

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:** Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-024079**Date Inspected:** 01-Jun-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** Pat Swain**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:** Tower**Summary of Items Observed:**

This Quality Assurance (QA) Inspector, Craig Hager was on site at the job site between the times noted above. This QA Inspector was on site to randomly observe Quality Control (QC) personnel perform Non-Destructive Testing (NDT) and monitor American Bridge/Fluor (ABF) welding operations. This Quality Assurance (QA) Inspector, Craig Hager observed the following.

This QA Inspector observed ABF personnel working at the 9 meter level in an effort to weld the external diaphragm plates to the various shear plates and tower skin plates. This QA Inspector observed the following during the shift noted above.

This QA Inspector observed ABF welding personnel were in the process of setting up the induction preheating equipment at weld joints #45 and #46 at approximately 0730 hours. At approximately 0900 hours QC Inspector Pat Swain informed this QA Inspector the minimum preheat temperature of 225°F had been obtained. This QA Inspector verified the preheat temperature using an electronic temperature gauge.

This QA Inspector observed ABF welding personnel Wai Kitlai (#2953) was setting up the Flux Cored Arc Welding (FCAW) equipment to begin welding on weld joint #45.

This QA Inspector observed ABF welding personnel Hua Qiang Hwang (#2930) was setting up FCAW equipment to begin welding on weld joint #46.

At approximately 0945 hours FCAW began at weld joint #45 and #46. This QA Inspector observed as QC

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Inspector Pat Swain verified the following welding parameters; Hua Qiang Hwang (#2930) - 295 amperes and 24 volts at a travel speed of 521 mm per minute to produce a heat input of 0.82 KJ per mm and Wai Kitlai (#2953) - 265 amperes and 24.2 volts at a travel speed of 347 mm per minute to produce a heat input of 1.11 KJ per mm. These parameters appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-3160-1.

This QA Inspector observed as QC Inspector Pat Swain perform a visual and Magnetic Particle Testing (MT) on the root pass of each weld. The root pass of weld #45 was approximately 1300 mm long, half the overall length. The root pass of weld #46 was approximately 1200 mm long, half the overall length. This QA Inspector was informed by QC Inspector Pat Swain that the root passes of both welds passed both the visual and MT inspection. This QA Inspector performed a random visual verification and observed the work appeared to comply with the contract requirements.

This QA Inspector periodically observed QC Inspector Pat Swain monitoring the work at this location, see photo below.

This QA Inspector observed welding continued at weld joints #45 and #46 at approximately 1200 hours. This QA Inspector observed the induction heating blankets were placed over the welds to start the 3 hour post heating. Approximately 2 hours into the post heating this QA Inspector verified the areas welded were still at the required (225°F) temperature using an electronic heat gauge.

This QA Inspector observed various ABF personnel continued to tear down the Electro Slag Welding (ESW) equipment at weld joint S-045 and move it to weld joint #S-046.

This QA Inspector observed QC Inspectors Steve McConnell performing preliminary Ultrasonic Testing (UT) using a shearwave transducer. Later this date QC Inspector Steve McConnell informed this QA Inspector the preliminary UT had been completed using a 70 degree transducer from both sides. He implied that two areas had defects and one area a recordable indication was observed. He stated a recordable indication did not produce a signal strong enough to reject the weld, but that the overall length was greater than 50 mm and that in this case the estimated length was 200 mm. The "recordable" indication appears to comply with the requirement specified in the contract requirements regarding locations for Radiographic Testing (RT). Weld #S-045 is a 90 degree tee joint.

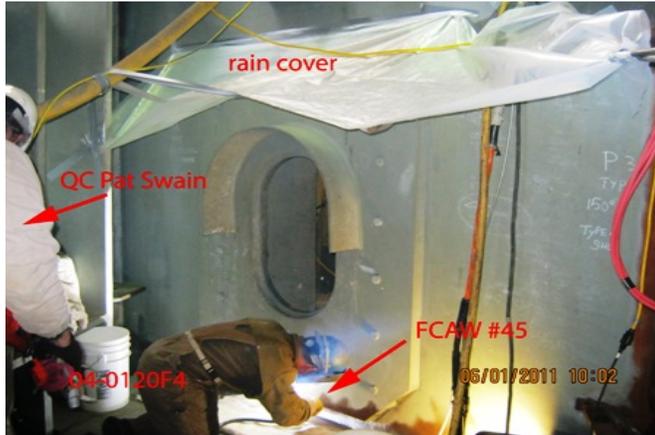
This QA Inspector observed QC inspection personnel had performed a visual inspection and marked both sides of weld #S-045 for grinding. This QA Inspector performed a random visual verification and observed the locations marked contained roll over /lack of fusion. This QA Inspector observed at several location Shielded Metal Arc Welding (SMAW) was being performed at areas where visual defects resulted in grinding below the surface of the base material. This QA Inspector observed QC Inspector Pat Swain perform a visual and MT inspection of two areas on the West side of the weld #S-045, approximately 6 meters up, prior to preheating and welding. ABF welding personnel Xiao Jian Wan (#9677) performed the welding. This QA Inspector verified the following welding parameters; 130 amperes using a 3.2 mm diameter E7018H4R electrode. The welding observed appeared to comply with ABF-WPS-002 Repair.

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Summary of Conversations:

This QA Inspector had general conversations with American Bridge/Fluor (ABF) and Caltrans personnel during this shift. Except as described above and noted below there were no notable conversations.



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 Nina Choy (510) 385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Hager,Craig	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer
