

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-023958**Date Inspected:** 25-May-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**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 #55 and #56 at approximately 0730 hours. The induction heating blankets were placed at the North end of each weld joint. 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 Jin Quan Huang (#9340) was setting up the Flux Cored Arc Welding (FCAW) equipment to begin welding on weld joint #56.

This QA Inspector observed ABF welding personnel Wai Kitlai (#2953) was setting up FCAW equipment to begin welding on weld joint #55.

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At approximately 0945 hours FCAW began at both weld joints. This QA Inspector observed as QC Inspector Pat Swain verified the following welding parameters; Jin Quan Huang (#9340) - 280 amperes and 25.4 volts at a travel speed of 466 mm per minute to produce a heat input of 0.92 Kj per mm and Wai Kitlai (#2953) - 280 amperes and 23.5 volts at a travel speed of 464 mm per minute to produce a heat input of 0.85 Kj per mm. These parameters appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-3160-1.

This QA Inspector observed QC Inspector Pat Swain perform a visual and Magnetic Particle Testing (MT) on the root pass of each weld joint. QC Inspector Pat Swain informed this QA Inspector he had accepted both inspections of both welds. This QA Inspector observed the MT inspection also included the ground cascaded end of the previous weld length. This QA Inspector performed a random visual verification of the root pass. The work observed appeared to comply with the contract requirements.

This QA Inspector randomly observed ABF welding personnel Wai Kitlai (#2953) welded the North end of weld joint #55, approximately 1160 mm in length.

This QA Inspector randomly observed ABF welding personnel Jin Quan Huang (#9340) welded the North end of weld joint #56, approximately 1130 mm in length.

This QA Inspector periodically observed QC Inspector Pat Swain monitor the welding at this location.

This QA Inspector observed both weld joints appeared to be completed by the end of welding at approximately 1200 hours this date.

This QA Inspector observed the induction heat blankets were placed over the welds at approximately 1230 hours this date for the 3 hour post weld heating.

This QA Inspector was informed by QC Inspector Pat Swain he had performed a visual and MT inspection of the center, 1500 mm length, of weld joint #53 where the root pass had been removed due to porosity. This QA Inspector performed a random visual verification observing the ground cascaded ends of previous welds had been included in the MT inspection and the work appeared to comply with the contract requirements.

This QA Inspector observed ABF welding personnel Xiao Jian Wan (#9677) using the Shielded Metal Arc Welding (SMAW) process to build up (butter) the shear plate side of the Partial Joint Penetration weld joint #39 due to the root gap. This QA Inspector observed QC Inspector Pat Swain verify the following welding parameters; 145 amperes using a 3.2 mm diameter E7018H4R electrode. This QA Inspector verified the preheat temperature using a temperature indicating marker. The work observed appeared to comply with ABF-WPS-D15-F1204.

This QA Inspector was informed by QCM Jim Bowers and ABF Welding Engineer John Callahan that Electro Slag Welding (ESW) would be performed at the weld joint identified as S0-45, which is a 90 degree Tee-Joint located at the Southwest corner of the center section of the tower base.

This QA Inspector was informed by QC Inspector Steve McConnell that he had been requested by production to measure the root gap of weld joint S-045 this morning. This QA Inspector randomly observed QC Inspector Steve McConnell measure the root gap opening from the 3-meter to the 13-meter level. QC Inspector Steve McConnell

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informed this QA Inspector the root opening was between 16 mm and 25 mm, within the range specified on the WPS. This QA Inspector used a taper gauge and took random measurements from the 3-meter to 13-meter elevations to verify this information. This QA Inspector did not observed any gaps less than 16 mm or greater than 25 mm. The root gap appeared to comply with ABF-WPS-ESW-90T. See photo below of root gap and access hole.

This QA Inspector observed the ladders and various other brackets had been attached on the West side of the weld joint, but had not been attached to the East side as of approximately 0930 hours this date.

This QA Inspector observed the rain had increased to a steady sprinkle by approximately 1130 hours this date. This QA Inspector was informed by QCM Jim Bowers that the start of ESW would probably not happen this date.

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
