTRICAL ENGINEER DATE
12-6-04
PLANS APPROVAL DATE
JENS ERLINGSSON No. 9249 Exp. 3/31/05 ELECTRICAL
PB POWER, Inc.
A Parsons Brinckerhoff Company
303 Second St., Suite 700N
San Francisco, CA 94107-1317

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Caltrans
DESIGN OVERSIGHT
BEHZAD GOLEMOHAMMADI
CALCULATED/ DESIGNED BY: KG
CHECKED BY: PF
DATE REVISED: 12/01
REVISED BY: DATE

E-22

LAST REVISION 00-00-00 DATE PLOTTED => 09-DEC-2004 TIME PLOTTED => 08:59

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CU 04251
EA 0120F1

Attachment #1 (4/17)

INFORMATION ONLY

Caltrans Metric

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	80	13.2/13.9	126	1204

12/19/02
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12-6-04
PLANS APPROVAL DATE

PB POWER, Inc.
A Parsons Brinckerhoff Company
303 Second St., Suite 700N
San Francisco, CA 94107-1317

REGISTERED PROFESSIONAL ENGINEER
JENS ERLINGSSON
No. 8249
Exp. 9/30/06
ELECTRICAL
STATE OF CALIFORNIA

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UTILITY PANEL UP-104 (CKT #1095)

Location: SAS SUPERSTRUCTURE SERVICE PLATFORM 4

LOAD DESCRIPTION	LTG	REC	OTH.	CB		CB	LTG	REC	OTH.	LOAD DESCRIPTION
Spare				20/1	1 A 2	20/1				Spare
Recept (2) Westbound South Barrier		360		20/1	3 B 4	20/1				Spare
Recept (2) Service Platform #4		360		20/1	5 C 6	20/1	820			Crossbeam Ltg (20)
Recept (2) Girder		360		20/1	7 A 8	20/1	984			Girder Lighting (24)
Recept (4) Crossbeam		720		20/1	9 B 10	20/1			2000	Controller Cabinet #TOS-4WA
Spare				20/1	11 C 12	20/1			2000	Controller Cabinet #TOS-4WB
TOTAL VA		1800					1804		4000	TOTAL VA

LOAD SUMMARY (INCLUDES .90 PF) (VA)

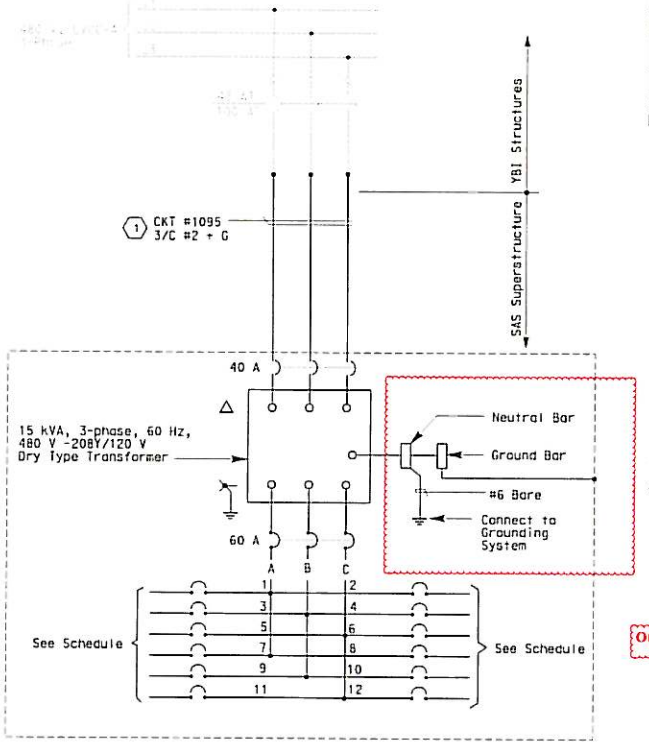
Lighting (At 100%): 1804
Gen Use (1st 10 kVA at 100% plus 50% of remainder): 5800

BALANCE (kVA)

Phase A - 1.344
Phase B - 3.080
Phase C - 3.180

VOLTAGE: 208/120 V
PHASE/WIRES: 3-phase, 4-wire
BUS RATING: 100 A
MAIN: 60 A
MOUNTING: Surface
K.A.I.C.: 10

TOTAL kVA: 7.604



NOTES:

1. The Contractor shall provide nameplates and circuit schedules as shown.
2. Install transformer/panelboard inside a PB-8A enclosure (fiberglass) to be sized by the Contractor.
3. References:
   - For circuit and conduit/cable tray schedules, see sheets starting at E-401.
   - For pull box schedule, see sheet E-83.
   - For crossbeam lighting plan, see sheet E-119.

SHEET NOTES:

1. The Contractor shall extend and coil 5 meters of cable in manhole 25. All cables shall be tagged with circuit numbers as shown. For location of manhole 25, see sheet E-11.

Other Sheets Similar : 126, 127, 128, 129, 130.

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

DETAILS
SAS SUPERSTRUCTURE ROADWAY WESTBOUND PANEL UP-104 SCHEDULE

E-59

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

DESIGN OVERSIGHT: BEHZAD GOLEMOHAMMADI
CALCULATED/DESIGNED BY: JP DATE 8/01
CHECKED BY: BL 12/01
REVISED BY
DATE REVISED

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CU 04251 | EA 0120F1

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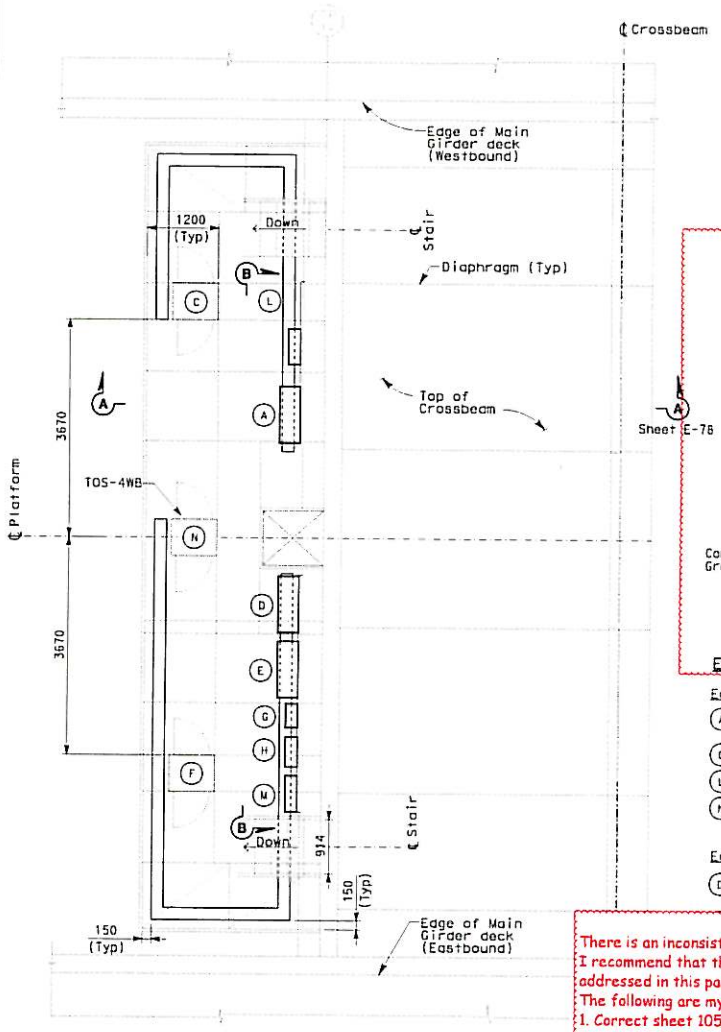
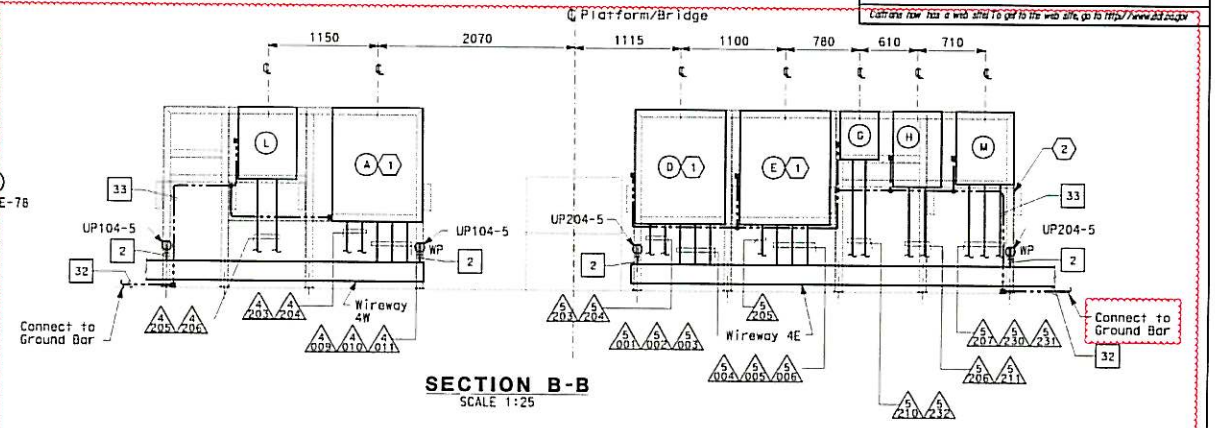
Attachment #1 (5/17)



EQUIPMENT ARRANGEMENT PLAN
SCALE 1:40



SECTION B-B
SCALE 1:25

EQUIPMENT SCHEDULE:

Equipment for Westbound

- (A) Utility Panel, UP-104 100 A, 208/120 V, 3-phase, 4-wire.
- (C) Controller Cabinet #TOS-4WA.
- (L) TOS/COM-4WA Pull Box.
- (N) Controller Cabinet #TOS-4WB (Temporary)

Equipment for Eastbound

- (D) Utility Panel, UP-204 100 A, 208/120 V, 3-phase, 4-wire.

SHEET NOTES:

1. Equipment dimensions as shown are approximate.
2. For electrical panel support details, see AS-sheet.

Other Sheets Similar : 135, 136, 137, 138.

NOTES:

1. References:
   - For platform 4 conduit, lighting and grounding plan, see sheet E-114.
   - For location of platform 4, see sheet E-46.
   - TOS are shown for conduit routing only. For typical details of TOS controller and devices, see sheets E-344 through E-361.
   - For schedule of utility panel UP-104, see sheet E-59.
   - For schedule of utility panel UP-204, see sheet E-150.
   - For schedule of lighting panel LP-219, see sheet E-155.
   - For typical panel arrangement details of SCADA communications terminal box, see sheet E-321.
   - For pull box schedule, see sheet E-83.
   - For circuit and conduit/cable tray schedules, see sheets starting at E-401.

