

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-016635**Date Inspected:** 31-Aug-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1000**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**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 E3/E4, "A" Deck Stiffeners
- B). Field Splice E5/E6

A). Field Splice E3/E4, "A" Deck Stiffeners

The QAI observed the welder, Hua Qiang Hwang ID-2930, perform the Complete Joint Penetration (CJP) groove welding on the longitudinal stiffener field splice identified as WN: 3E-4E-A-LS1. The welder utilized 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 John Pagliero as a reference. The amperage was recorded as 126 amps and the minimum preheat of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified. The welding was performed and completed on the "B" face of the weld joint.

The QC inspector John Pagliero performed the fit-up inspection of the longitudinal stiffener identified as WN: 3E-4E-A-LS2 and the vertical planar alignment appears to be 7.5mm to 4.0mm and does not comply with the contract documents. This issue has been addressed and a Request for Information (RFI) has been submitted by the contractor to the Department for review and approval. The welding has proceeded at the contractor's risk. The CJP welding was performed by the welder Mr. Hwang utilizing the WPS ABF-WPS-D15-1012-3, Rev. 0. The QC inspector also utilized the WPS to monitor the welding and verify the welding parameters.

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The QAI also observed the welder perform the back grinding on the "B" face of the weld joint utilizing a rotary file and at the conclusion of the back grinding the QC technician Tom Pasqualone performed a visual inspection and a Magnetic Particle Test (MPT) on the excavation and at the conclusion of the testing no rejectable indications were noted. The application and evaluation of the testing appeared to comply with the procedure identified as SE-MT-CT-D1.5-101 Rev. 4. At the conclusion of the testing, the welder commence the CJP welding of the weld joint identified per the AWS weld designation B-U3b. The welder, Xiao Jian Wan ID-9677, performed the CJP groove welding on the longitudinal stiffener field splice identified as WN: 3E-4E-A-LS5. The welder utilized 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 John Pagliero 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 completed during this shift.

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 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.

B). Field Splice E5/E6

The QAI observed continued the Ultrasonic Testing (UT) on the side plate field splice identified as WN: 5E-6E-E2. The testing was performed by the QC technician Steve McConnell utilizing a G.E./Krautkramer USM 35X and the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. The QC technician performed the required longitudinal testing for base metal soundness and shear wave testing for weld soundness which was performed utilizing a .75 x .75 rectangular transducer. At the conclusion of the ultrasonic testing of the "A" face four (4) rejects were noted by Mr. McConnell.

The QAI observed the excavation of the unacceptable discontinuities, discovered during the Ultrasonic Testing (UT) performed by the QC Technician, Tom Pasqualone, which are currently in the R2 repair cycle. The excavations were performed by Ken Chappell, utilizing a 4" high cycle grinder, and the repair welding was performed by welding personnel Fred Kaddu ID-2188. At the conclusion of the excavations the QC technician, Steve McConnell, performed a visual inspection and a Magnetic Particle Test (MPT) of the excavated areas. No rejectable indications were noted by the QC inspector and Mr. Kaddu commenced the repair welding utilizing the Shielded Metal Arc Welding (SMAW) process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1000-Repair Rev. 2. The inspection of the repair welding was performed by Mr. Pasqualone utilizing the WPS as a reference. The QC inspector verified the DCEP welding parameters as 132 amps and the minimum preheat 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The repair welding was completed during this shift.

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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 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 the FCAW-G processes 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 the work observed during this scheduled shift.



Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. and Mike Johnson 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.

The QC inspector informed the QAI that he had notified Mike Johnson of the misalignment issue and Mr. Johnson in turn informed Welding Quality Control Manager (WQCM), James Bowers of the issue. Later in the shift the QC inspector informed the QAI that AB/F was in the process of generating a Request for Information (RFI) to correct the misalignment and would be submitted to the Department for review and approval

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