

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-022766**Date Inspected:** 13-Apr-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** Steve Jensen**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.

Tower Splice – 83 Meter elevation, South Tower leg: This QA Inspector randomly observed the status of the upper and lower Interior Corner Closure Splice Plates located at the B- C corner and C-D corner. During this shift the following was observed.

B-C corner, lower plate: This QA Inspector randomly observed ABF welding personnel Salvador Sandoval (#2202) performing production welding on the bottom half of the splice plate using the Flux Cored Arc Welding (FCAW) process. This QA Inspector observed a hand held gas torch was being used to preheat areas prior to welding. This QA Inspector observed QC Inspector Steve Jensen using an electronic temperature gauge to verify the preheat temperature. This QA Inspector observed QC Inspector Steve Jensen verify the following welding parameters; 235 amperes and 21.2 volts with a travel speed of 97 mm per minute which produced a heat input of 3.08 KJ per mm. This QA Inspector verified the filler metal as Innershield NR-232, E71T-8-H16 and 1.8 mm diameter. The welding parameters, preheat and filler metal appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-F2200-3. This QA Inspector observed QC Inspector Steve Jensen monitoring the preheat and interpass temperatures, welding parameters and work in general at various times throughout the shift at this location. This QA Inspector randomly also observed ABF welding personnel Salvador Sandoval (#2202) performing production welding on the top half of this splice plate between the existing tack

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welds using the Flux Cored Arc Welding (FCAW) process. This welding was observed after the welding was performed on the bottom half of the splice plate. At the end of the shift this date welding was completed between the existing tack welds. At the end of the shift this date the two vertical welds on the lower half of the splice plate appeared to be completed and welding had been performed between the tack welds on the upper half of this splice plate. This QA Inspector observed the induction heating blanket placed over the splice plate was only long enough to cover the bottom half of the plate. This QA Inspector reminded QC Inspector Steve Jensen that welding was performed on the full length (top and bottom half) of the splice plate implying the induction heat blanket should cover the entire area where welding was performed. Note that ABF has induction heat blankets both the full length of the splice plate (2 meters) and half length (1 meter). QC Inspector Steve Jensen stated ABF welding personnel Sal Sandoval (#2202) had informed him the heat temperature would be increased on the half blanket to allow the heat to soak into the upper half of the splice plate. This QA Inspector was hesitant to think the heat would soak up the splice plate a full meter and also wanted to know what the increases of temperature was. This QA Inspector and QC Inspector Steve Jensen went to the 83 meter elevation, South Tower leg and checked the temperature of the upper half of the lower B-C splice plate and observed it was approximately 175°F. This QA Inspector stated the heat did not appear to be soaking into the top half of the plate. QC Inspector Steve Jensen agreed stated he would inform the welding personnel to use a full length blanket to cover the entire length welding had been performed. This QA Inspector confirmed later the half blanket had been replaced with a full length blanket and the temperature of the induction heater appeared to be set at 390°F for a 3 hour soak time.

C-D corner, upper plate: This QA Inspector randomly observed ABF welding personnel Richard Garcia (#5892) using the Flux Cored Arc Welding (FCAW) process for production welding on the top fillet weld in the horizontal (2F) position. This QA Inspector observed QC Inspector Steve Jensen verify the following welding parameters; 370 amperes and 22.3 volts with a travel speed of 213 mm per minute which produced a heat input of 2.32 Kj per mm. This QA Inspector verified the filler metal as Innershield NR-232, E71T-8-H16 and 1.8 mm diameter. The welding observed appeared to comply with ABF-WPS-D15-F2200-2. This QA Inspector randomly observed ABF welding personnel Richard Garcia (#5892) using the Shielded Metal Arc Welding (SMAW) process for production welding on the bottom fillet weld in the overhead (4F) position. This QA Inspector observed QC Inspector Steve Jensen verify the following welding parameters; 127 amperes using a 3.2 mm diameter E7018 H4R electrode. The welding observed appeared to comply with ABF-WPS-D15-F1200A. This QA Inspector randomly observed QC Inspector Steve Jensen monitoring the welding parameters, preheat and interpass temperature and work in general at various times throughout the shift at this location. At the end of the shift the welding on the top plate appeared to be completed. This QA Inspector observed ABF personnel rigging the induction heat blanket into position on the splice plate for a 3 hour post weld heat.

Tower Splice – 83 Meter elevation, West Tower leg: This QA Inspector had previously observed and noted the splice plates were fit up and held into position with fitting aids (dogs). This QA Inspector did not observe any welding at this location regarding the splice plates.

Tower Base – 3 to 13 Meter elevation; This QA Inspector randomly observed ABF welding personnel Morgan Winters (#3305) using the FCAW process to perform production welding on the various pates used as temporary attachments for the Electro Slag Welding (ESW) process at the North side of the tower, outside the tower. This QA Inspector was informed by Lead QA Inspector Danny Reyes that ABF welding personnel Morgan Winters (#3305) had passed the bend test for the certification/qualification test using the FCAW-self shielded process and filler metal NR-232. The welding observed by this QA Inspector appeared to comply with

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ABF-WPS-D15-2160-1. This QA Inspector randomly observed QC Inspector Pat Swain monitoring the welding at this location at various times throughout the shift.

Tower Elevation – 146: This QA Inspector was informed by Caltrans Construction Engineer Doug Wright the shim plates under the grillage may be tack welded onto the top of the tower legs prior to setting the grillage structure this date. This QA Inspector observed the shim plates had not been tack welded as of approximately 0930 hours this date and was informed by ABF personnel this work would be performed Thursday afternoon or Friday morning. This QA Inspector spoke with ABF welding foreman Eric Sparks regarding this work and was informed that he would notify this QA Inspector prior to tack welding. This information was provided to Caltrans Construction Engineer Doug Wright.

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