There is an inconsistency in the plans dealing with the grounding.
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The following are my suggestions:
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4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

DETAILS
SAS SUPERSTRUCTURE ROADWAY WESTBOUND PLATFORM 4 ARRANGEMENT
SCALE AS NOTED

E-71

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS 0 20 40 60 80

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TIME PLOTTED = 09:57

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

DESIGN OVERSIGHT
BEHZAD GOLEMOHAMMADI

CALCULATED/DESIGNED BY IAH
CHECKED BY IAH

DATE	REVISED BY
1/02	DATE REVISED
1/02	3/04

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	SF	80	13.2/13.9	134	1204

12/19/02
REGISTERED ELECTRICAL ENGINEER DATE

12-6-04
PLANS APPROVAL DATE

JENS ERLINGSSON No. 8249 Exp. 9/30/06 ELECTRICAL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

PB POWER, Inc.
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San Francisco, CA 94107-1317

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Attachment #1 (6/17)

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

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DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	80	13.2/13.9	150	1204

REGISTERED ELECTRICAL ENGINEER 12/19/02 DATE

12-6-04
PLANS APPROVAL DATE

PB POWER, Inc.
A Parsons Brinckerhoff Company
303 Second St., Suite 700N
San Francisco, CA 94107-1317

REGISTERED PROFESSIONAL ENGINEER JENS ERLINGSSON No. 8249 Exp. 9/30/06 ELECTRICAL STATE OF CALIFORNIA

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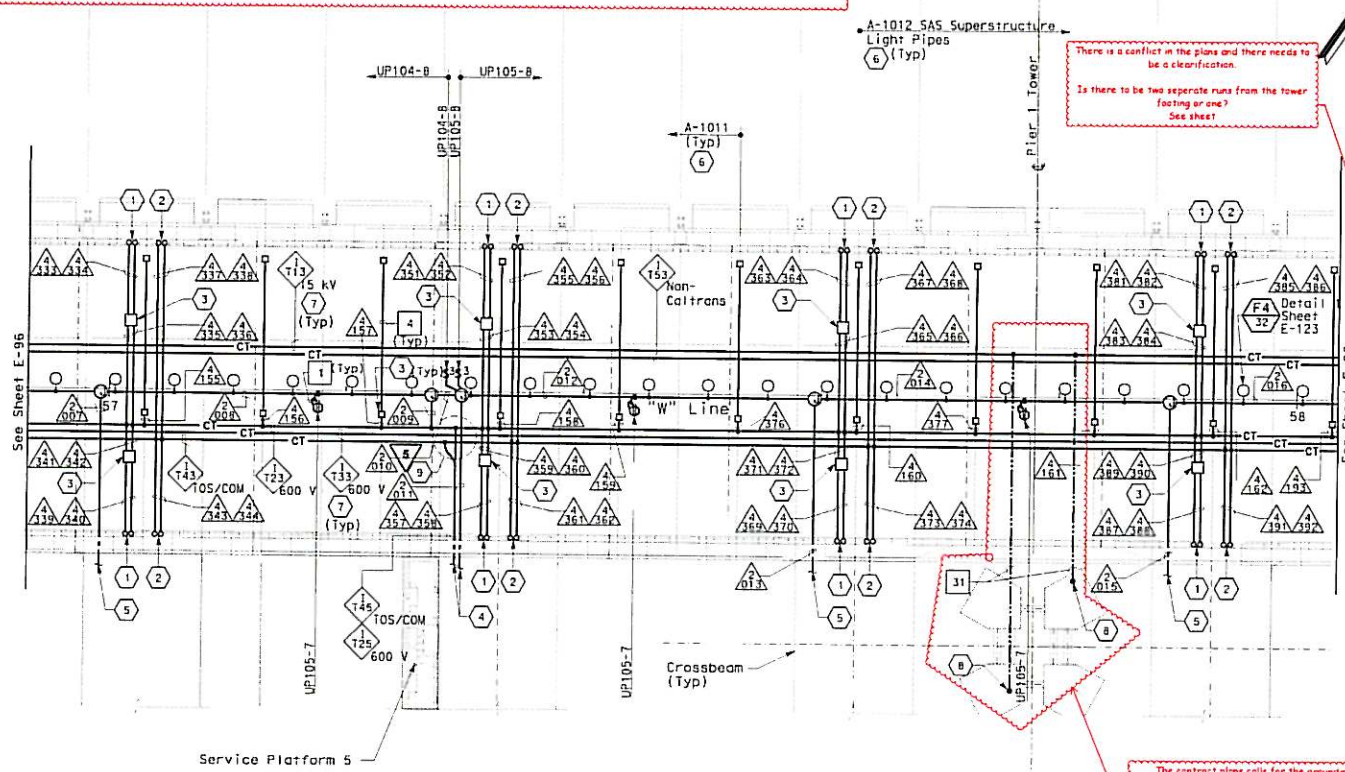

There is a conflict in the plans and there needs to be a clearification.

Is there to be two seperate runs from the tower footing or one? See sheet

The contract plans calls for the grounding connection to the westbound ground conductor. This needs to be installed.

The plans indicate that the ground conductor to be bare copper and run in the marine environment outside the structure. The conductor outside the structure needs to be protected.

SAS SUPERSTRUCTURE - CONDUIT AND CABLE TRAY PLAN

SHEET NOTES:

1. Conduit up to PB-LTG located in barrier, see sheet E-47.
2. Conduit up to PB-COM located in barrier, see sheet E-47.
3. PB-2A locate on top of floor.
4. For cable tray run and lighting inside crossbeam, see sheet E-115.
5. For lighting inside crossbeam, see sheet E-119.
6. PB-2L with circuit for future light pipes. See sheet E-121 for installation details and E-130 for lighting schedule.
7. For cable tray & ground bar support, refer to sheet E-125.
8. 250 kcmil copper grounding conductor exothermically welded to 500 kcmil system grounding conductor and run down to tower footer and exothermically welded to rebar system. For grounding interface, see sheet E-111.
9. For fiber splice tray detail, refer to sheet E-355.

NOTES:

1. References:
   - TOS equipment is shown for conduit routing only. For typical details of TOS controller and devices, see sheets E-344 through E-357.
   - For types of pull boxes, splice boxes and enclosures, see sheet E-83.
   - For bridge grounding plan, see sheet E-111.
   - For circuit and conduit/cable tray schedules, see sheets starting at E-401.
2. For other related work not shown on this sheet, see Electrical Special Provisions.
3. The girder lighting fixtures are shown diagrammatically. Contractor shall install fixtures at railing posts with a maximum of 8000 mm between fixtures. For types and typical lighting fixture installation details, see sheet E-123.
4. The cable trays are shown diagrammatically. For typical girder cable tray plans and sections, see sheets E-124 and E-125.

SAS SUPERSTRUCTURE GIRDER WESTBOUND
LIGHTING AND ELECTRICAL SYSTEMS
SCALE 1:200

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E-97

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There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

Attachment #1 (7/17)

Caltrans Metric

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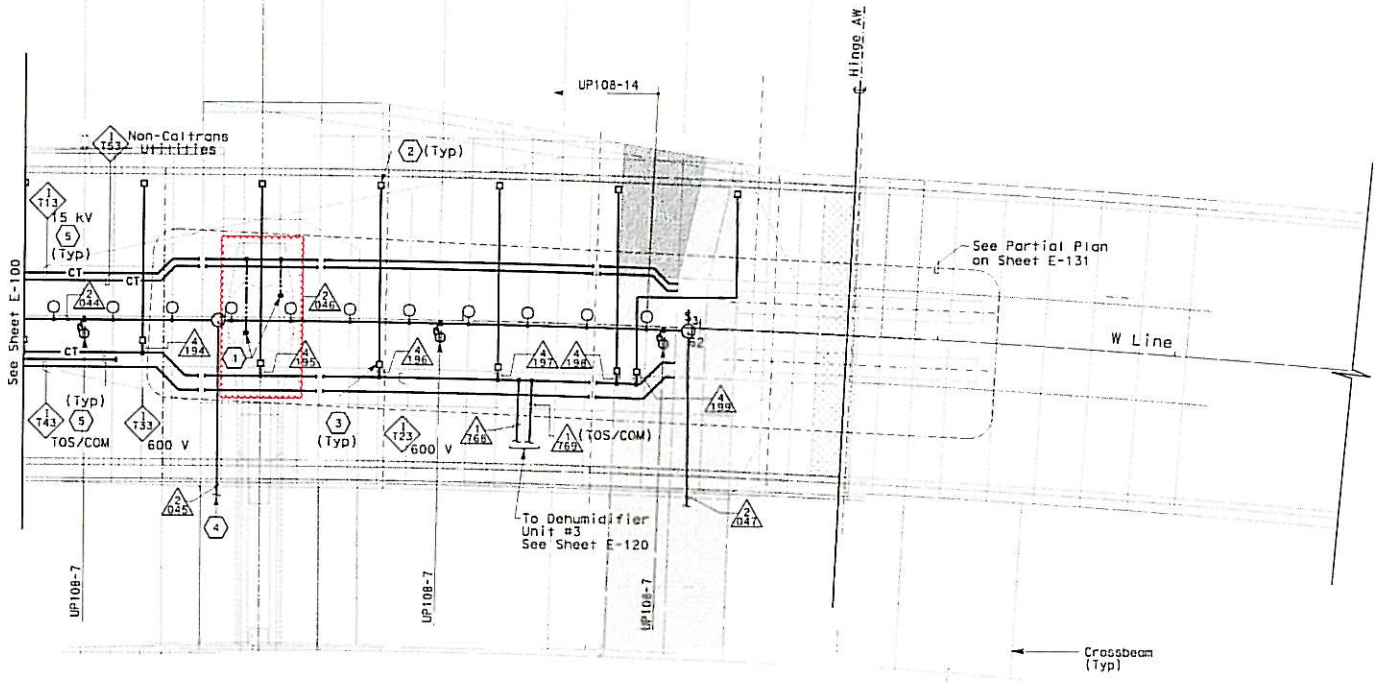

SAS SUPERSTRUCTURE - CONDUIT AND CABLE TRAY PLAN

SHEET NOTES:

1. 250 kcmil bare copper grounding conductor exothermically welded to 500 kcmil system ground conductor. See E2/T1 structures EA-0120E1 for limit of work.
2. PB-2A with circuit for future light pipes.
3. PB-2A, locate on top of floor.
4. For lighting inside crossbeam, see sheet E-119.
5. For cable tray & ground bar support, refer to sheet E-125.

