

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-016241**Date Inspected:** 16-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 E1/E2
- B). Field Splice E2/E3
- C). Field Splice W2/W3
- D). Field Splice W3/W4

A). Field Splice E1/E2

The QAI observed the welder James Zhen correcting the excessive root opening on the longitudinal field splice identified as WN: 1E-2E-A-LS1. The welder utilized the Shielded Metal Arc Welding (SMAW) as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0 and the weld inspection was performed by John Pagliero utilizing the WPS as a reference. The QC inspector verified the welding parameters and were observed and recorded by the QAI as 132 amps. The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical. The minimum preheat temperature of 100 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. 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.

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Later in the shift the QAI observed Mr. Pagliero perform Ultrasonic Testing (UT) field splices on the longitudinal stiffener plates identified as WN: 1E-2E-A-LS5 and LS6. 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 longitudinal wave testing for base metal soundness followed by the shear wave technique during the testing for weld soundness which was performed utilizing a .75 x .75 rectangular transducer. No rejectable indications were noted by the QC technician. At the conclusion of the QC testing the QC technician requested QAI verification of the CJP. See Summary of Conversations regarding the scheduling of QAI UT verification.

B). Field Splice E2/E3

The QAI also observed the welder, Xiao Jian Wan ID-9677, correcting the excessive root opening utilizing the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0. This work was performed on the longitudinal stiffener field splice identified as WN: 2E-3E-A-LS3 and the inspection was performed by Mr. Pagliero utilizing the WPS as a reference. The QC inspector verified the welding parameters and were observed and recorded by the QAI as 123 amps. The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical. The minimum preheat temperature of 100 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. 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.

C). Field Splice W2/W3

The QAI observed the excavation of the unacceptable discontinuities discovered during the Ultrasonic Testing (UT) of edge plate field splice identified as 2W-3W-D1. The excavation and repair welding was performed by Fred Kaddu ID-2188 utilizing a high cycle grinder to remove the defect. At the conclusion of the excavations the QC technician William Sherwood performed a Magnetic Particle Test (MPT) of the excavated areas and no rejectable indications were noted. The application and evaluation of the MPT appeared to comply with the MPT procedure identified as SE-MT-CT-D1.5-101 Rev. 4. The repair welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and the 3.2mm electrode as per the Welding Procedure Specification (WPS) identified as ABF-WPS-1000 Repair Rev. 2. The WPS was also used by the QC inspector, Mr. Sherwood, as a reference to monitor and verify the Direct Current welding parameters which were noted as 136 amps. The welding was performed in the flat (1G) position with the work in the horizontal plane and the weld metal deposited from above. The minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was monitored and maintained by the QC inspector during the repair welding. The repair welding was completed at the end of the scheduled shift.

D). Field Splice W3/W4

The QAI observed the Ultrasonic Testing (UT) of the repair on the edge plate field splice identified as WN: 3W-4W-B1, R3. The testing was performed by the QC technician Jesse Cayabyab 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 wave testing for base metal soundness followed by the shear wave technique for weld

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soundness which was performed utilizing a .75 x .75 rectangular transducer. No rejectable indications were noted by the QC technician. At the conclusion of the QC testing the QC technician requested QAI verification of the CJP. See Summary of Conversations regarding the scheduling of QAI UT verification.

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 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 the work observed during this scheduled shift.



Summary of Conversations:

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

At 1630, the QAI contacted QC Supervisor, Leonard Cross, via cell phone regarding the request by QC inspector John Pagliero and Jesse Cayabyab. Mr. Cross confirmed the request and inquired the QAI to commence the UT verification.

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