

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-016708**Date Inspected:** 09-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). OBG E1, Erection Access Hole Insert Plate
- B). OBG E1, Ventilation Access Hole Insert Plate
- C). Field Splice E4/E5, "A" Deck Stiffeners
- D). Field Splice E5/E6, "A" Deck Stiffeners

A). 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-PP9.5-E3-W3 and W4 on the "A" deck of the Orthotropic Box Girder (OBG) E1. Prior to the welding the QAI observed the QC technician William Sherwood perform the Magnetic Particle Testing (MPT) of the back grinding. No rejectable indications were noted and at the conclusion of the testing the welder, Jin Pei Wang ID-7299, commence the overhead (OH) welding on the "B" side of the Complete Joint Penetration (CJP) groove weld utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1110-B, Rev. 1. 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 130 amps by the QC inspector. The 3.2 mm Lincoln electrode was utilized with the 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

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temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were verified by the QC inspector.

B). OBG E1, Ventilation Access Hole Insert Plate

The QAI observed AB/F personnel, Fred Kaddu, cut the bevel on the insert plate utilizing a TruTool TKF 1500 to mechanically cut the bevel in preparation for a Complete Joint Penetration groove weld. The insert plate is identified as L1E-N and located at the northwest side of the Orthotropic Box Girder (OBG) between PP10 and PP11.

C). Field Splice E4/E5, "A" Deck Stiffeners

The QAI observed the welder, Hua Qiang Hwang ID-2930, continue the Complete Joint Penetration (CJP) groove welding on the longitudinal stiffener field splice identified as WN: 4E-5E-A-LS1. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0 and was also utilized by the QC inspector John Pagliero as a reference. The amperage was recorded as 127 amps and the minimum preheat of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified.

The QAI also observed the welder perform and complete the CJP groove welding on the "A" face of the longitudinal stiffener field splice identified as WN: 4E-5E-A-LS3. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0 and was also utilized by the QC inspector as a reference. The amperage was recorded as 126 amps and the minimum preheat of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified. At the conclusion of the welding the welder performed the back grinding of "B" face and the MPT was performed by QC technician William Sherwood and no rejectable indications were noted.

The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical. The welder utilized a slag hammer, pneumatic air gun with an attached chisel and a wire wheel attached to a 4" high cycle grinder to remove slag after deposit each fill pass. The electrodes were stored in electrically heated, thermostatically controlled oven after removal from sealed containers. The exposure limits of the electrodes identified as E9018-H4R and the minimum storage oven temperature of 250 degrees Celsius appeared to be in compliance with the contract documents. The welder completed the correcting of the root opening and the QAI observed the QC inspector perform a dimensional survey of the root opening and the included angle prior to the CJP welding. At the time of the observation no issues were noted by the QAI.

The QAI also observed Mr. Pasqualone perform Ultrasonic Testing (UT) of the edge plate field splice identified as WN: 4E-5E-B1. The testing was performed by the QC technician utilizing the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. The QC technician performed the required shear wave technique during the testing for weld soundness which was performed utilizing a 16mm x 20mm rectangular transducer. See QA Observation and Verification Summary and Summary of Conversation regarding QAI UT verification.

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D). Field Splice E5/E6

The QAI also observed the Shielded Metal Arc Welding (SMAW) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 5E-6E-A-LS4, LS5 and LS6. The welding was performed by the welding personnel Xiao Jian Wan, ID-9677 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1012-3, Rev.0 to correct the excessive root openings of the double-v-groove joint identified as per the AWS joint designation B-U3b. The WPS was also used by the AB/F Quality Control (QC) Inspector John Pagliero as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding. Later in the shift the QAI observed the QC inspector monitoring the welding parameters and were noted as 123 amps. 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 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

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 FCAW-G 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.

At the request of the QC technician, Tom Pasqualone, the QAI performed a random ultrasonic verification test of the Complete Joint Penetration (CJP) groove weld identified as WN: 4E-5E-B1. A total area of approximately 10% was ultrasonically tested to verify the weld and testing by QC meet the requirements of the contract documents. The examination was performed in the first and second leg and an ultrasonic test report TL6027, was generated on this date.

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



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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.

At 1300, the QAI contacted the Field QC Supervisor, Leonard Cross, regarding the request by the QC inspector John Pagliero. Mr. Cross confirmed the request and inquired the QAI to commence the UT verification of the edge plate field splice.

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
