

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-013054**Date Inspected:** 15-Apr-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 W1/W2 and W2/W3 field splices:

- A). Welding and QC/NDT of the Field Splice W1 to W2
- B). Welding of Field Splice W2/W3

A) Welding of Field Splice W1/W2

The QAI observed the continued Shielded Metal Arc Welding (SMAW) of the bottom plate field splice identified as Weld Number (WN): 1W-2W-D. The Complete Joint Penetration (CJP) groove welding was performed by welding personnel James Zhen ID-6001 and Chun Fai Tsui utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1040C Rev. 1. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena as a reference when performing QC verification of the Direct Current Electrode Positive (DCEP) welding parameters during the CJP welding. The groove joint appeared to comply with the AWS joint designation identified as B-U2a. The QAI also observed the QC inspector verify the average welding parameters and were observed as 158 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. The CJP welding of the groove joint identified as "A" side was completed during this shift.

WELDING INSPECTION REPORT

(Continued Page 2 of 3)

The QAI also observed continued the Ultrasonic Testing (UT) of the transverse CJP weld and the repairs of the deck plate field splice identified as WN: 1W-2W-A. The testing was performed by the QC technician Steve McConnell utilizing a Krautkramer USM 35 and 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 was completed during this shift. See QA Observation and Verification Summary regarding QAI UT verification.

B) Welding of the Field Splice W2/W3

Later in the shift the QAI observed the removal of a crack in the continuous tack weld located at the field splice identified as WN: 2W-3W-A, Weld Segment A1. The linear length of the crack was approximately 500mm. At the conclusion of the removal of the crack the QC inspector William Sherwood performed the Magnetic Particle Testing (MPT) and no rejectable indications were noted. At this time welding personnel Jordan Hazelaar ID-2135 commence the repair welding utilizing the WPS ABF-WPS-D15-1000-Repair Rev. 2 as per the Submittal identified as ABF-SUB-001503 Rev. 7, Request for Weld Repair Approval, Report No: 201004-013. The WPS was also used by the QC inspector as a reference to monitor and verify the DCEP welding parameters which were noted as 157 amps. The QAI verified the minimum preheat at 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. At the conclusion of the repair welding, the QC inspector performed the required MPT and no rejectable indications were noted. At this time, ABF welding personnel, Jordan Hazelaar and Bryce Howell ID-5591 continued the production welding utilizing the Submerged Arc Welding (SAW) as per the WPS identified as ABF-WPS-D15-4042B-1 Rev. 0. The QC inspector's William Sherwood and Bonifacio Daquinag also used the WPS to monitor the CJP welding and verify the DCEP welding parameters. The QAI inspector observed the QC inspector's monitoring the welding parameters and the surface temperatures at random intervals.

The QAI also observed the continuous tack welding of the backing bar to the bottom plate identified as WN: 2W-3W-D. The welding was performed by James Zhen ID-6001 and Chun Fai Tsui ID-3426 utilizing the WPS identified as ABF-WPS-D15-F1200A Rev. 1 which was also used by the QC inspector, Bernie Docena, to monitor the in process welding and verify the welding parameters. The welding parameters were verified and recorded by the QAI as follows: 157 amps for the welder Mr. Tsui and 160 amps for the welder Mr. Zhen. The minimum and maximum surface temperatures were also verified and recorded by the QAI.

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 SAW processes appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift was not completed, except as noted, 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.

WELDING INSPECTION REPORT

(Continued Page 3 of 3)

The QAI also performed a random ultrasonic verification test of the Complete Joint Penetration (CJP) groove weld identified as WN: 1W-2W-A. A total area of approximately 10% was ultrasonically tested to verify the weld and testing by QC meet the requirements of the contract documents. The QC inspector also verified a total of four repairs. The examination was performed in the first and second leg and a ultrasonic test report, TL6027, was generated on this date.

The QAI also performed a random visual verification of the CJP groove weld identified as WN: 1W-2W-A to verify the weld and QC visual inspection comply with the contract documents. At the conclusion of the verification no rejectable discontinuities were noted.

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

Reviewed By: Levell, Bill

QA Reviewer