NOTES:

1. References:
   - TOS equipment is shown for conduit routing only. For typical details of TOS controller and devices, see sheets E-344 through E-361.
   - For types of pull boxes, splice boxes and enclosures, see sheet E-83.
   - For bridge grounding plan, see sheet E-111.
   - For circuit and conduit/cable tray schedules, see sheets starting at E-401.
2. For other work related to Hinge AW and items not shown on this sheet, see Electrical Special Provisions.
3. The girder lighting fixtures are shown diagrammatically. Contractor shall install fixtures at railing posts with a maximum of 8000 mm between fixtures. For types and typical lighting fixture installation details, see sheet E-123.
4. The cable trays are shown diagrammatically. For typical girder cable tray plans and sections, see sheets E-124 and E-125.

SAS SUPERSTRUCTURE GIRDER WESTBOUND
LIGHTING AND ELECTRICAL SYSTEMS
SCALE 1:200

E-101

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Attachment #1 (8/17)

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04	SF	80	13.2/13.9	165	1204

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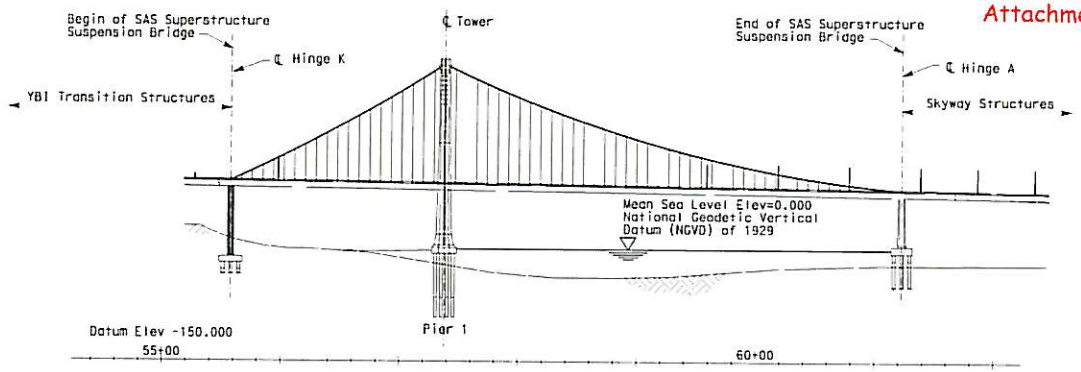


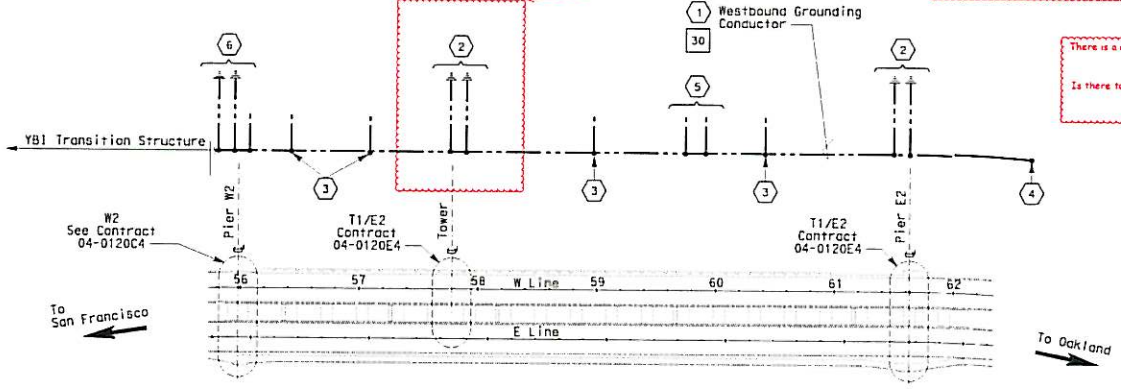
ELEVATION

The contract plans calls for the grounding connection to the westbound ground conductor. This needs to be installed

The plans indicate that the ground conductor to be bare copper and run in the marine environment outside the structure.
The conductor outside the structure needs to be protected.

There is a conflict in the plans and there needs to be a clearification.

Is there to be two seperate runs from the tower footing or one?
See sheet



PLAN

SHEET NOTES:

1. Install one separate 500 kcmil bare copper system grounding conductor in westbound girder, spanning the entire SAS Superstructure. The system grounding conductor shall be physically attached to the 15 kV cable tray and 15 kV conduits (flexible and rigid) routed through the pipe beams in hinges.
2. At pier E2 and tower install, two 250 kcmil bare copper ground conductors and shall be exothermically welded to the 500 kcmil system grounding conductor, run embedded down the pier and tower columns, T1/E2 see contract 04-0120E4 for limited of work.
3. Approximately 1/3 the distance between piers and tower, two #4/0 bare copper ground conductors shall be exothermically welded to the 500 kcmil system grounding conductor and bonded to all the cable trays.
4. Exothermically weld the 500 kcmil system grounding conductor, at SAS Superstructure and Skyway Structure girder interface, to the adjoining 500 kcmil system grounding conductor located at the Skyway Structure.
5. Provide two ground bars in the girder. These ground bars shall provide a ground point of connection for platform equipment.
6. For continuation see W2 contract 04-0120C4. For limited of work.

NOTES:

1. References:
   - For SAS Superstructure Girder Eastbound grounding, see sheet E-196.
   - For grounding at service platforms, see platform sheets E-114 through E-118.

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

DETAILS
SAS SUPERSTRUCTURE GIRDER WESTBOUND GROUNDING PLAN
SCALE 1:2000

E-111

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CHECKED BY	IAH	08/02	DATE REVISED	2/04

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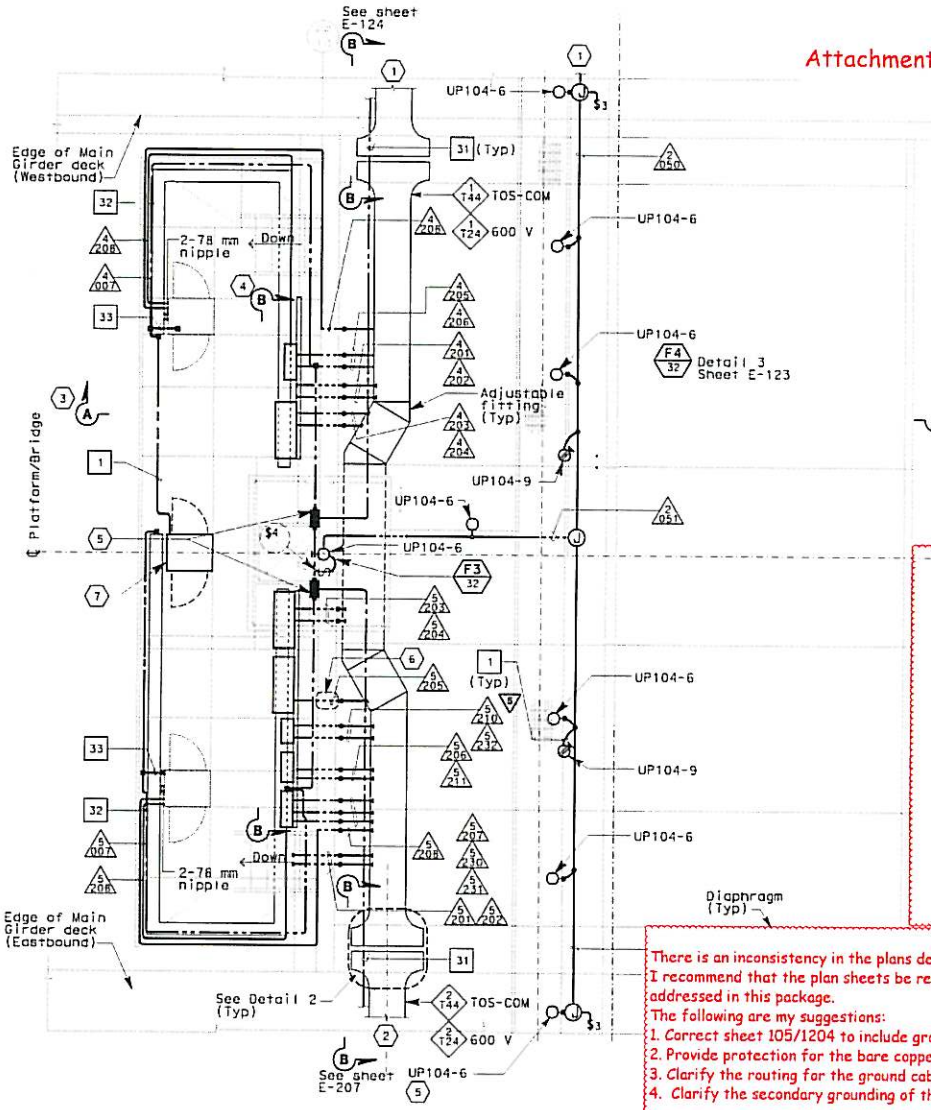
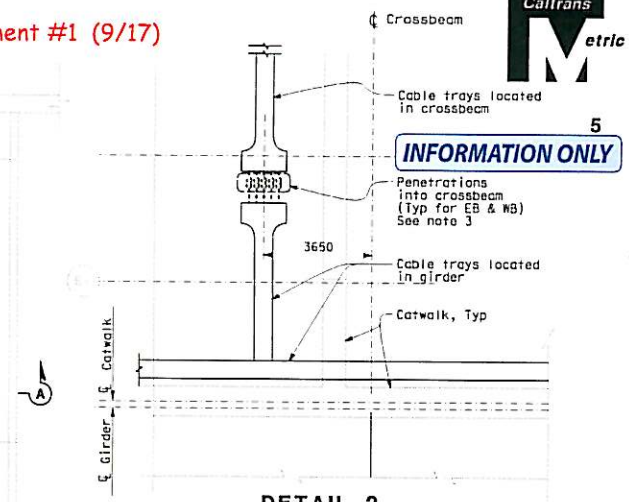
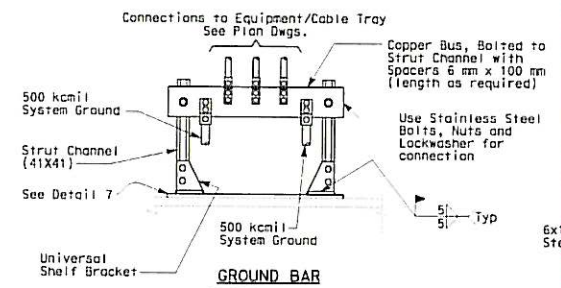
Attachment #1 (9/17)



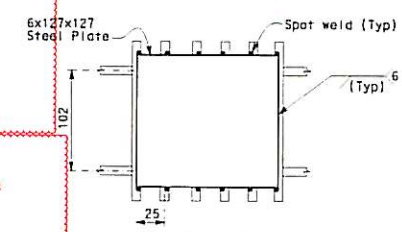
PLAN
SCALE 1:40



DETAIL 2
NO SCALE



GROUND BAR
DETAIL 5
NO SCALE



DETAIL 7
NO SCALE

There is an inconsistency in the plans dealing with the grounding.
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The following are my suggestions:
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2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

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DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	80	13.2/13.9	166	1204

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PB POWER, Inc.
4 Parsons Brinckerhoff Company
303 Second St., Suite 700N
San Francisco, CA 94107-1317

REGISTERED PROFESSIONAL ENGINEER JENS ERLINGSSON No. 8249 Exp. 9/30/06 ELECTRICAL STATE OF CALIFORNIA

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SHEET NOTES:

1. For continuation inside WB girder, see sheet E-96.
2. For continuation inside EB girder, see sheet E-181.
3. For Section A-A, see sheet E-78.
4. For Section B-B, see sheet E-71.
5. For typical ground bar installation, see Detail 5 this sheet.
6. For location and number of pipe sleeves to the utility platforms, see Typical Crossbeam Details sheets.
7. TOS-4WB for the temporary mobil CMS. Control cabinet shall remain for future use. U.O.N.

