

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
690 Walnut Ave. St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

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-024080**Date Inspected:** 31-May-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 #53 and #55 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 #53.

This QA Inspector observed ABF welding personnel Xiao Jian Wan (#9677) was setting up FCAW equipment to begin welding on weld joint #55.

At approximately 0945 hours FCAW began at weld joint #53 and #55. This QA Inspector observed as QC

WELDING INSPECTION REPORT

(Continued Page 2 of 3)

Inspector Pat Swain verified the following welding parameters; Xiao Jian Wan (#9677) - 285 amperes and 25.5 volts at a travel speed of 400 mm per minute to produce a heat input of 1.09 Kj per mm and Wai Kitlai (#2953) - 285 amperes and 24.5 volts at a travel speed of 360mm per minute to produce a heat input of 1.16 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 inspection of the root pass on weld # 53. This QA Inspector was informed the first 1100 mm contained multiple porosity indications but that the last 500 mm of the weld appeared acceptable. This QA Inspector performed a random visual verification and concurred with the observations and measurements provided by QC Pat Swain.

This QA Inspector observed welding continued at weld joint #53 for the last 500mm of root pass that was accepted by QC Pat Swain. This QA Inspector observed as the Magnetic Particle Testing (MT) was performed on the last 500 mm of the weld and accepted. Production welding was performed on the area accepted by QC.

This QA Inspector observed the welding at joint #55 consisted of fill and cover passes, the root and several fill passes had been welded previously.

The welding being performed at weld joints #53 and #55 were completed at approximately 1200 hours and that the induction heating blankets were placed over the weld to start the 3 hour post hating.

ABF welding Foreman James Zhen stated the next attempt made at weld joint #53 would be to use a SMAW root pass and FCASW fill and cover passes.

This QA Inspector observed various ABF personnel starting 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 and Pat Swain start preliminary Ultrasonic Testing (UT) using a straight beam transducer and scanning for laminations prior to using a shearwave transducer.

This QA Inspector performed a random visual and observed the vast majority of the weld appeared to have a "normal" width and the sides (toes) appeared to be fused to the base metal, whereas when the weld appeared to have a narrow width the filler metal did not appear to be fused to the base metal. See photo below.

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.

WELDING INSPECTION REPORT

(Continued Page 3 of 3)



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