

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
690 Walnut Ave. St. 150  
Vallejo, CA 94592-1133  
(707) 649-5453  
(707) 649-5493

Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-012799**Date Inspected:** 27-Mar-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1100**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1900**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**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:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the E1/E2, E2/E3 and E3/E4 field splices:

- A). Welding of the Field Splice E1 to E2.
- B). Back Gouge of the Field Splice E3 to E4
- C). Welding Repair on the Field Splice E2 to E3

A) Field Splice E1/E2, WN: 1E-2E-D

The QAI observed the automated FCAW-G welding process during the CJP welding of the bottom plate field splice performed by Rory Hogan ID-3186 and Jeremy Dolman ID-5042. The welders utilized the FCAW-G welding process as per the WPS ABF-WPS-D15-3040A-4 Rev. 0 which was also used as a reference by the QC inspector Bernie Docena to verify the welding parameters and the surface temperatures. The DCEP welding parameters were verified and noted by the QC inspector and were noted as follows: 248 amps, 23.2 volts and a travel speed measured at 195 mm/minute. The minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were maintained. The welding was completed at 1600 and at this time the Post Weld Heat Treat (PWHT) process commence and the minimum preheat temperature was maintained for three (3) hours.

Later in the shift the QAI observed of the back gouging surface of the side plate field splice identified as WN: 1E-2E-E. The back gouging of the "B" side CJP groove weld was performed by AB/F personnel Salvador

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Sandavol utilizing the plasma arc cutting process.

### B) Field Splice E3/E4, WN: 3E-4E-A

The QAI observed the Submerged Arc Welding (SAW) process of the deck plate field splice identified as Weld Number(WN): 2E-3E-A, Weld Segments A1-A5. The welding was performed by AB/F welding personnel Daniel Ieraci ID-3232 , segments A4-A5 and Jordan Hazelaar ID-2135, segments A1-A3 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The WPS was also used by the AB/F Quality Control (QC) Inspector's Bonifacio Daquinag and James Cunningham to perform QC verification of the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding of the deck plate field splice. Later in the shift the QAI observed the QC inspector's verifying the welding parameters of each welder and were noted as follows: 582 amps, 32.5 volts and a travel speed measured at 400 mm/minute for the SAW machine operated by Mr. Ieraci and 556 amps, 32.6 volts and a travel speed measured at 378 mm/minute. The QC inspector's also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The SAW was completed during this scheduled shift. Later in the shift, the QAI observed AB/F personnel utilizing electric powered grinders to machine the CJP flush with the adjacent base metal to accommodate the QC ultrasonic testing and QAI verification. The SAW was completed during this shift.

### C). Field Splice E2/E3, WN: 2E-3E-A

The QAI also observed the in process weld inspection of the repair welding on the deck plate field splice identified as WN: 2E-3E-A. This repair is in the second repair cycle mode and it's linear distance is located approximately 3454 mm from the start of the A5 weld segment and it's measured length is 25.4 mm. At the conclusion of the excavation the QC inspector, Tom Pasqualone, performed a magnetic particle test of the excavated area and no rejectable indications were noted. The welder Mitch Sittinger ID-0315 commence the welding at this time utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS identified as ABF-WPS-D15-1000 Repair Rev. 2. The welding was monitored by Mr. Pasqualone using the above mentioned WPS and the Direct Current Electrode Positive (DCEP) amperage of 131 was verified and noted by the QAI. The repair welding was completed during this shift.

### QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector's and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The consumables identified as ESAB Spoolarc 81, ESAB Dual Shield 70 Ultra Plus and ESAB Atom Arc E7018-HR4 appeared to comply with the applicable AWS Specification and Classification. The QC inspection, testing and welding performed on this shift was not completed, except as noted above, appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages, a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

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The QAI inspector also observed and noted two areas where the backing bar is not held in intimate contact with the deck plate and exceeded the maximum 2 mm dimension. The QAI has generated a TL-15 Incident Report.

The digital photographs below illustrate the work observed during this scheduled shift.



### Summary of Conversations:

There were no pertinent conversations discussed in regards to the project except as noted above.

### 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 Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Reyes,Danny	Quality Assurance Inspector
<b>Reviewed By:</b>	Levell,Bill	QA Reviewer

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