NOTES:

1. Reference:
   - For typical lighting installation see sheet E-123.
   - For circuit, conduit/cable tray schedules, see sheets starting at E-401.
2. For location and number of cable tray supports in the crossbeams, see sheets E-124 and E-207. For cable tray support details, see AS-sheets.
3. For location of pipe sleeves at the utility platform crossbeams, see Typical Crossbeam Details sheets.

DETAILS
SAS SUPERSTRUCTURE GIRDER WESTBOUND
PLATFORM 4 CONDUIT, LIGHTING AND GROUNDING PLAN
SCALE AS NOTED

E-114

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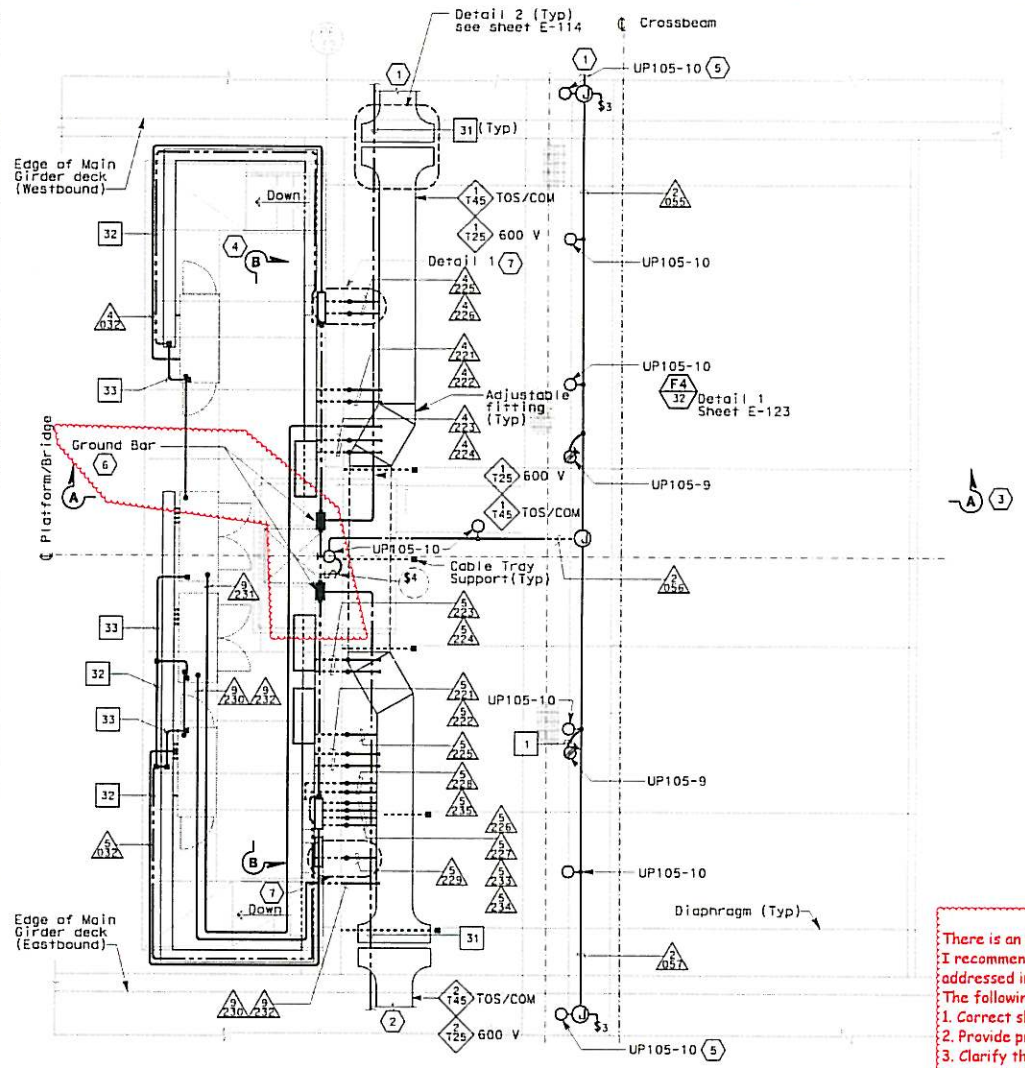

SHEET NOTES:

1. For continuation inside girder, see sheet E-97.
2. For continuation inside girder, see sheet E-182.
3. For Section A-A, see sheet E-78.
4. For Section B-B see sheet E-72.
5. Locate light fixture approx. half-way between girder wall & girder walkway.
6. For typical grounding installation see sheet E-125.
7. For sleeve penetration detail, see sheet E-114.

NOTES:

1. Reference:
   - Lighting conduit for crossbeams without platforms see sheet E-119.
   - For wiring diagram see sheet E-107.
   - For typical lighting installation see sheet E-123.
   - For circuit, conduit/cable tray schedules, see sheets starting at E-401.
2. For TOS communication cable block diagram, see sheet E-353.

Other Sheets Similar : 167, 168, 169, 170.

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

DETAILS
SAS SUPERSTRUCTURE GIRDER WESTBOUND
PLATFORM 5 CONDUIT, LIGHTING AND GROUNDING PLAN
SCALE 1:40

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E-115

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Attachment #1 (10/17)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	80	13.2/13.9	177	1204

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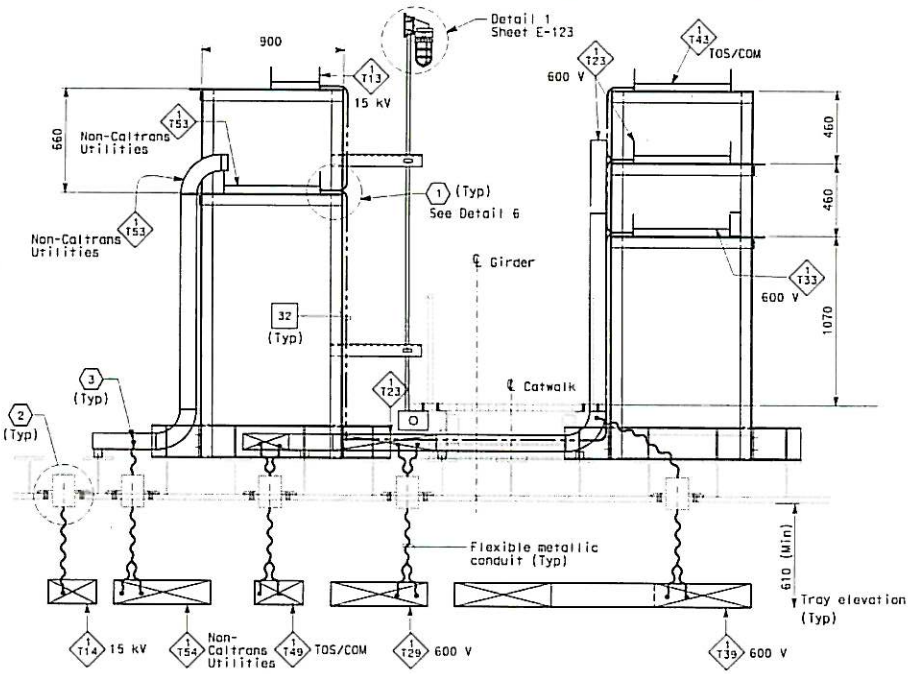
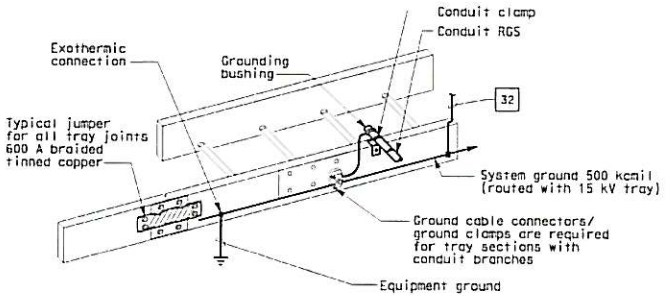


SECTION E-E - TYPICAL CABLE TRAY SUPPORT

SCALE: 1:15



GROUNDING OF METALLIC RACEWAYS

DETAIL 6

NO SCALE

SHEET NOTES:

1. Provide connections to 500 kcmil ground system for all cable trays every 200 meters.
2. For location of conduit penetrations thru girder plate, see Utility Detail No. 1 and Utility Layout sheets respectively. To prevent moisture from passing inside the sleeve, Contractor shall install sealant after conduits have been installed. Spares shall be plugged and capped.
3. Contractor shall provide hooked conduit support grips for each conduit or group of conduits passing through the cable penetrations. Contractor shall provide support for grips as needed.

NOTES:

1. See Structural drawings for Catwalk Support Details.
2. For SAS Superstructure Girder access detail #2, see structural dwgs.
3. Ground cable shall be installed along full length of each cable tray.
4. For typical cable tray support details, see AS-sheets.

