

**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:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-016470**Date Inspected:** 25-Aug-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See below**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:** SAS OBG**Summary of Items Observed:**

The Quality Assurance (QA) Inspector, Rick Bettencourt was on site at the job site between the times noted above. The QA Inspector was on site to randomly observe the in process welding and inspection of the weld joints identified as stiffeners, 5E/6E hole restoration, and the following observations were made:

**2E/3E-A-LS-4,5,6**

The Smith Emery (SE) Quality Control (QC) Inspector John Pagliero was on site and informed the QA Inspector the above identified complete joint penetration (CJP) groove weld of the "A" stiffener plates were completed. The QC Inspector went on to inform the QA Inspector the ultrasonic testing had been completed on all three welds and the welds would be turned over to the Caltrans QA Inspectors some time on this date.

**2E/3E-A-LS-1**

Upon the arrival of the QA Inspector at the above identified location, the QA Inspector randomly observed the ABF welder Xiao Jian Wan preparing to begin the SMAW fill/cover pass from one side only. The QA Inspector randomly observed the ABF welder preheat the material to 200°F utilizing a rosebud torch. The QA Inspector noted the SE QC Inspector John Pagliero was on site monitoring the in process preheats and welding parameters of approved welding procedure identified as ABF-WPS-D1.5-1012-3. The QA Inspector performed a random visual inspection of the above identified stiffener plate and noted the production welding appeared to be in general compliance with the contract requirements and approximately 50% complete. The QA Inspector randomly observed the ABF welder remove the E9018 1/8" electrodes from the rod container at 0730. The QA Inspector noted the maximum exposure time for the above identified electrodes is one hour. The QA Inspector randomly observed the ABF welder continue the SMAW fill passes on the above identified weld joint. The QA Inspector

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noted the SMAW parameters were 130 amps and appeared to be in general compliance with the above identified WPS. The QA Inspector noted the ABF welder completed the production welding at 0900 from one side and began welding from the opposite side. The QA Inspector randomly observed the ABF welder perform grinding tasks of the weld reinforcement on both sides of the weld.

3E/4E-A-LS-4

The QA Inspector randomly observed the ABF welder identified as Hua Qiang Huang was preparing to fit up the above identified weld joint. The QA Inspector randomly observed the two member to be fit up appeared to have planar misalignment which exceeded the maximum allowable for the given thickness. The QA Inspector noted no welding was performed on the QA Inspectors shift, only fitting tasks and fitting aids were utilized.

5E/6E-D1/D2

The QA Inspector randomly observed the ABF welder Rory Hogan and Jeremy Doleman had previously started the induction heating blankets on the outside of OBG next to the weld joint to ensure the minimum required preheat of 150°F was achieved prior to welding. The QA Inspector randomly verified utilizing a 150°F temperature indicating marker and noted the minimum required preheat had been achieved. The QA Inspector observed the ABF welder to be utilizing the semi automated flux cored arc welding (FCAW) for the above identified weld joint. The QA Inspector randomly observed the Smith Emery (SE) QC Inspector identified as Jim Cunningham set the FCAW machine to the parameters of the approved WPS identified as ABF-WPS-D1.5-3042A. The QA Inspector randomly observed the FCAW parameters were 236 Amps, 24.1 Volts and a travel speed of 250mm/min. The QA Inspector randomly observed the ABF welder identified above continue the FCAW fill/cover passes on approximately 2000mm of weld segment D2 of the back weld in the am. The QA Inspector noted the weld segment D2 was completed on this date.

Lifting lug hole restoration

1AE5-The QA Inspector noted the above identified weld joint was completed from the top side of the deck or side "A" upon the arrival of the QA Inspector. The QA Inspector randomly observed the ABF welder James Zhen performed additional pick up welding on a couple of low areas of the weld. After the welder had completed the additional welding indicated by the SE QC Inspector Mike Johnson the welder moved on to the next deck hole to be welded. The QA Inspector noted the weld was not ground flush on this date.

