

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-023906**Date Inspected:** 18-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 personnel were in the process of setting up the induction preheating equipment at weld joints #53 and #54 at approximately 0730 hours. Weld joints #53 and #54 are at the Southern section between the South and East tower legs.

At approximately 0930 hours QC Inspector Pat Swain informed this QA Inspector the preheat temperature was slightly above the minimum of 225°F. This QA Inspector verified the preheat using a temperature indicating marker.

This QA Inspector observed ABF welding personnel Xiao Jian Wan (#9677) start production welding at the center of weld joint #53 for an approximate length of 1000 mm and ABF welding personnel Jin Quan Huang (#9340) and Wai Kitlai (#2953) start production welding at the center of weld joint #54 for an approximate length of 1350 mm with one on each end. This QA Inspector observed the welding personnel noted above were using Flux cored Arc

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Welding (FCAW) process. This QA Inspector observed as QC Inspector Pat Swain verified the following welding parameters; Xiao Jian Wan (#9677) 285 amperes and 25.1 volts at a travel speed of 388 mm per minute to produce a heat input of 1.11 Kj per mm, Jin Quan Huang (#9340) 291 amperes and 25.3 volts at a travel speed of 500 mm per minute to produce a heat input of 0.88 Kj per mm and Wai Kitlai (#2953) 290 amperes and 25.1 volts at travel speed of 400 mm per minute to produce a heat input of 1.09 Kj per mm. The welding observed appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-3160-1. See photo below, noting close working conditions.

This QA Inspector observed QC Inspector Pat Swain perform Magnetic Particle Testing (MT) on the root pass of weld joint # 54 and informed this QA Inspector he had accepted the weld. This QA Inspector performed a random visual verification and the welding appeared to comply with the contract requirements.

QC Inspector Pat Swain informed this QA Inspector he was rejecting the visual inspection of the root pass on weld joint #53 due to porosity. This QA Inspector performed a random visual verification and concurred, the porosity was intermittent (approximately 25%) for the full length of the root pass. See photo below. This QA Inspector observed ABF welding personnel Xiao Jian Wan (#9677) using a burr to grind out the root pass and was informed by ABF welding Foreman James Zhen (#6001) the entire root pass would be removed.

This QA Inspector observed welding at joint #54 (center section as noted above) was completed and the induction heating blankets were placed over the weld for post hating. This QA Inspector observed grinding was still in process at the end of the shift on weld joint # 53.

This QA Inspector randomly observed ABF welding personnel Wen Han Yu (#6317) using the Shielded Metal Arc Welding (SMAW) process to “butter” or build up the base material at the first 4 sections (between stiffeners, from the North end) at weld joint #29. This QA Inspector had previously observed the root opening or gap at these locations was less than the maximum allowed but was informed by ABF welding Foreman James Zhen (#6001) that they preferred a root opening of 3mm or less and elected to perform the SMAW for this purpose. This QA Inspector performed a verification of the welding parameters and observed 125 amperes using a 3.2 mm diameter E7018H4R electrode. The welding observed appeared to comply with ABF-WPS-D15-F1200A-Rev-2. This QA Inspector randomly observed QC (Inspector Pat Swain periodically monitoring the work at this location. By the end of the shift this date this QA Inspector observed grinding had been performed at 2 of the 4 locations buttering had been performed and that weld metal did not bridge the gap between the shear plate and diaphragm plate to create a root pass and joint fit up appeared to comply with the contract requirements.

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.

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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