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

DETAILS

SAS SUPERSTRUCTURE GIRDER WESTBOUND TYPICAL TRAY AND GROUNDING INSTALLATION

NO SCALE

E-125

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Attachment #1 (11/17)

Caltrans Metric

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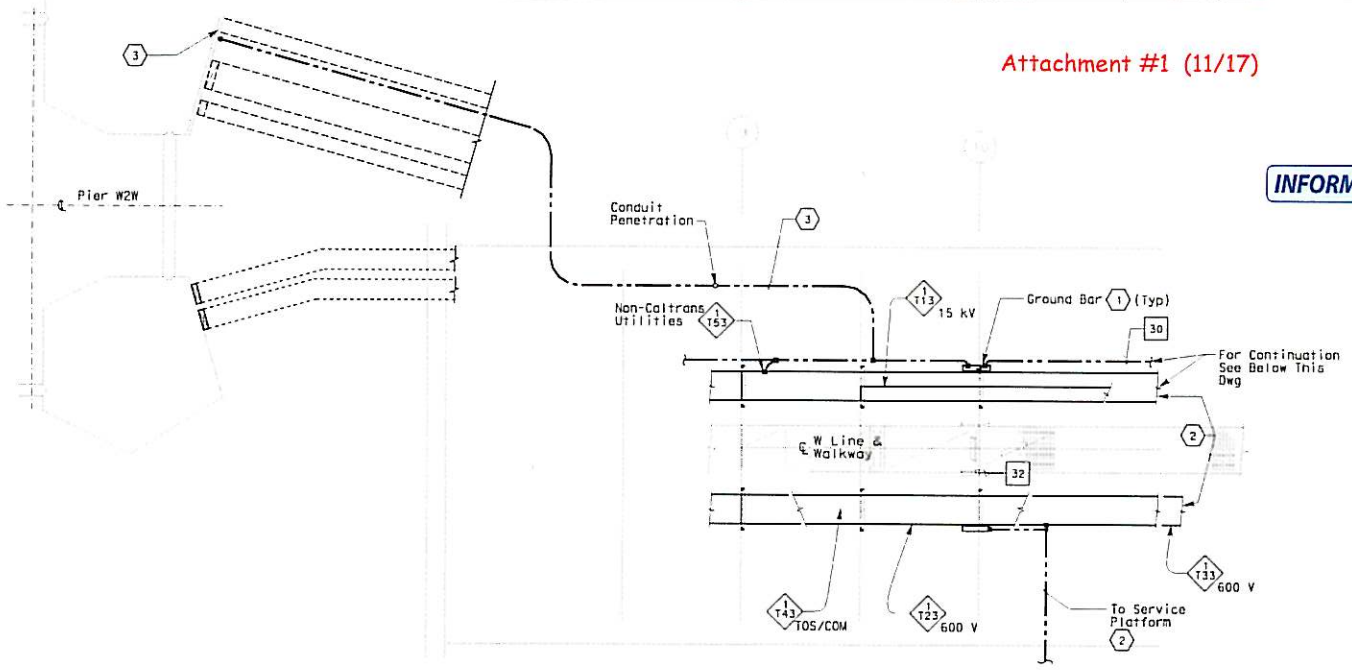

GIRDER PLAN - CABLE TRAY AND GROUNDING

SCALE 1:50

SHEET NOTES:

1. Ground bar detail see sheet E-125.
2. For actual conduit locations, see girder level, cable tray and conduits plans, see sheet E-96 thru E-101.
3. 500 kcmil bare copper ground cable run along with tray.

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

DETAILS
SAS SUPERSTRUCTURE GIRDER WESTBOUND
TYPICAL TRAY AND GROUNDING INSTALLATION AT PIER W2W

SCALE AS NOTED

E-127

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CU 04251

EA 0120F1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

DESIGN OVERSIGHT
BEHZAD GOLEMOHAMMADI

CALCULATED/DESIGNED BY FK DATE 08/02 REVISED BY
CHECKED BY IAH 08/02 DATE REVISED

LAST REVISION 00-00-00 DATE PLOTTED => 09-DEC-2004 TIME PLOTTED => 10:55

Attachment #1 (12/17)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	80	13.2/13.9	216	1204

Caltrans Metric

INFORMATION ONLY

REGISTERED ELECTRICAL ENGINEER 12/19/02 DATE

12-6-04
PLANS APPROVAL DATE

PB POWER, Inc.
A Parsons Brinckerhoff Company
303 Second St., Suite 700N
San Francisco, CA 94107-1317

REGISTERED PROFESSIONAL ENGINEER JENS ERLINGSSON No. 8249 Exp. 9/30/06 ELECTRICAL STATE OF CALIFORNIA

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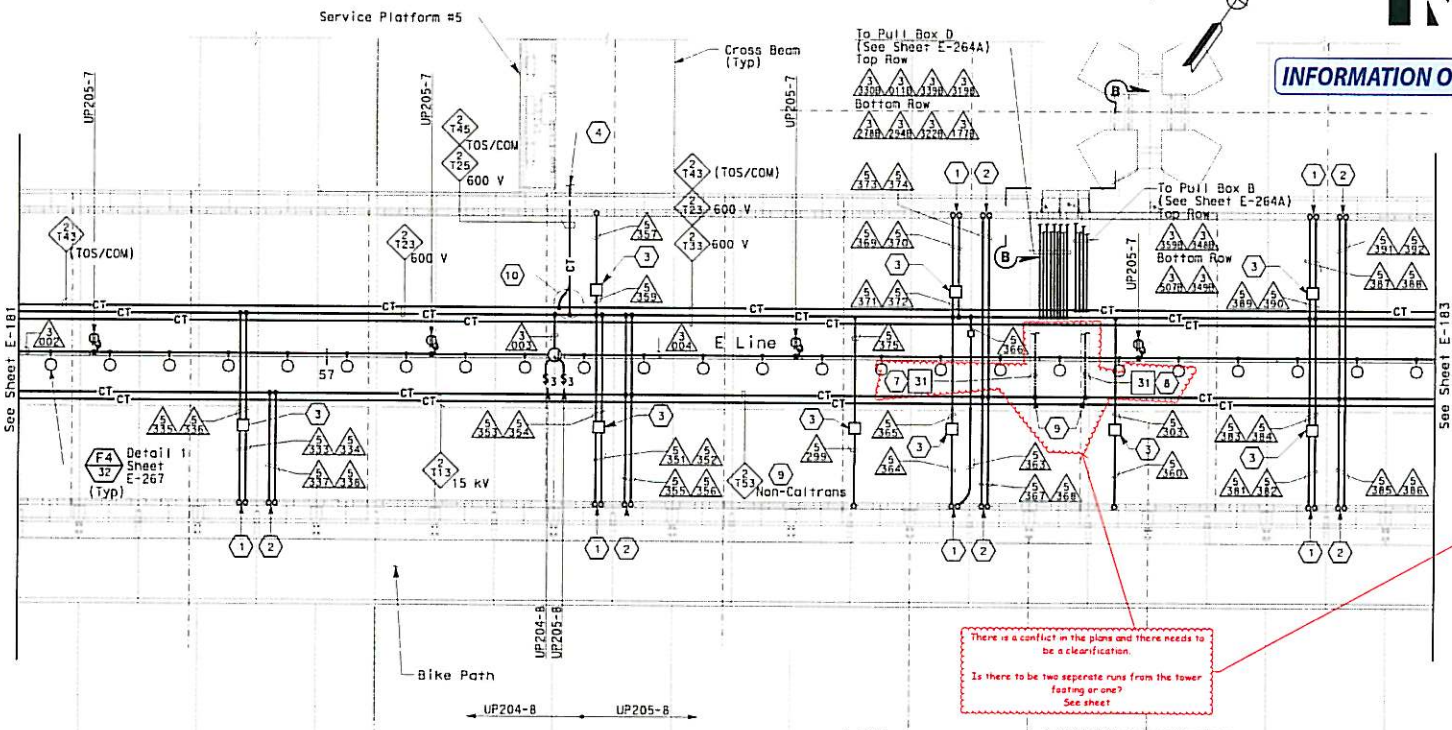

There is a conflict in the plans and there needs to be a clearification.

Is there to be two seperate runs from the tower footing or one? See sheet

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

SAS SUPERSTRUCTURE - CONDUIT AND CABLE TRAY PLAN

SHEET NOTES:

1. Conduit up to PB-LTG located in barrier, see sheet E-136.
2. Conduit up to PB-COM located in barrier, see sheet E-136.
3. PB-2A, locate on top of floor.
4. For cable tray run and lighting inside crossbeam, see sheet E-115.
5. For lighting inside crossbeam, see sheet E-119.
6. For future light pipe, see sheets E-202 thru E-204. For light pipe schedule, see sheet E-217.
7. Routed inside conduit 3330A.
8. Routed inside conduit 3339A.
9. 250 kcmil copper grounding conductor exothermically welded to 500 kcmil system grounding conductor.
10. For fiber splice tray detail, refer to sheet E-355.

NOTES:

1. References:
   - TOS equipment is shown for conduit routing only. For typical details of TOS controller and devices, see sheets E-344 through E-357.
   - For types of pull boxes, splice boxes and enclosures, see sheet E-169.
   - For bridge grounding plan, see sheet E-196.
   - For circuit and conduit/cable tray schedules, see sheets starting at E-401.
2. For other work related to items not shown on this sheet, see Electrical Special Provisions.
3. The girder lighting fixtures are shown diagrammatically. Contractor shall install fixtures at railing posts with a maximum of 8000 mm between fixtures. For types and typical lighting fixture installation details, see sheet E-206.
4. The cable trays are shown diagrammatically. For typical girder cable tray plans and sections, see sheets E-207 and E-208.
5. For Section B-B, see sheet E-264A.

