

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 99.28**WELDING INSPECTION REPORT****Resident Engineer:** Casey, William**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-029987**Date Inspected:** 09-Sep-2013**Project Name:** SAS Superstructure**OSM Arrival Time:** 600**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1630**Contractor:** Steward Machine Co.**Location:** Birmingham, AL**CWI Name:** Fred Hudson / Jimmy Brewer**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** E2 Shear Key Anchorages**Summary of Items Observed:**

Quality Assurance Inspector (QAI) Andrew Webster was present on the date and times noted above in order to observe the fabrication and Quality Control (QC) functions performed by Steward Machine Company for the E2 Shear Key Anchorages for the SFOBB project. The following items were observed:

**Steward Machine - Plant 1:**

This QAI performed a walkthrough at the shop to verify plates on site and to observe Steward Machine personnel at work machining and welding. Work performed at the Steward Machine shop as noted below:

CNC Machine #176 milling plate S4C-g4. (Milling inside radius)

CNC Machine #211 milling plate S3C-g3. (Milling excess stock off ends)

CNC Machine #231 milling S10B assembly (Milling the bolt holes in the four lug plates)

CNC Machine #245 milling plate S4B-h4. (Milling excess stock off ends)

The following plates were noted staged throughout the shop in various stages of processing.

**Bay 1 – Plates:**

S3B-h3. Formed, stressed relieved and partially machined.

**Bay 2 – Plates:**

S3C-a3. Formed, stressed relieved and partially machined.

S3C-h3. Formed, stressed relieved and partially machined.

S4C-h4. Formed, stressed relieved and partially machined.

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### Bay 4 – Plates:

S3B-a3. Formed, stressed relieved and partially machined.  
S3B-b3. Formed, stressed relieved and partially machined.  
S3B-c3. Formed, stressed relieved and partially machined.  
S3B-f3. Formed, stressed relieved and partially machined.  
S3B-g3. Formed, stressed relieved and partially machined.  
S3C-b3. Formed, stressed relieved and partially machined.  
S3C-c3. Formed, stressed relieved and partially machined.  
S3C-d3. Formed, stressed relieved and partially machined.  
S3C-f3. Formed, stressed relieved and partially machined.  
S4B-a4. Formed, stressed relieved and partially machined.  
S4B-b4. Formed, stressed relieved and partially machined.  
S4B-c4. Formed, stressed relieved and partially machined.  
S4B-d4. Formed, stressed relieved and partially machined.  
S4B-f4. Formed, stressed relieved and partially machined.  
S4B-g4. Formed, stressed relieved and partially machined.  
S4C-a4. Formed, stressed relieved and partially machined.  
S4C-b4. Formed, stressed relieved and partially machined.  
S4C-c4. Formed, stressed relieved and partially machined.  
S4C-d4. Formed, stressed relieved and partially machined.  
S4C-f4. Formed, stressed relieved and partially machined.  
Pallet of R3 plates.

### Welding jig Bay 4 – S10C assembly Plates:

S10C-a1. Formed, stressed relieved and partially machined.  
S10C-a2. Formed, stressed relieved and partially machined.  
S10C-b1. Formed, stressed relieved and partially machined.  
S10C-b2. Formed, stressed relieved and partially machined.  
S10C-c1. Formed, stressed relieved and partially machined.  
S10C-d1. Formed, stressed relieved and partially machined.

This QAI noted the welding of the above mentioned plates in the welding jig. The welding was done by qualified welders Benjamin Rhodes (481) and John Roy (469). The welding was done to the approved welding procedure (WPS) P2-W126-B. All welding done was monitored by Certified Welding Inspector (CWI) Fred Hudson. Welding was done on the shear key side. Welding was completed at 1630.

This QAI noted the welding of the above mentioned plates in the welding jig for night shift. The welding was done by qualified welders Daniel Rowe (73) and Jeffery Hennington (476). The welding was done to the approved welding procedure (WPS) P2-W126-B. All welding done was monitored by Certified Welding Inspector (CWI) Jimmy Brewer. Welding was done on the shear key side.

This QAI was informed by the welding supervisor that he hoped the welding on the shear key side would be completed tonight. He stated that is the welding was completed the part would be flipped and welding would start

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on the non-shear key side this evening if time permitted.

Steward Machine - Plant 2:

This QAI performed a walkthrough at the shop to verify plates on site and to observe Steward Plant 2 personnel at work. Work performed at the Steward Plant 2 shop as noted below:

It was noted by this QAI that plates S3B-e3, S4B-e4, S3C-e3 and S4C-e4 were transported to Plant 2 for stud welding. This QAI spoke with QC Inspector Darrel Nix about the stud welding and the QC Inspector informed this QAI that Steward Plant 2 would inform the QAI before Plant 2 started the stud welding so that the process could be witnessed by the QAI on site.

The following plates were noted staged throughout the shop.

S3B-e3. Formed, stressed relieved and partially machined.

S4B-e4. Formed, stressed relieved and partially machined.

S3C-e3. Formed, stressed relieved and partially machined.

S4C-e4. Formed, stressed relieved and partially machined.

NON-DESTRUCTIVE TESTING (NDT).

The QA performed NDT on the following.

Plate S3B-b3:

- Visual Testing (VT) & Magnetic Particle Testing (MPT) Accept. (See TL-6028 for detailed information.)

Plate S4B-d4:

- Visual Testing (VT) & Magnetic Particle Testing (MPT) Accept. (See TL-6028 for detailed information.)

Plate S3B-a3:

- Visual Testing (VT) & Magnetic Particle Testing (MPT) Accept. (See TL-6028 for detailed information.)

The Non Destructive Testing (NDT) listed above were observed performed and accepted by the QC Inspectors prior to the QA Inspector performing the tests. The QC Inspectors performed 100% NDT with the QA Inspector performing over 10% NDT.

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## Summary of Conversations:

As noted in the body of the report above. Other basic communication was performed between the QAI and the QC Inspector during the observations.

## Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Gary Thomas 916-764-6027, who represents the Office of Structural Materials for your project.

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**Inspected By:** Webster, Andrew

Quality Assurance Inspector

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**Reviewed By:** Foerder, Mike

QA Reviewer