

**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-017665**Date Inspected:** 26-Oct-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:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

- A). Field Splice E6/E7
- B). Field Splice E7/E8
- C). Field Splice W7/W8

A). Field Splice W6/W7

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) 6W-7W-E1 and E2. The Complete Joint Penetration (CJP) was performed by the welder/operator Rory Hogan ID-3186 utilizing the WPS ABF-WPS-D15-3042A, Rev. 1. The WPS was also used by the QC inspector William Sherwood as a reference when monitoring the welding and verifying the welding parameters which were observed as follows: 249 amps, 23.8 volts and a travel speed measured as 179 mm. The QC inspector also verified the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding was performed in the overhead (4G) position with the work at approximate incline of 22 degrees. The CJP welding of the "B" face of the joint was not completed during this scheduled shift.

B). Field Splice E7/E8

The QAI observed the automatic Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld

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## WELDING INSPECTION REPORT

( Continued Page 2 of 3 )

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Number (WN) E7-E8-E1 and E2. The Complete Joint Penetration (CJP) welding was performed by welding personnel Song Tao Huang, ID-3794 utilizing the WPS ABF-D15-3042B-1, Rev. 0. The joint designation appeared to comply with AWS single-v-groove butt joint identified as B-U2a-G. The WPS was also used by the QC inspector Tom Pasqualone as a reference to monitor the welding and to verify the DC welding parameters which were noted and recorded by the QC as follows: 240 amps, 23.0 volts and a travel speed measured as 280 mm per minute. The welding was performed in vertical position (3G) at approximate incline of 22 degrees. The QC inspector also verified the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. Later during the shift the QAI observed, at random intervals, the QC inspector monitoring the in process welding, the surface temperatures and verifying the welding parameters. The welding of the side plate field splice was not completed during this scheduled shift.

### C). Field Splice W7/W8

The QAI observed the excavation of the unacceptable discontinuities on the deck plate field splice identified as WN: 7W-8W-A2 and A5, repair cycle # R1. The rejectable discontinuities was discovered during the Ultrasonic Testing (UT) performed by the QC technician, Steve McConnell and appeared to travel in the longitudinal direction of the weld axis. The excavation was performed by AB/F personnel Hua Qiang Hwang utilizing a high cycle grinder to remove the defects and a rotary file to bring the excavated area into compliance with the Weld Procedure Specification (WPS) ABF-WPS-D15-1001 Repair, Rev. 0. At the conclusion of the excavation the QC inspector, Steve McConnell, performed a visual inspection and a Magnetic Particle Test (MPT) of the areas and one rejectable indication was noted by the QC inspector. Additional grinding was performed and the indications were removed by grinding and confirmed by MPT. At this time the welder commenced the repair welding on the following; Y=2830 mm and 4380 mm located at the weld segment identified as A5 and Y=1180 mm located at the weld segment identified as A2. The welding was performed by James Zhen ID-6001 utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS which was also utilized by the QC inspector to monitor the welding and to verify the DC welding parameters. The QC inspector verified the DC welding parameters as 116 amps and the minimum preheat temperature 40 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius which appeared to comply with the contract documents. The QAI also verified the dimensions of the excavations and were noted and recorded as follows; Y=450 mm, L=80 mm, d=13 mm; Y=525 mm, L=190 mm, d=14 mm; Y=1180 mm, 210 mm, d=14 mm and Y=4380 mm, 140 mm and 20 mm. The welding and the QC inspection was not completed during this shift.

### QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

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# WELDING INSPECTION REPORT

( Continued Page 3 of 3 )

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The digital photographs below illustrate the work observed during this scheduled shift.



## Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

## 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>	Reyes,Danny	Quality Assurance Inspector
<b>Reviewed By:</b>	Levell,Bill	QA Reviewer

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