

**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 #: 78.28**WELDING INSPECTION REPORT****Resident Engineer:** Casey, William**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-030049**Date Inspected:** 18-Sep-2013**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Steward Machine Co.**Location:** Birmingham, AL**CWI Name:** Fred Hudson (Cert. #01061501)**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) Fritz Belford 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. Material Test Reports (MTRs) for all materials used have been reviewed and approved by others at the XKT shop in Vallejo California prior to shipping to Steward Machine Company. The following items were observed:

**STEWARD MACHINE - PLANT 1:**

The QA 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:

**S4C Assembly:**

The painters were observed sand blasting the Class B Faying surfaces of the assembly plates to SP10 prior to assembly. The plates blast profiles were verified by NACE level II Inspector Chris Shifflett using ASTM 4417 Method C with X-Coarse Tape with an indication range of 1.5 to 4.5 Mills. The blast profiles were verified by tape and were well within the acceptable limits as per contract documents. After profile verification the plates were moved to the weld shop where they were immediately assembled for welding. Assembly S4C as noted above includes plates S4C-a4, S4C-b4, S4C-h4, S4C-c4, S4C-d4, S4C-g4 & S4C-f4.

**Welders Ben Rhodes (#481) & John Ray (#469):**

The welders were observed welding the S3B assembly utilizing Welding Procedure Specification (WPS) P2-W126-B for Flux Core Arc Welding-Gas Shielded (FCAW-G) in the 1G position. The welding parameters

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were observed adjusted and monitored by Certified Welding Inspector (CWI) Fred Hudson (Cert. #01061501) who was onsite with the WPS as required by contract documents. The welding parameters were measured to be 31volts/300amps using 1/16" Class E70T-1 filler and 100% CO2 at 40cfm. Assembly S3B as noted above includes plates S3B-f4, S3B-g4, S3B-d4, S3B-c4, S3B-h4, S3B-b4 & S3B-a4.

Welder John Ray (#469) was also observed tack welding the S4C assembly utilizing Welding Procedure Specification (WPS) P2-W126-B for Flux Core Arc Welding-Gas Shielded (FCAW-G) in the 2G position. The welding parameters were observed adjusted and monitored by Certified Welding Inspector (CWI) Fred Hudson (Cert. #01061501) who was onsite with the WPS as required by contract documents. The welding parameters were measured to be 30volts/300amps using 1/16" Class E70T-1 filler and 100% CO2 at 40cfm. Welding 2G was out of position qualified and will be removed before the root pass is welded.

### Plate Milling:

CNC Machine #230 milling S4B assembly (Milling)

CNC Machine #231 milling S10C assembly (Milling assembly ends)

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

### Bay 4 & 5- Plates:

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

S3C-b3. Formed, stressed relieved and partially machined.

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

S3C-c3. Formed, stressed relieved and partially machined.

S3C-d3. Formed, stressed relieved and partially machined.

S3C-g3. Formed, stressed relieved and partially machined.

S3C-f3. Formed, stressed relieved and partially machined.

S3B-e3. Milling complete.

S3C-e3. Milling complete.

S4C-e4. Milling complete.

S4B-e4. Milling complete.

### COMPONENT RELEASES.

None.

### NON-DESTRUCTIVE TESTING (NDT).

None.

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## Summary of Conversations:

The QC Inspector relayed to the QA Inspector that the S4B Assembly had an area where the machining had milled too deep into the parent material of plate S4B-a4. After careful measurements were taken the QA concurs with the QC findings that the milled area is within acceptable limits of the plate dimensions. The area is in way of the S4B-a4 plate and measure 30 x 30 x 0.8mm deep on the non shear side at the East End upper corner . The overall width of the assembly when measured from the depth of the miscut area was 811.5 mm out of a required 812mm and is within acceptable limits. Assembly width overall is 812.5mm. Hardie Tynes will be filing a non conformance material report (NCRM) for the milling performed on the S3C-h3 plate. See attached for photo for detailed information

## 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:** Belford,Fritz

Quality Assurance Inspector

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**Reviewed By:** Foerder, Mike

QA Reviewer