SAS SUPERSTRUCTURE GIRDER EASTBOUND
LIGHTING AND ELECTRICAL SYSTEMS
SCALE 1:200

E-182

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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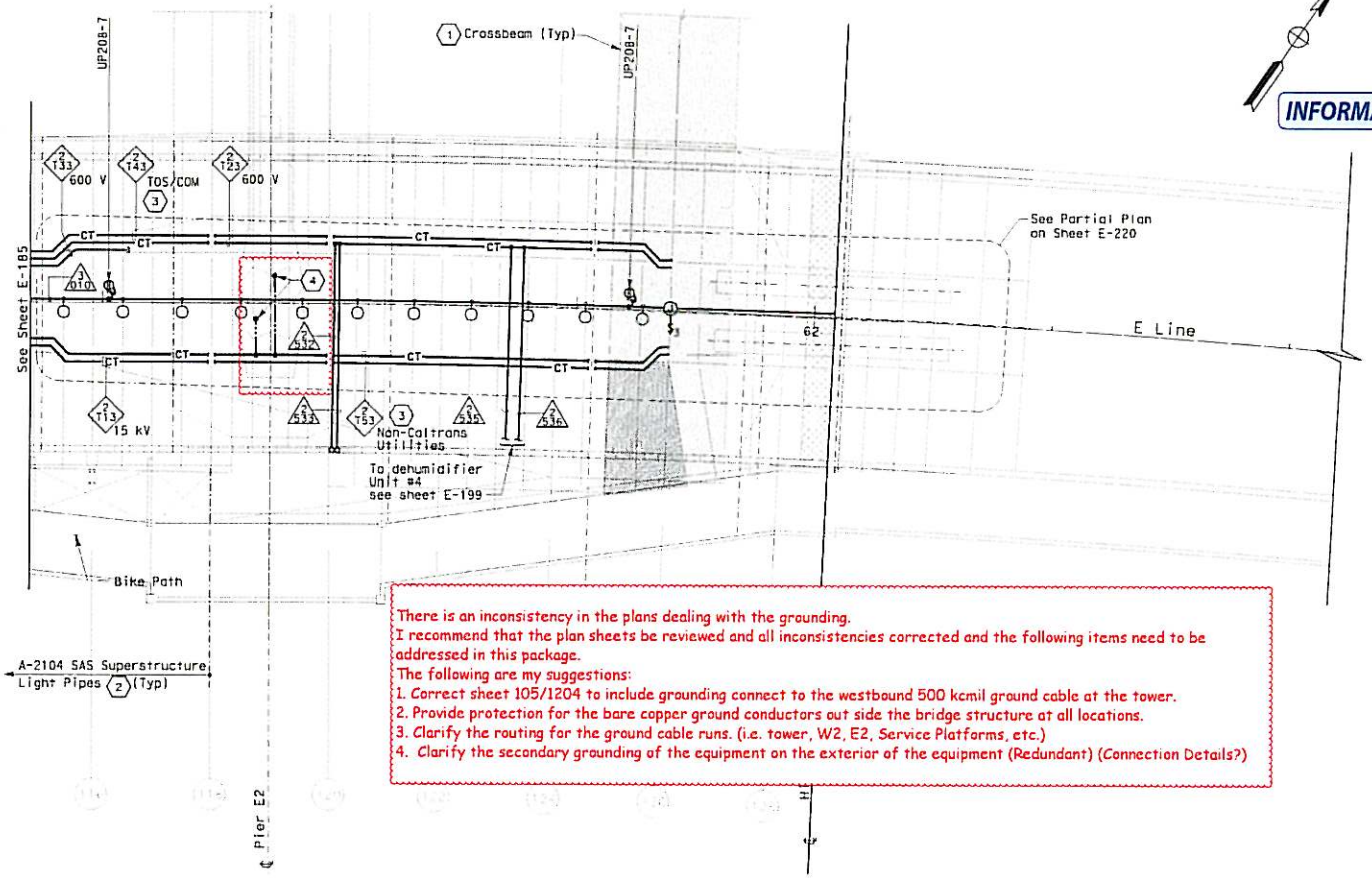
Attachment #1 (13/17)



There is an inconsistency in the plans dealing with the grounding.
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The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

SAS SUPERSTRUCTURE - CONDUIT AND CABLE TRAY PLAN

Caltrans Metric

INFORMATION ONLY

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	SF	80	13.2/13.9	220	1204

12/19/02
REGISTERED ELECTRICAL ENGINEER DATE

12-6-04
PLANS APPROVAL DATE

JENS ERLINGSSON No. 8249 EXP. 3/30/05 ELECTRICAL REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA

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SHEET NOTES:

1. For lighting inside crossbeam, see sheet E-119.
2. For future light pipes, see sheets E-202 thru E-204. For light pipe schedule, see sheet E-217.
3. For cable tray & ground bar support, refer to sheet E-206.
4. 250 kcmil bare copper grounding conductor exothermically welded to 500 kcmil system ground conductor. See E2/T1 Structures Contract 04-0120E4. For continuation, see sheet E-196.

NOTES:

1. References:
   - TOS equipment is shown for conduit routing only. For typical details of TOS controller and devices, see sheets E-344 through E-357.
   - For types of pull boxes, splice boxes and enclosures, see sheet E-169.
   - For bridge grounding plan, see sheet E-196.
   - For circuit and conduit/cable tray schedules, see sheets starting at E-401.
2. For other work related to Hinge AE and items not shown on this sheet, see Electrical Special Provisions.
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4. The cable trays are shown diagrammatically. For typical girder cable tray plans and sections, see sheets E-207 and E-208.

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SAS SUPERSTRUCTURE GIRDER EASTBOUND
LIGHTING AND ELECTRICAL SYSTEMS

SCALE 1:200

E-186

CU 04251 EA 0120F1

DATE PLOTTED = 02-DEC-2004
TIME PLOTTED = 12:51
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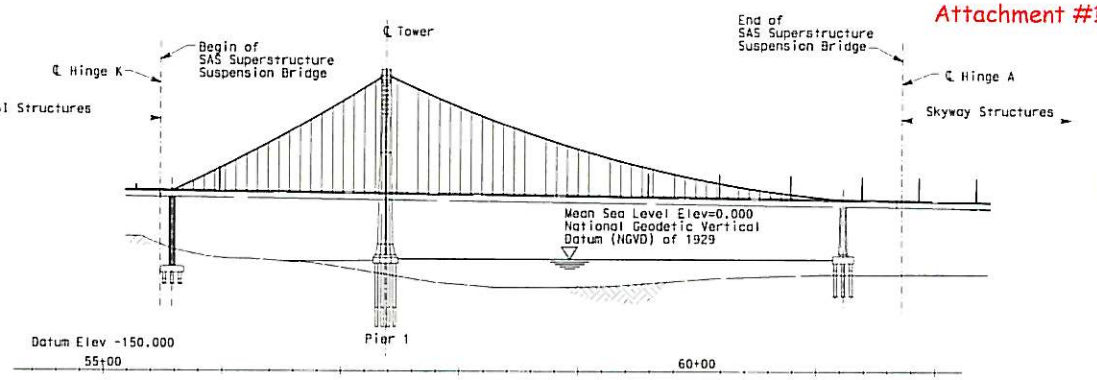
Attachment #1 (14/17)

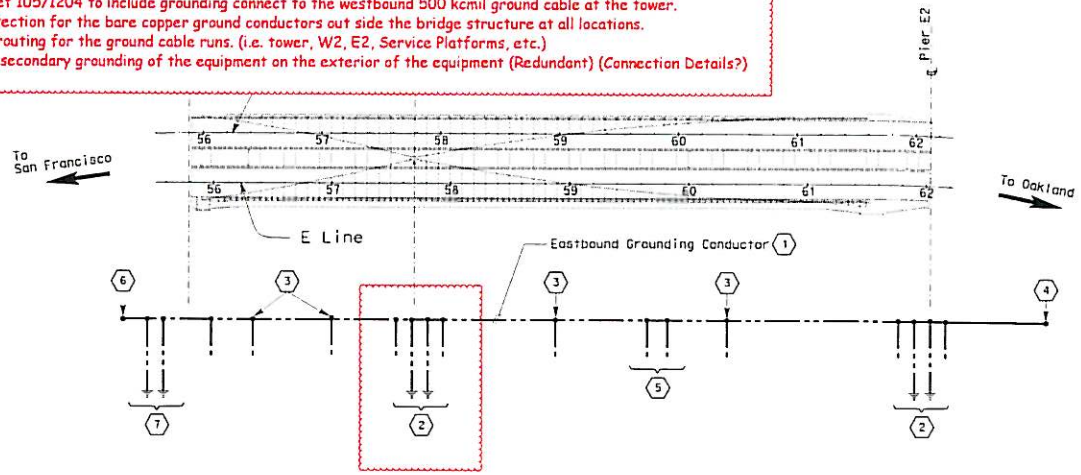


ELEVATION
SCALE 1:2000

There is an inconsistency in the plans dealing with the grounding.
I recommend that the plan sheets be reviewed and all inconsistencies corrected and the following items need to be addressed in this package.
The following are my suggestions:
1. Correct sheet 105/1204 to include grounding connect to the westbound 500 kcmil ground cable at the tower.
2. Provide protection for the bare copper ground conductors out side the bridge structure at all locations.
3. Clarify the routing for the ground cable runs. (i.e. tower, W2, E2, Service Platforms, etc.)
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

There is a conflict in the plans and there needs to be a clarification.

Is there to be two separate runs from the tower footing or one?
See sheet



PLAN
SCALE 1:2000

SHEET NOTES:

(1) Install one separate 500 kcmil bare copper system grounding conductor in eastbound girder, spanning the entire SAS Superstructure. The system grounding conductor shall be physically attached to the 15 kV cable tray.

(2) At pier E2 and tower install, two 250 kcmil bare copper ground conductors and shall be exothermically welded to the 500 kcmil system grounding conductor, run embedded down the pier and tower columns, and shall be exothermically welded to the footing collars. At each pier and tower, the 500 kcmil bare copper system grounding conductor shall be connected to two ground bars located in the girder, one on each side of the pier. These ground bars shall provide a ground point of connection for cable trays and equipment located near the pier in girder or on the platform.

(3) Approximately 1/3 the distance between piers and tower, two #4/0 bare copper ground conductors shall be exothermically welded to the 500 kcmil system grounding conductor and bonded to all the cable trays.

(4) Exothermically weld the 500 kcmil system grounding conductor, at SAS Superstructure and Skyway Structure girder interface, to the adjoining 500 kcmil system grounding conductor, located at the Skyway Structure.

(5) Provide two ground bars in the girder. These ground bars shall provide a ground point of connection for platform equipment.

(6) For continuation YBI Structures Contract 04-0120H4.

(7) For continuation see W2 contract 04-0120C4 for limited of work.

NOTES:

1. References:
   - For SAS Superstructure Girder Westbound grounding, see sheet E-111.
   - For grounding at service platforms, see platform sheets E-114 through E-118.

DETAILS
SAS SUPERSTRUCTURE GIRDER EASTBOUND GROUNDING PLAN
SCALE 1:2000

E-196

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	SF	80	13.2/13.9	225	1204

12/19/02
REGISTERED ELECTRICAL ENGINEER DATE
12-6-04
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PB POWER, Inc.
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JENS ERLINGSSON No. 8249 Exp. 3/31/05 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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EDC	CYF	03/02

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Attachment # 1 (15/17)

INFORMATION ONLY

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	SF	80	13.2/13.9	233 H1	1204

