

**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 #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-019472**Date Inspected:** 24-Jan-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**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 locations noted below:

- A). Field Splice W8/W9
- B). DAH Access Hole/"A" Deck Stiffener
- C). Pipe Supports

A). Field Splice W8/W9

The QAI observed the Complete Joint Penetration (CJP) groove welding utilizing the Shielded Metal Arc Welding (SMAW) process of the bottom plate field splice identified as Weld Number (WN): 6E-7E-D1. The welding was performed by Song Tao Huang ID-3794 utilizing the Welding Procedure Specification (WPS)

ABF-WPS-D15-1041C-1, Rev. 0. The WPS was also used by the Quality Control (QC) Inspector, Fred Von Hoff, to verify the Direct Current Electrode Positive (DCEP) welding parameters and to monitor the CJP welding. The QAI observed the QC inspector verifying the welding parameters and were noted as 140 amps. The minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with contract documents. The welding was performed in the flat (1G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the upper side. The welding of the bottom plate splice was not completed during this shift.

Later in the shift, the welder Song Tao Huang completed the CJP welding on the "A" face of the side plate field

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splice identified as \WN: 8W-9W-C2. The welding was performed utilizing the SMAW process as per the WPS ABF-D15-1042A-3 Rev. 0. The WPS was also used by the QC inspector Fred Von Hoff as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters which was noted and recorded as follows: . The welding was performed in vertical position (3G) at approximate incline of 22 degrees. The QC inspector also verified the minimum preheat temperature of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

### B). DAH Access Hole/"A" Deck Stiffener

The QAI observed the welder, Hua Qiang Hwang ID-2930, performed fit-up and the CJP groove welding on the longitudinal stiffener field splice identified as WN: 1W-PP10.5-W5-LS-W. The fit-up and alignment appeared to comply with the contract specifications and the welder proceeded with the welding operation utilizing the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0 and was also utilized by the QC inspector Gary Erhsam as a reference. The amperage was recorded as 127 amps and the minimum preheat of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified.

The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical. The welder utilized a slag hammer, pneumatic air gun with an attached chisel and a wire wheel attached to a 4" high cycle grinder to remove slag after deposit of each fill pass. The electrodes were stored in electrically heated, thermostatically controlled oven after removal from the sealed containers. The exposure limits of the electrodes identified as E9018-H4R and the minimum storage oven temperature of 250 degrees Celsius appeared to be in compliance with the contract documents. At the time of the observation no issues were noted by the QAI.

### C). Pipe Supports

The QAI observed the welder, Rick Kiikvee-ID-5319, perform the Complete Joint Penetration (CJP) welding of the field pipe splices for the 4" compressed air service and 2.5" utility water lines located at the W2 Bent Cap of the W-line. The welding was performed utilizing the Weld Procedure Specification (WPS) identified as 1-12-1 which was also utilized by the QC inspector, Steve Jensen, to monitor the welding and to verify the welding parameters. The QC inspector verified the welding parameters and were observed as 66 amps.

The QAI also observe the on going installation, field fit-up and tack welding of the pipe supports along the E5 grid line located on top side, "A" Deck, of the OBG's identified as E4 and E5. The QC inspection was performed by Mr. Jensen utilizing the WPS identified as Fillet Murex to monitor the welding and to verify the welding parameters. The welding parameters were observed and recorded as 96 amps utilizing 2.4 mm electrodes with the welding performed in the 2F and 3F position. The welding of the pipe supports identified as 110121-04 through 110121-09 was performed by the welder David Garcia ID-8789.

### D). QC Inspection Request

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, the QAI randomly verified the QC visual inspection of the Complete Joint Penetration (CJP) welding of the following Lifting Lug Holes (LLH); WN:

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4W-PP20-W3-Welds No's. 1 and 3. The QAI verification was performed to verify that the overhead welding (4G) and the visual weld inspection performed by the QC inspector meet the requirements of the contract documents. At the conclusion of the QAI verification it appeared that the welds and the QC inspection complies with the contract documents.

## 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 inspectors 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 ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift 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 which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

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



## Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

## 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 Sang Le (916) 764-5650, who represents the Office of Structural Materials for your project.

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**Inspected By:** Reyes, Danny

Quality Assurance Inspector

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**Reviewed By:**      Levell,Bill

QA Reviewer