

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-015834**Date Inspected:** 26-Jul-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 W1/W2
- B). Field Splice W4/W5
- C). Field Splice W5/W6

A). Field Splice W1/W2

The QAI observed the Ultrasonic Testing (UT) of the repairs on the edge plate field splice identified as WN: 1W-2W-B1. The testing was performed by the QC technician Tom Pasqualone 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 shear wave technique during the testing for weld soundness which was performed utilizing a .75 x .75 rectangular transducer. The ultrasonic testing of the UT repairs was completed during this shift. See QA Observation and Verification Summary regarding QAI UT verification.

Later in the shift, the QAI observed the excavation of the unacceptable discontinuities discovered during the Ultrasonic Testing (UT) of bottom plate field splice identified as 1W-2W-D2 performed by the QC Technician, Steve McConnell. The excavations were performed by welding personnel Fred Kaddu ID-2188 utilizing a high cycle grinder to remove the defects. The excavation process was not completed during this shift.

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B). Field Splice W4/W5

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the edge plate field splice identified as Weld Number (WN): 5W-6W-F1. The Complete Joint Penetration (CJP) groove welding was performed by welding personnel Hua Qiang Hwang ID-2930 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3110-3 Rev. 0. The WPS was also used by the AB/F Quality Control (QC) Inspector Tom Pasqualone as a reference during the monitoring of the in process field welding and when performing the QC verification of the Direct Current Electrode Positive (DCEP) welding parameters. The groove joint appeared to comply with the AWS joint designation identified as B-U2a-GF. The QAI also observed the QC inspector verify the average welding parameters and were observed as follows: 225 amps, 21.0 volts and a travel speed measured at 183mm/minute. The minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was also verified by the QC inspector. The welding was performed on the "B" face of the CJP and the work was positioned in 3G position in an approximate vertical plane with the groove approximately vertical.

The QAI also observed the removal of the backing bar and at the conclusion of the backing bar removal the operator Bryce Howell commence the back gouging on the "B" face of the single-v-groove weld joint identified as Weld Number (WN): 4W-5W-D. The back gouging was performed utilizing the plasma arc cutting method.

C). Field Splice W5/W6

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the edge plate field splice identified as Weld Number (WN): 5W-6W-B1. The Complete Joint Penetration (CJP) groove welding was performed by welding personnel Xiao Jian Wan ID-9677 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3040B-3 Rev. 0. The WPS was also used by the AB/F Quality Control (QC) Inspector William Sherwood as a reference during the monitoring of the in process field welding and when performing the QC verification of the Direct Current Electrode Positive (DCEP) welding parameters. The groove joint appeared to comply with the AWS joint designation identified as B-U2a-GF. The QAI also observed the QC inspector verify the average welding parameters and were observed as follows: 230 amps, 21.0 volts and a travel speed measured at 186mm/minute. The minimum preheat temperature of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was also verified by the QC inspector. The welding was performed on the "A" face side of the weld joint and was not completed during this shift.

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.

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The QAI also reviewed the Request for Information (RFI) document identified as ABF-RFI-00611R00 regarding the verification of the Complete Joint Penetration groove welds at the floorbeam web to skin plate weld at the Orthotropic Box Girder (OBG) suspender brackets located at various areas as noted in the RFI. The QAI performed Ultrasonic Testing to verify the CJP along girder Face "B", for 1100mm from the OBG corner on girder Face "A", and for 800mm from the OBG corner on girder Face "C". At the conclusion of the QAI verification no issues were noted on the OBG Lift W1, PP14, PP16 and PP18 for CJP clarification.

The QAI also performed an Ultrasonic Test (UT) on the repairs of the edge plate field splice weld identified as WN: 1W-2W-B1. 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 on this date.

The digital photographs below illustrate the work observed during this scheduled shift.



Summary of Conversations:

There were general conversations with Quality Control Inspector's Tom Pasqualone and Steve McConnell at the start of the shift regarding the location of American Bridge/Flour welding personnel and inspection/ N.D.E. testing 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.

Inspected By:	Reyes, Danny	Quality Assurance Inspector
Reviewed By:	Levell, Bill	QA Reviewer
