

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:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-013954**Date Inspected:** 05-May-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1100**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**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 W1/W2
- B). Field Splice W3/W4

A) Field Splice W1/W2

The QAI observed the continued Shielded Metal Arc Welding (SMAW) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S12. The welding was performed by the welding personnel James Zhen ID-6001 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1010 Rev. 1 during the welding to correct the excessive root openings and the Complete Joint Penetration (CJP) welding of the double-v-groove joint identified as B-U3b per the AWS joint designation. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding. The welding was performed in the vertical (3G) position with the work placed in the vertical plain. Later in the shift the QAI observed the QC inspector verifying the welding parameters and were noted as 152 amps. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

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The QAI also observed the continued Shielded Metal Arc Welding (SMAW) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S6. The welding was performed by the welding personnel Chun Fai Tsui ID-3426 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1010 Rev. 1 during the the Complete Joint Penetration (CJP)welding of the double-v-groove joint identified as B-U3b per the AWS joint designation. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding. The welding was performed in the vertical (3G) position with the work placed in the vertical plain. Later in the shift the QAI observed the QC inspector verifying the welding parameters and were noted as 143 amps. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

Later in the shift the QAI also observed the continued Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) 1W-2W-C. The welding was performed by American Bridge/Fluor Enterprise personnel Songtao Huang, ID-3794 utilizing the WPS ABF-D15-3042A-1 Rev. 0. The joint designation appeared to comply with AWS single-v-groove butt joint identified as B-U2a-G. The WPS was also used by the QC inspector Bernie Docena as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters which noted and recorded by the QAI as follows: 256 amps, 22.5 volts and a travel speed measured as 270mm per minute. The welding was performed in the as-built position at approximate incline of 22 degrees. The QAI inspector also verified the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. Later during the shift the QAI observed, at random intervals, the QC inspector monitoring the in process welding, the surface temperatures and verifying the DCEP welding parameters.

B) Field Splice W3/W4

The QAI observed the excavation of the unacceptable discontinuities discovered during the Ultrasonic Testing (UT) performed by the QC Technicians, Tom Pasqualone and Steve McConnell. The excavations were performed by welding personnel Jordan Hazelaar ID-2135 utilizing a high cycle grinder and a rotary file to remove the defects. At the conclusion of the excavations the QC inspector, Tom Pasqualone, performed a visual inspection and a Magnetic Particle Test (MPT) of the areas. No rejectable indications were noted by the QC inspector and Mr. Hazelaar commence the welding of the excavations utilizing the WPS identified as ABF-WPS-D15-1001-Repair Rev. 2. The QAI verified the DCEP welding parameters as 180 amps and the minimum preheat 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. Later in the shift the QAI observed at random intervals the QC inspector monitoring and verifying the welding parameters.

The QAI also observed Mr. Pasqualone perform Ultrasonic Testing (UT) of the repairs of the deck plate field splice identified as WN: 3W-4W-A at Segment A3. The testing was performed by the QC technician utilizing the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. The QC technician performed the required shear wave technique during the testing for weld soundness which was performed utilizing a .75 x .75 rectangular transducer. The ultrasonic testing of eight (8) repairs was completed during this shift. See QA Observation and Verification Summary regarding QAI UT verification.

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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 ESAB consumables utilized for the SMAW and FCAW-G process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift was not completed 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 QAI also performed a random ultrasonic verification test of the Complete Joint Penetration (CJP) groove weld identified as WN: 3W-4W and eight (8) repairs. A total area of approximately 10% was ultrasonically tested and 100% of the repairs were tested to verify the weld and testing by QC meet the requirements of the contract documents. The examination was performed in the first and second leg and a ultrasonic test report, TL6027, was generated on this date.

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.

Inspected By: Reyes, Danny

Quality Assurance Inspector

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Reviewed By: Levell,Bill

QA Reviewer