12/19/02
REGISTERED ELECTRICAL ENGINEER DATE

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JENS ERLINGSSON NO. 8249 EXP. 9/30/06 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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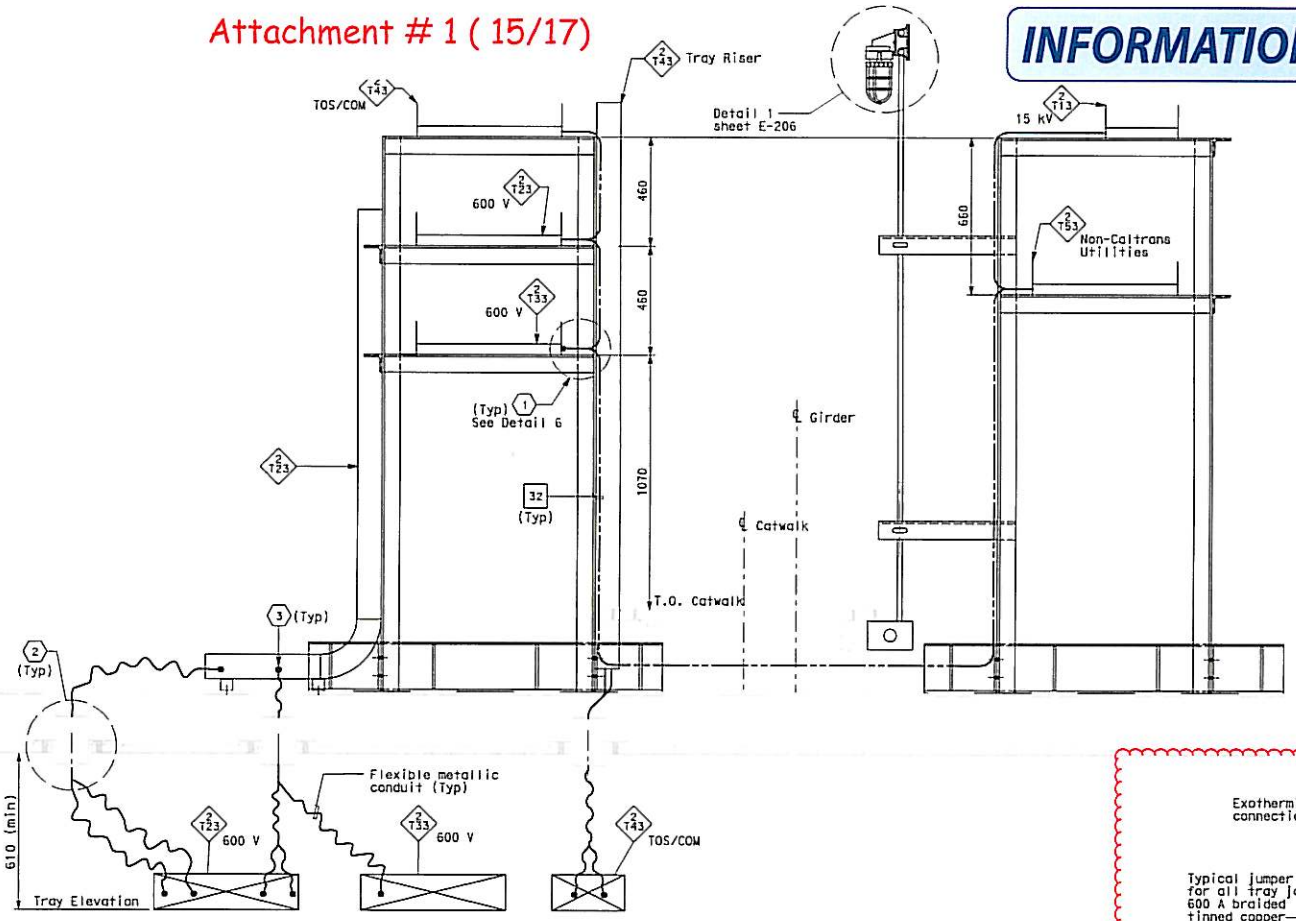


SECTION D-D - TYPICAL CABLE TRAY SUPPORT

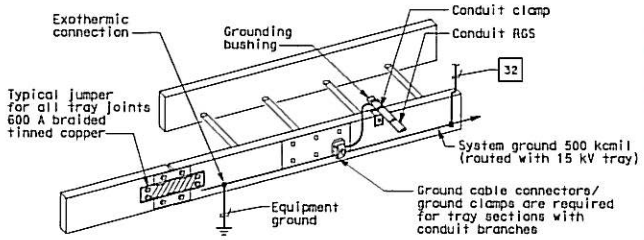
SCALE: 1:10

SHEET NOTES:

1. Provide connections to 500 kcmil system ground for all cable trays, every 200 meters.
2. For location of conduit penetrations thru girder plate, see Utility Detail No. 1 and Utility Layout sheets respectively. To prevent moisture from passing inside the sleeve, Contractor shall install sealant after conduit have been installed. Spares shall be plugged and capped.
3. Contractor shall provide hooked conduit support grips for each conduit or groups of conduits passing through the conduit penetrations. Contractor shall provide support for grips as needed.

NOTES:

1. See structural drawings for Catwalk Support Details.
2. For SAS Superstructure Girder access detail #2, see structural dwgs.
3. Ground cable shall be installed along full length of the 15 kV cable tray only.
4. For typical cable tray support details, see AS-sheets.



GROUNDING OF METALLIC RACEWAYS

DETAIL 6

MARK	DATE	DESCRIPTIONS	REV	CK	CCO NO.
1	1/10/06	Revised note. Bidder Inquiry #330.	CR	JE	11
		REVISIONS			

CONTRACT CHANGE ORDER NO. 11

SHEET 13 OF 13

DETAILS
SAS SUPERSTRUCTURE GIRDER EASTBOUND
TYPICAL CABLE TRAY AND GROUNDING INSTALLATION 2

SCALE AS NOTED

E-208

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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Attachment #1 (16/17)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	80	13.2/13.9	234	1204

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12/19/02
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PB POWER, Inc.
A Parsons Brinckerhoff Company
303 Second St., Suite 700N
San Francisco, CA 94107-1317

REGISTERED PROFESSIONAL ENGINEER
JENS ERLINGSSON
No. 8249
Exp. 9/30/05
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STATE OF CALIFORNIA

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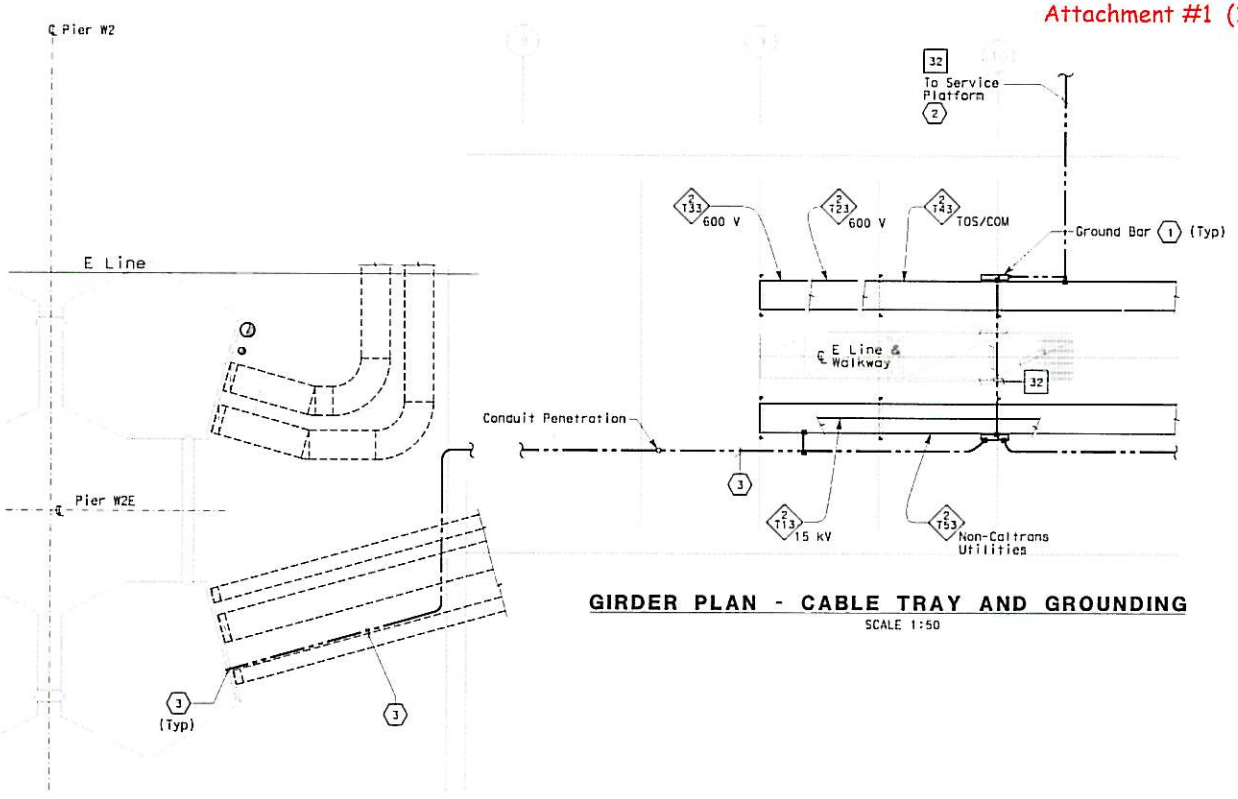

GIRDER PLAN - CABLE TRAY AND GROUNDING

SCALE 1:50

SHEET NOTES:

1. Ground bar detail see sheet E-208.
2. For actual conduit locations, see Girder Level, Cable Tray and conduits plans. See sheets E-181 thru E-186.
3. 500 kcmil bare copper ground cable run along with tray at column to pier footing collar.

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DETAILS
SAS SUPERSTRUCTURE GIRDER EASTBOUND
TYPICAL TRAY AND GROUNDING INSTALLATION AT PIERS W2E

SCALE AS NOTED

E-211

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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BEHZAD GOLEMOHAMMADI

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Attachment #1 (17/17)

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04	SF	80	13.2/13.9	270	1204

12/19/02
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12-6-04
PLANS APPROVAL DATE

