

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:** Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-016647**Date Inspected:** 07-Sep-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 E4/E5, "A" Deck Stiffeners
- C). Field Splice E5/E6
- D). Field Splice E6/E7

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

The QAI observed the QC inspector John Pagliero perform a visual weld inspection of the Complete Joint Penetration (CJP) on the longitudinal stiffener field splices identified as WN: 3E-4E-A-LS1, LS2 and LS3. No rejectable flaws were noted by the QC inspector. Later in the shift the QC technician, Salvador Moreno performed the Magnetic Particle Test on each of the weld joints utilizing a Parker Probe identified as DA-400. The testing was performed as per the MPT procedure identified as SE-MT-D1.5-CT-100 Rev.4 and at the conclusion of the testing no rejects were noted by the QC technician.

B). Field Splice E4/E5, "A" Deck Stiffeners

The QAI observed the welder, Hua Qiang Hwang ID-2930, continue the Complete Joint Penetration (CJP) groove welding on the longitudinal stiffener field splice identified as WN: 4E-5E-A-LS3. The welder utilized the SMAW

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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 123 amps and the minimum preheat of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified.

The QAI also observed the welder, Fred Kaddu ID-2188, perform the Complete Joint Penetration (CJP) groove welding on the longitudinal stiffener field splice identified as WN: 4E-5E-A-LS4. 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 129 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 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. The welder completed the correcting of the root opening and the QAI observed the QC inspector perform a dimensional survey of the root opening and the included angle prior to the CJP welding. At the time of the observation no issues were noted by the QAI.

C). Field Splice E5/E6

The QAI observed the QC inspector Steve McConnell perform a visual weld inspection of the Complete Joint Penetration (CJP) on the edge plate field splice identified as WN: 5E-6E-F1. At the conclusion of the inspection the QC inspector performed a Magnetic Particle (MPT) and an Ultrasonic Test (UT) on the field splice and no rejectable indications were noted. The MPT was performed utilizing a Parker Probe identified as a DA-400 and a G.E./Krautkramer USM 35X was utilized to perform the UT. The testing was performed as per the MPT procedure identified as SE-MT-D1.5-CT-100 Rev.4 and the SE-MT-D1.5-CT-100 Rev.4 was utilized to perform the UT. At the conclusion of the testing no rejects were noted by the QC technician.

D). Field Splice E6/E7

The QAI observed the continuous tack welding of the backing bar to the deck plate identified as WN: 6E-7E-A. The welding was performed by James Zhen ID-6001 and Song Tao Huang ID-3794 utilizing the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-F3200A Rev. 1 which was also used by the QC inspector, William Sherwood, to monitor the in process welding and verify the welding parameters. The welding was performed in the horizontal position (2F) with the work placed so that the fillet weld metal appeared to be deposited on the upper side of the horizontal surface and against the vertical surface. The welding parameters were verified and recorded by the QC inspector as 240 amps, 23.5 volts and a travel speed measured at 333 mm/m for the welder Mr. Zhen and 270 amps, 24.2 volts and a travel speed measured at 350 mm/m. The minimum/maximum surface temperatures were also verified and recorded by the QC inspector.

The QAI also observed the continuous tack welding of the backing bar to the deck plate identified as WN:

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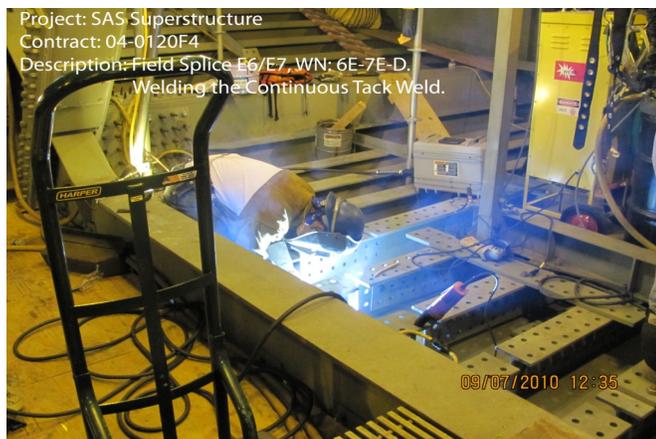
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6E-7E-D. The welding was performed by Xiao Jian Wan, ID-9677 utilizing the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-F3200A Rev. 1 which was also used by the QC inspector, William Sherwood, to monitor the in process welding and verify the welding parameters. The welding was performed in the horizontal position (2F) with the work placed so that the fillet weld metal appeared to be deposited on the upper side of the horizontal surface and against the vertical surface. The welding parameters were verified and recorded by the QC inspector as 226 amps, 22.8 volts and a travel speed measured at 292 mm/m. The minimum/maximum surface temperatures were also verified and recorded by the QC inspector.

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.

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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Inspected By: Reyes,Danny

Quality Assurance Inspector

Reviewed By: Levell,Bill

QA Reviewer