

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-013436**Date Inspected:** 26-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 W2/W3
- C). Field Splice W3/W4

A) Field Splice W1/W2

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: 270 amps, 22.7 volts and a travel speed measured at 240 mm/minute. The minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were maintained.

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B) Field Splice W2/W3

The QAI observed the Ultrasonic Testing (UT) of the deck plate field splice repairs identified as WN: 2W-3W-A. The testing was performed by the QC technician Steve McConnell utilizing a Krautkramer USM 35X. Mr. McConnell also utilized the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 during the examination of the CJP repairs. The QC technician performed the required longitudinal wave utilizing a 1" diameter transducer for base metal soundness and a .75 x .75 rectangular transducer to perform the shear wave testing during the testing for weld soundness. At the end of the shift there appeared to be no rejectable discontinuities noted by the QC technician.

C) Field Splice W3/W4

Later in the shift the QAI observed the Magnetic Particle Testing (MPT) of a crack in the continuous tack weld located at the field splice identified as WN: 2W-3W-A, Weld Segment A1. At the conclusion of the removal of the crack the QC inspector Bonifacio Daquinag performed the Magnetic Particle Testing (MPT) and no rejectable indications were noted. At this time welding personnel Kenneth Chappell ID-3833 commence the repair welding utilizing the WPS ABF-WPS-D15-1000-Repair Rev. 2. The WPS was also used by the QC inspector as a reference to monitor and verify the DCEP welding parameters which were noted as 151 amps. The QAI verified the minimum preheat at 40 degrees Celsius and the interpass temperature of 230 degrees Celsius. At the conclusion of the repair, Mr. Daquinag performed a second MPT prior to the production welding and no rejectable indications were noted by the QC technician. At this time, the welding personnel Bryce Howell commence the production welding utilizing the Submerged Arc Welding (SAW) process as per the WPS identified as ABF-WPS-D15-4042B-1 Rev. 0.

The QAI observed the Submerged Arc Welding (SAW) process of the deck plate field splice identified as Weld Number (WN): 3W-4W-A, Segments 1A through 3A. The welding was performed by the welding operator Jordan Hazelaar ID-2135 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The WPS was also used by the AB/F Enterprises Quality Control (QC) Inspector Bonifacio Daquinag to perform QC verification of the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding of the transverse field splice. The QAI observed the QC inspector verifying the welding parameters and were noted as follows: 565 amps, 32.6 volts and a travel speed measured at 381mm per minute. The surface temperatures were also verified by the QC inspector and were noted as follows: the minimum preheat temperature of 60 degrees Celsius, the maximum interpass temperature of 230 degrees Celsius.

The QAI also observed a second Submerged Arc Welding (SAW) operation of the deck plate field splice identified as Weld Number (WN): 3W-4W-A, Segments 3A through 5A. The welding was performed by the welding operator Bryce Howell ID-2135 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The WPS was also used by the AB/F Enterprises Quality Control (QC) Inspector Steve McConnell to perform QC verification of the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding of the transverse field splice. The QAI observed the QC inspector verifying the welding parameters and were noted as follows: 570 amps, 33.0 volts and a travel speed measured at 381mm per minute. The surface temperatures were also verified by the QC inspector and were noted as follows: the minimum preheat temperature of 60 degrees Celsius, the maximum interpass temperature of 230 degrees Celsius.

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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.

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) and a Magnetic Particle Test (MPT) on the repairs of the transverse weld identified as WN: 2W-3W-A. 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 and a TL-6028 was generated on this date.

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
