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-014175
Date Inspected: 19-May-2010

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

OSM Arrival Time: 1100
OSM Departure Time: 1930
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 W1/W2
B). Field Splice W2/W3

A) Field Splice W1/W2

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S12. The welding was performed by the welding personnel James Zhen ID-6001utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3011-3 Rev. 1 during the Complete Joint Penetration (CJP) welding of the double-v-groove joint identified as B-U3-GF per the AWS joint designation. The WPS was also used by the AB/F Quality Control (QC) Inspector Bonifacio Daquinag as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters during the CJP groove welding. The welding was performed in the vertical (3G) position with the work placed in the vertical plain. Later in the shift the QAI observed the QC inspector verifying the welding parameters and were noted as follows: 225 amps, 22.0 volts and a travel speed measured at 180mm/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 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

The QAI also observed the Flux Cored Arc Welding (FCAW-G) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S4. The welding was performed by the welding personnel Chun Fai Tsui ID-3426 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3011-3 Rev. 1 during the Complete Joint Penetration (CJP) welding of the double-v-groove joint identified as B-U3-GF per the AWS joint designation. The WPS was also used by the AB/F Quality Control (QC) Inspector Bonifacio Daquinag as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters during the CJP groove welding. The welding was performed in the vertical (3G) position with the work placed in the vertical plain. Later in the shift the QAI observed the QC inspector verifying the welding parameters and were noted as follows: 231 amps, 21.7 volts and a travel speed measured at 175mm/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 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

Later in the shift, the QAI observed the Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) 1W-2W-C. The welding 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 James Cunningham as a reference when monitoring the welding and verifying the welding parameters which were observed as follows: 229 amps, 23.0 volts and a travel speed measured as 310mm/m. 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 position (4G) with the work at approximate incline of 22 degrees.

B) Field Splice W2/W3

The QAI observed the automatic Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) 2W-3W-C. The welding was performed by welding personnel Song Tao Huang, ID-3794 utilizing the WPS ABF-D15-3042A-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 Bernie Docena as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters which noted and recorded by the QAI as follows: 250 amps, 24.3 volts and a travel speed measured as 290mm per minute. The welding was performed in vertical position (3G) at approximate incline of 22 degrees. The CJP welding was performed on the face "A" of the side plate field splice. The QAI inspector also verified the minimum preheat temperature of 100 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 DCEP welding parameters. In regards to maintaining the minimum preheat temperature of 65 degrees Celsius, utilizing electric resistance heating bands, the Contractor, ABF, has elected to maintain the preheat continuously through out the welding operation to comply with the requirements of Field Welding, Item C on page 334 of the Special Provisions.

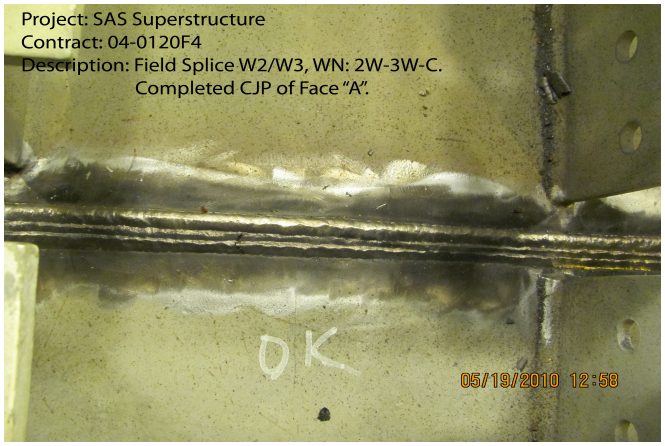
The QAI also observed the removal of the backing bar and at the conclusion of the backing bar on the "B" face of the single-v-groove weld identified as Weld Number (WN): 2W-3W-E. The removal of the backing bar was performed by Ken Chappell and Mike Maday utilizing the plasma arc cutting method.

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'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 ESAB consumables utilized for the FCAW-G process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift was not completed 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 QAI also performed an ultrasonic verification test on the Orthotropic Box Girder (OBG) 14mm deck plate identified as Lift E5 at the field weld splice identified as WN: 5E-6E-A. The longitudinal wave test was performed to verify that no mechanical laminar tearing was induced in the area of which temporary attachments were placed between the U-ribs and fillet welded on the deck plate and utilized by the contractor as an attempt to correct the planar misalignment in which a hydraulic jacking system was utilized and pressures of 60 to 75 tons were achieved. The examination was performed utilizing a 0 degree transducer. For locations and test results an ultrasonic test report identified as TL-6027 was generated on this date.

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



Summary of Conversations:

In converstion with Mr. Callahan regarding the replacing of the galvanized H.S.B., that were relieved of their tension values in order to attempt the correcting the misalignment at the deck plate field splice, Mr. Callahan informed the QAI to speak with Mr. Paul Jefferson in regards to this issue.

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.

WELDING INSPECTION REPORT

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