

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-016745**Date Inspected:** 11-Sep-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1000**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**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). OBG E1, Erection Access Hole Insert Plates

A). Field Splice E6/E7

The QAI observed the Complete Joint Penetration (CJP) welding utilizing the Submerged Arc Welding (SAW) process as per the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The welding was performed by the welding operator Bryce Howell ID-5591 on the deck plate field splice identified as Weld Number (WN): 6E-7E-A, Segments 1A through 3A. The WPS was also used by the Quality Control (QC) Inspector Tom Pasqualone to monitor the CJP welding and to verify the Direct Current Electrode Positive (DCEP) welding parameters. The QAI observed the QC inspector verifying the welding parameters and were noted as follows: 552 amps, 32.2 volts and a travel speed measured at 375mm/minute with a calculated heat of 2.8 kj/mm. The minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were also verified by the QC inspector.

The QAI also observed the Complete Joint Penetration (CJP) welding utilizing the Submerged Arc Welding (SAW) process as per the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The welding was performed by the welding operator Mike Maday ID-3391 on the deck plate field splice identified as Weld

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Number (WN): 6E-7E-A, Segments 3A through 5A. The WPS was also used by the Quality Control (QC) Inspector Tom Pasqualone to monitor the CJP welding and to verify the Direct Current Electrode Positive (DCEP) welding parameters. The QAI observed the QC inspector verifying the welding parameters and were noted as follows: 560 amps, 31.5 volts and a travel speed measured at 389mm/minute with a calculated heat of 2.72 kJ/mm. The minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were also verified by the QC inspector.

The QAI observed the Submerged Arc Welding (SAW) process of the bottom plate field splice identified as Weld Number (WN): 6E-7E-D1 and D2. The welding was performed by the welding operator James Zhen ID-6001 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The WPS was also used by the Quality Control (QC) Inspector John Pagliero to verify the Direct Current Electrode Positive (DCEP) welding parameters and to monitor the Complete Joint Penetration welding. The QAI observed the QC inspector's verifying the welding parameters and were noted as follows: 550 amps, 32.0 volts and a travel speed measured at 370mm/m with a calculated heat input of 2.85. The minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with contract documents. The SAW welding process was completed on this date.

Later in the shift the QAI observed the welder Mr. Zhen welding the field splice identified as WN: 6E-7E-D1 utilizing the Shielded Metal Arc Welding (SMAW) process. The welding was performed at the Y dimensions 0mm-1000mm. This area was not welded during the SAW process due the machine configuration would not allow access to the weld joint. The welding was performed utilizing the WPS identified as ABF-WPS-D15-1040-C, Rev. 1 and was also used by the QC inspector as a reference. The QAI observed the the QC inspector verify the welding parameters which were noted as 130 amps utilizing the 3.2 welding consumable. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents.

Also, the QAI observed the welder Song Tao Huang ID-3794 welding the field splice identified as WN: 6E-7E-D1 utilizing the Shielded Metal Arc Welding (SMAW) process. The welding was performed at the Y dimensions 4180mm-4250mm. This area was not welded during the SAW process due the machine configuration would not allow access to the weld joint. The welding was performed utilizing the WPS identified as ABF-WPS-D15-1040-C, Rev. 1 and was also used by the QC inspector as a reference. The QAI observed the the QC inspector verify the welding parameters which were noted as 140 amps utilizing the 3.2 welding consumable. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents.

B). OBG E1, Erection Access Hole Insert Plate

The QAI observed the Shielded Metal Arc Welding (SMAW) of the erection access hole insert plate identified as Weld Number (WN): 1E-PP8.5-E3-W3 on the "A" deck of the Orthotropic Box Girder (OBG) E1. The welding was performed by Jin Pei Wang ID-7299 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1110-B, Rev. 1. The welding was performed in the overhead (OH) position on the "B" side of the Complete Joint Penetration (CJP) groove joint. The WPS was also utilized by the QC inspector John Pagliero as a reference to monitor the welding and verify the Direct Current Electrode Positive (DCEP) welding parameters which was recorded as 128 amps by the QC inspector. The 3.2 mm Lincoln electrode was utilized with the

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welding performed in the overhead (4G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the bottom side. The groove joint appeared to comply with the AWS joint designation identified as B-U4a. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were verified by the QC inspector.

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 and the SAW processes 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.

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.

James Bowers, ABF WQCP, informed the QAI in regards to the deck plate field splice, 6E-7E-A1, that during production welding a burn through was developed in the middle of the bar located at Y-820mm for a length of 80mm and would be repaired utilizing a backing bar and removing the bar at the conclusion of the production welding. Mr. Bowers also informed the QAI that he has informed Robert Mertz of the issue and how the repair would be performed. Mr. Bowers also informed the QAI that another burn through had occurred at the edge of the backing bar located Y-2000mm for a length of 1010mm and a Non-Conformance Report was being issued by ABF Quality Control Department.

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

Inspected By:	Reyes,Danny	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer
