

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-013465**Date Inspected:** 28-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 locations noted below:

- A). Field Splice W1/W2
- B). Field Splice W3/W4

A) Field Splice W1/W2

The QAI also observed the Flux Cored Arc Welding (FCAW-G) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S5. The welding was performed by the welding personnel James Zhen ID-6001 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3011-3 Rev. 1 for the Complete Joint Penetration welding of the double-v-groove joint identified as per the AWS joint designation B-U3b. 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. Later in the shift the QAI observed the QC inspector verifying the welding parameters and were as follows: 275 amps, 23.3 volts with a travel speed measured at 230mm/minute. 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 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

The QAI also observed the Shielded Metal Arc Welding (SMAW) of the bottom plate longitudinal stiffener field

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splices identified as Weld Number (WN): 1W-W2-D-S11. The welding was performed by the welding personnel Chun Fai Tsui ID-3426 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1010 Rev. 0 to correct the excessive root openings of the double-v-groove joint identified as per the AWS joint designation B-U3b. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena as a reference to perform the monitoring and verifying the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding. Later in the shift the QAI observed the QC inspector monitoring the welding and verifying the welding parameters and were noted as 113 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 QAI observed the automatic Flux Cored Arc Welding (FCAW-G) welding during the Complete Joint Penetration (CJP) groove welding of the side plate field splice performed by Songtao Huang ID-3794. The single-v-groove joint appeared to comply with the AWS joint designation identified as B-U2a-GF. The welder, Mr. Huang, utilized the FCAW-G welding process as per the WPS ABF-WPS-D15-3042A-4 Rev. 0 which was also used as a reference by the Quality Control (QC) inspector Bernie Docena to monitor and verify the welding parameters and the surface temperatures during the welding operation. The Direct Current Electrode Positive welding parameters were verified and noted by the QC inspector and were noted as follows: 256 amps, 23.5 volts and a travel speed measured at 205 mm/minute. The minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were maintained.

B) Field Splice W3/W4

The QAI also observed the fillet welding of the fitting gear to the bottom plate field splice to be utilized during the alignment process of the field splices. The work was performed on the weld joints identified as WN: 3W-4W-B and 3W-4W-C. The welding and the assembly fit-up was performed by Rick Clayborn ID-2773 utilizing the SMAW process during the welding as per the WPS ABF-WPS-D15-F1200A Rev. 1. The WPS was also used by the QC inspector Bonifacio Daquinag as a reference to verify the DCEP welding parameters and were noted as follows: 129 amps. Later in the shift the QAI observed the QC inspector verify the surface temperatures and appeared to comply with the contract documents were noted as follows: 20 degrees Celsius (preheat temperature) and the maximum interpass temperature of 230 degrees Celsius. The assembly fit-up of the field splices was completed during this shift and appeared to comply with the contract documents.

The QAI also observed the machining of the deck plate field splice identified as 3W-4W-A. The machining was performed utilizing high cycle grinders to perform the machine the cover pass. It appears the machining of the weld surface is performed to prepare the weld joint regarding inspection and N.D.E.

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, FCAW-G and SAW processes appeared to comply with the AWS Specification and AWS Classification.

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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.

The QAI also performed an Ultrasonic Test (UT) on the repairs of the transverse weld identified as WN: 2E-3E-C. The repaired areas were tested 100% to verify that the welds and testing by QC meet the requirements of the contract documents. The examination was performed as per the contract documents and a ultrasonic test report, TL-6027, was generated.

The 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