DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-012771
Date Inspected: 24-Mar-2010

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 1300
OSM Departure Time: 2130
Location: Job Site

CWI Name: See Contents in Report

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ 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 E1/E2 and E2/E3 field splices:

A). Welding of the Field Splice E2 to E3.
B). Welding of the Field Splice E1 to E2.

A) Field Splice E2/E3, WN: 2E-3E-B
The QAI observed the Complete Joint Penetration (CJP) groove welding of the edge plate field splice identified as Weld Number (WN): 2E-3E-B, Segment B1. The welding was performed by the AB/F personnel Songtao Huang ID-3794, utilizing the Flux Cored Arc Welding (FCAW-G) process, with the welding progression in the vertical up position (3G), as per the Welding Procedure Specification (WPS) ABF-WPS-D15-3042B-3 Rev. 0 and the AWS D1.5-2002 Chapter 5/Section 5.12. The WPS was also used by the AB/F Quality Control (QC) Inspector Mr. Cunningham as a reference to perform QC verification of the Direct Current Electrode Positive (DCEP) welding parameters during the CJP groove welding of the edge plate field splice. The QAI also observed the QC inspector verifying the welding parameters and were noted as follows: 218 amps, 22.8 volts and a travel speed measured at 152 mm/minute. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The CJP welding was completed during this shift.

Later in the shift the QAI inspector observed the grinding of the backgouged surface of the bottom deck splice

identified as 2E-3E-D, Segments D1 and D2.

B) Field Splice E1/E2, WN: 1E-2E-D

The QAI observed the automated FCAW-G welding process during the CJP welding of the bottom plate field splice performed by Rory Hogan ID-3186 and Jeremy Dolman ID-5042. The welders utilized the FCAW-G welding process as per the WPS ABF-WPS-D15-3040A-4 Rev. 0 which was also used as a reference by the QC inspector Bernie Docena to verify the welding parameters and the surface temperatures. the DCEP welding parameters were verified and noted by the QC inspector and were noted as follows: 256 amps, 23 volts and a travel speed measured at 190mm/minute. The minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were maintained. The welding operators appeared to be experiencing areas of porosity during the CJP welding which required additional grinding prior to welding of subsequent passes. The welding was terminated at approximately 1715 and the contractor, AB/F, has elected to leave the heating bands on the weld joint continuously which was verified by the QAI, at the time the welding was terminated, and will resume welding on the next scheduled shift, 03/25/10.

QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the E2/E3 field splices utilizing the WPS's as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector's 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 1.4 mm diameter consumables identified as ESAB Dual Shield 70 Ultra Plus was utilized during the FCAW-G welding of the CJP groove welds and appeared to be in compliance with the AWS Specification A5.20 and the AWS Classification E71T-1M. The QC inspection, testing and welding performed on this shift was not completed, except as noted above, appeared to be in general compliance with the contract documents. The QAI randomly verified the QC inspection, testing and the welding parameters and surface temperatures utilizing various inspection equipment and gages, a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The QAI performed a survey of the backing bars located at the field splices E1/E2 and E2/E3 identified accordingly as WN: 1E-2E-A and 2E-3E-A. There appeared to be weld burn through at various locations along the backing bar. The QAI also observed a misalignment of the E3/E4 deck plate field splice identified as WN: 3E-4E-A. The QAI has generated a TL-15 Report for each of the issues at hand.

The digital photographs on page 3 of this report illustrates the work observed during this scheduled shift.

WELDING INSPECTION REPORT

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Summary of Conversations:

There were no pertinent conversations discussed in regards to the project except as noted above.

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