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303 Second St., Suite 700N
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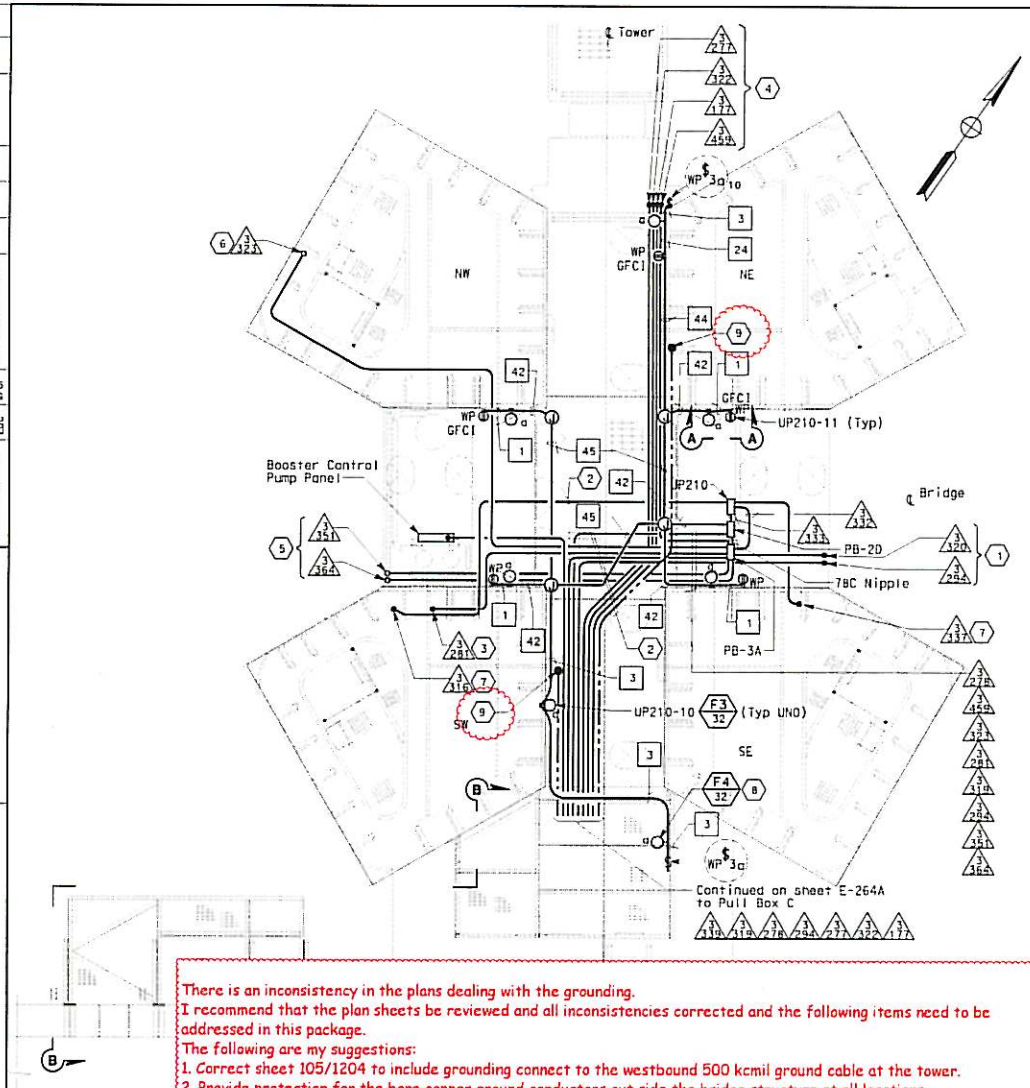

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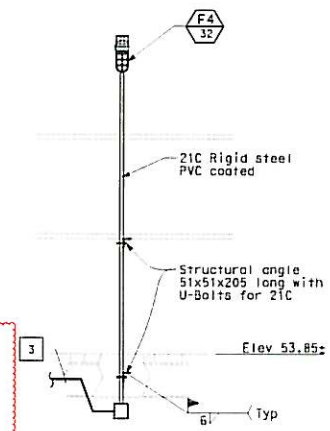
4. Clarify the secondary grounding of the equipment on the exterior of the equipment (Redundant) (Connection Details?)

WALKWAY AND ACCESS PLATFORM TO "E" LINE GIRDER AT ELEV 53.85 m

SCALE 1:40



DETAIL 1

NO SCALE

SHEET NOTES:

1. For continuation to Dehumidification Unit #2 blower, see sheet E-287.
2. All conduits which thereafter cross the access walkways shall be raised to a level of at least 2438 above the grating to pass overhead, allowing free walkways on the remaining three quadrants of the platform. Door on north face of SE tower shaft shall remain accesible.
3. Down to elev. 3.0 m, see sheet E-231.
4. Down to Pier 1 tower elevator pit. See sheet E-265
5. For continuation, see sheet E-285.
6. Conduit up to Dehumidification Unit #5 located on elev 158.0. For continuation, see sheets E-285, E-286 and E-287.
7. For continuation, see sheet E-266.
8. See Detail 1, this drawing.
9. 250 kcmil Copper conductor down to tower footing and exothermically welded to rebar system.

NOTES:

1. References:
   - For typical conduit installation details, see sheet E-268.
   - For utility panel UP-210 schedule, see sheet E-278.
   - For types of pull boxes, splice boxes and enclosures, see sheets E-83 and E-169.
   - For conduit and cable tray schedules, see sheets starting at E-401.
   - For lighting fixture schedule, see sheet E-273.
   - For vertical conduit runs support system, see sheet E-287.
   - For Section A-A, see sheet E-285.
   - For lighting installation details, see sheet E-267.
2. Electrical conduits shall enter the tower shafts between stiffeners A3 and A4 only. For conduit entry details, see Structural Utility drawings.
3. All conduits and fittings routed exposed at grating shall be rigid galvanized steel, PVC coated.
4. Fixture mounting height elevation shall be 2.125 m above floor/platform elevation UNO.
5. For other related work not shown on this sheet, see Electrical Special Provisions.
6. For Section B-B, see sheet EE-264A.
7. Typical conduit installation. See Detail 8, sheet E-268.

DETAILS
TOWER AND SUSPENSION CABLE
TOWER POWER AND LIGHTING

SCALE AS NOTED

E-264

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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DESIGN OVERSIGHT: BEHZAD GOLEMOHAMMADI
CALCULATED/DESIGNED BY: FK | DATE: 10/01 | REVISED BY
CHECKED BY: EDC | DATE: 11/01 | DATE REVISED

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Attachment #2 (1/2)

Michael
Travis/HQ/Caltrans/CAGov
12/07/2007 10:52 AM

To Bill Shedd/D04/Caltrans/CAGov@DOT
cc SAS - Caltrans
bcc
Subject Fusing for each Luminaire

Bill,

This is a copy from the standard specifications for the fused connectors.

Standard Specifications: FuseSplice Connector SSP.pdf

Michael Travis
SFOBB Construction Offices
Design Campus Building
375 Burma Road
Oakland Ca. 94607
Phone: 510-808-4618

Heat-shrink tubing shall not be heated with an open flame. A heating device designed for the purpose is required.

The Contractor may, at the Contractor's option, use either of the following splice insulation methods:

1. "Method B" as shown on the plans. A minimum of 2 thicknesses of electrical insulating pad shall be used. Pads shall be applied to the splice in conformance with the manufacturer's recommendations.
2. Heat-shrink tubing as provided above.

86-2.095 FUSED SPLICE CONNECTORS

In the pull box adjacent to each luminaire a fused disconnect splice connector shall be installed in each ungrounded conductor between the line and the ballast. The connector shall be readily accessible in the pull box regardless of whether the ballast is remote or is integral with the luminaire.

For 240-V and 480-V circuits, each connector shall be designed so that both ungrounded conductors are disconnected simultaneously. The connector shall have no exposed metal parts, except the head of a stainless steel assembly screw may be exposed. The head of the metal assembly screw shall be recessed a minimum of 0.8-mm below the top of a plastic boss which surrounds the head.

The splice connector shall completely enclose the fuse and shall protect the fuse against damage from water and weather. The contact between the fuse and fuseholder shall be by spring pressure. The terminals of the splice connector shall be rigidly crimped, using a tool of the type recommended by the manufacturer of the fused splice connector, onto the line conductors and the conductors to the ballasts and shall be insulated and made waterproof in conformance with the splice connector manufacturer's recommendations.

Fused splice connectors shall not be used in series circuits.

Fuses shall be standard midget, ferrule type, with "Non-Time-Delay" feature, and shall be 10-mm x 38-mm.

86-2.10 BONDING AND GROUNDING

Metallic cable sheaths, metal pull box covers, metal conduit, equipment grounding conductors, ballast and transformer cases, service equipment, sign switches and metal poles and pedestals shall be made mechanically and electrically secure to form a continuous system, and shall be effectively grounded. Bonding jumpers shall be copper wire or copper braid of the same cross sectional area as No. 6 for series lighting systems and No. 8 or larger for all other systems. The jumper size shall be increased to match the load or the circuit breaker size, or shall be as shown on the plans. Equipment grounding conductors shall be color coded to Code requirements or shall be bare.

The bonding jumper in standards with handholes and traffic pull box lid cover shall be attached by a 4.5-mm or larger brass bolt and shall be run to the conduit or bonding wire in the adjacent pull box. Standards without handholes shall be bonded by a jumper attached to all anchor bolts, and shall be run to the conduit or bonding wire in the adjacent pull box. The grounding jumper shall be visible after the cap has been placed on foundation.

Where slip base standards or slip base inserts are installed, the bonding jumper shall not intrude into the slip plane. Bonding shall be accomplished by a bonding

Attachment #3 (1/2)

Attachments can contain viruses that may harm your computer. Attachments may not display correctly.

Mike Travis

From: Sugiyama, Eric [Sugiyama@pbworld.com] **Sent:** Thu 12/6/2007 12:14 PM
To: tho@tylin.com; george_boughosn@dot.ca.gov; irene_khinsann@dot.ca.gov; bill_shedd@dot.ca.gov; Garcia, Rocky; grady_hart@dot.ca.gov; Lucas, Ellery; Martin Chandrawinata; Mike Travis; Paz, Michelle; Saeed_Shahmirzai@dot.ca.gov; Sollie, Cassidy; Takaki, Maxwell
Cc: Marwan Nader; James Duxbury; Nhan Vo; george.baker
Subject: CCR 45, FAA Lighting (Revised)
Attachments: CCR 45 memo.doc(63KB) CCR 45 attachment.pdf(1MB)

Just to clarify, the detail shows stud bolts, therefore, we are not bolting through the tower top plate. Leakage and corrosion should not be an issue. The stud bolts are attached to the sealing plate which is welded to the tower top plate. There is however an error on the sketch on a weld callout which has been corrected.

See attached PB's revised request for design change.

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From: Tom Ho [mailto:tho@tylin.com]
Sent: Thursday, December 06, 2007 10:32 AM
To: Sugiyama, Eric; george_boughosn@dot.ca.gov; irene_khinsann@dot.ca.gov; bill_shedd@dot.ca.gov; Garcia, Rocky; grady_hart@dot.ca.gov; Lucas, Ellery; Martin Chandrawinata; Mike Travis; Paz, Michelle; Saeed_Shahmirzai@dot.ca.gov; Sollie, Cassidy; Takaki, Maxwell
Cc: Marwan Nader; James Duxbury; Nhan Vo; george.baker
Subject: RE: CCR 45, FAA Lighting

The Design JV has a comment on the mounting detail of the aviation light that PB is proposing. The detail as show is questionable because a neoprene gasket and a weld happen at the same location. To avoid leakage and corrosion of the tower structure it is recommend not to directly bolting the fixture to the tower top plate. A special designed bracket with a base plate (welded to the top plate), a short pole and a flange on top to mount the fixture is a better solution for this application.

-----Original Message-----
From: Sugiyama, Eric [mailto:Sugiyama@pbworld.com]
Sent: Friday, November 30, 2007 1:58 PM
To: george_boughosn@dot.ca.gov; irene_khinsann@dot.ca.gov; bill_shedd@dot.ca.gov; Garcia, Rocky; grady_hart@dot.ca.gov; Lucas, Ellery; Martin Chandrawinata; Mike Travis; Paz, Michelle; Saeed_Shahmirzai@dot.ca.gov; Sollie, Cassidy; Takaki, Maxwell; tho@tylin.com
Subject: CCR 45, FAA Lighting

Attached are PB's request for design change.

Attachment #3 (2/2)

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