1AE8-The QA Inspector Randomly observed the American Bridge/Fluor (ABF) welder identified as James Zhen begin setting up to perform the shielded metal arc welding (SMAW). The QA Inspector randomly observed the ABF welder perform some base metal grinding of the top deck plate insert prior to commencing the SMAW root pass. The QA Inspector randomly observed the ABF welder grind the precut bevels from 30° to 45°, the QA Inspector randomly verified the bevel angles and noted they appeared to be in general compliance with the contract requirements. The QA Inspector randomly observed the ABF welder had previously installed ceramic backing to the underside of the top deck plate and held in place with adhesive. The QA Inspector randomly observed the ABF welder had set the circular deck insert onto the ceramic backing and held in place utilizing magnets. The QA Inspector performed a random visual inspection of the fit up and noted the root opening, bevel angle and planar alignment of the complete joint penetration (CJP) groove weld appeared to meet the general requirements of the contract documents. (see summary of conversations)

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The QA Inspector randomly observed the ABF welder preheat the area to approximately 100°F prior to performing any SMAW. After the minimum required preheat had been achieved, the QA Inspector randomly observed the ABF welder begin the SMAW root pass. The QA Inspector noted the Smith Emery (SE) Quality Control (QC) Inspector Mike Johnson was on site to monitor and record the in process production welding at the above identified location. The QA Inspector randomly observed the SMAW parameters to be approximately 130 Amps with 5/32" E7018 low hydrogen electrodes. The QA Inspector randomly observed the in process welding parameters and dimensional tolerances appeared to be in general compliance with the approved welding procedure identified as ABF-WPS-D1.5-1050-A. The QA Inspector noted the ABF welder did not complete the SMAW on the QA Inspectors shift.



## Summary of Conversations:

The QA Inspector was informed by the QC Inspector Mike Johnson the ABF welding Superintendent Dan Ieraci would like to begin performing the production welding with flux cored arc welding. The QC Inspector went on to inform the QA Inspector that's why ABF is grinding a 10° bevel on the deck plate prior to welding to open the weld joint up to perform the FCAW. The QA Inspector informed the QC Inspector due to the thickness of the deck plate at lift 1E a 200°F minimum preheats is required along with a 3 hour heat treatment after the welding is complete. The QC Inspector informed the QA Inspector he was not sure if that would be required, but he would check.

The QA Inspector informed John Callaghan of the heat treat and minimum preheat requirements for utilizing the FCAW process with the given thickness of the deck plate at lift 1E. Mr. Callaghan informed the QA Inspector he was aware of the heat requirements and ABF will follow the requirements of the Caltrans Special Provisions. The QA Inspector observed and heard Mr. Callaghan relay the information to the Welding Superintendent Dan Ieraci and noted Mr. Ieraci said "that's ridiculous!" "that will take to many man hours". Mr. Callaghan reiterated to Ieraci it was necessary and a requirement and it would be done.

Mr. Ieraci later made a comment "these welders should have to weld with someone standing over their shoulder" and he asked the QA Inspector if we could stand back during the welding process. The QA Inspector informed Mr. Ieraci after our random verification of fit and in process welding it would not be an issue and yes we could stand back.

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Later in the shift the QA Inspector was knelt down with the ABF welder in an attempt to perform a verification of the planar alignment of the deck insert plate prior to welding. Mr. Ieraci belligerently told the QA Inspector that the inspection was not necessary and “you don’t need to check that!” The QA Inspector informed Mr. Ieraci that indeed it was a requirement to verify the fit up and the planar alignment of the two members. Mr. Ieraci proceeded to come closer and raise his voice at the QA Inspector stating that the QA Inspector was in the way of the welder. The QA Inspector informed Mr. Ieraci once the fit up verification was completed, the QA Inspector would step back out of the way.

### **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 Mohammad Fatemi (916)-813-3677, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Bettencourt,Rick	Quality Assurance Inspector
<b>Reviewed By:</b>	Levell,Bill	QA Reviewer

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