

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:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-016440**Date Inspected:** 24-Aug-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 Welding Erection Access Holes
- B). Field Splice E2/E3
- C). Field Splice E3/E4
- D). Field Welding of Insert Plate
- E). Drip Rails

- A). Field Welding Erection Access Holes

The QAI observed the Shielded Metal Arc Welding (SMAW) of the erection access hole identified as Weld Number (WN): 1AE8 located on the deck plate. The Complete Joint Penetration (CJP) groove welding was performed by welding personnel James Zhen ID-6001 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1050A, Rev. 1 and utilizing the 4.0mm Lincoln electrode. The WPS was also used by the AB/F Quality Control (QC) Inspector Mike Johnson as a reference to monitor the welding and verify the Direct Current Electrode Positive (DCEP) welding parameters which was recorded as 137 amps by the QC inspector. 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.

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B). Field Splice E2/E3

The QAI observed the QC inspector John Pagliero perform a visual welding inspection on the longitudinal stiffener field splices identified as 2E-3E-A, LS2 through LS6. It appeared at the conclusion of the inspection no rejects were noted by the QC inspector and the QAI verified the inspection and concurs with the QC evaluation. At this time the QC technician, James Cunningham, performed a Magnetic Particle Test (MPT) on the CJP welds and at the conclusion of the testing the QAI observed no rejects were noted. The application and evaluation of the MPT appeared to comply with the MPT procedure identified as SE-MT-CT-D1.5-101 Rev. 4.

Following the MPT the QAI observed the Ultrasonic Testing (UT) of the CJP groove welds of the "A" deck longitudinal stiffener splices identified as WN: 2E-3E-A-LS4, LS5 and LS6. The testing was performed by the QC technician John Pagliero utilizing a G.E./Krautkramer USM 35X and the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. The QC technician performed the required longitudinal wave for base metal soundness and the shear wave technique for weld soundness which was performed utilizing a .75 x .75 rectangular transducer. The ultrasonic testing was completed during this shift.

The QAI also observed the welder, Xiao Jian Wan ID-9677, perform the CJP groove welding utilizing the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0. This work was performed on the longitudinal stiffener field splice identified as WN: 2E-3E-A-LS1 and the inspection was performed by Mr. Pagliero utilizing the WPS as a reference. The QC inspector verified the welding parameters and were observed and recorded by the QAI as 121 amps.

The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical. The minimum preheat temperature of 100 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The welders utilized slag hammers, pneumatic air guns with attached chisels and a wire wheel attached to a 4" high cycle grinders to remove slag from fill passes. 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. No issues were noted by the QC inspector and the welder commence the welding of the groove joint.

C). Field Splice E3/E4

The QAI observed the welder, Hua Qiang Hwang ID-2930, correcting the excessive root opening on the longitudinal stiffener field splice identified as WN: 3E-4E-A-LS6. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0. and the inspection was performed by the QC inspector John Pagliero utilizing the WPS as a reference and verified the DC welding parameters which were observed and recorded as 130 amps. At the completion of the CJP welding and back grinding of the weld joint, the QC inspector John Pagliero perform the visual inspection of the of the excavation on the opposite side of the joint. At the conclusion of the inspection, James Cunningham performed the MPT of the back gouge and no rejectable indications were noted. At this time the welder commence the CJP groove welding from the "B" face of the weld joint of the longitudinal stiffener field splice. The welding was not

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completed during this shift.

The welding of the longitudinal stiffeners was performed in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical. The minimum preheat temperature of 100 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. 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.

D). Field Welding W2

The QAI observed the Ultrasonic Testing (UT) of the CJP groove weld on the insert plate located on the longitudinal shear plate identified as . The testing was performed by the QC technician Tom Pasqualone utilizing a G.E./Krautkramer USM 35X. Mr. Pasqualone also utilized the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 during the examination of the CJP. The QC technician performed the required longitudinal wave utilizing a 1" diameter transducer for base metal soundness and a .75 x .75 rectangular transducer to perform the shear wave testing during the testing for weld soundness. The testing was not completed during this shift.

E). Field Welding of the Drip Rails

The QAI observed the field welding of the drip rails on the Orthotropic Box Girder (OBG) identified as lift W1 located at Panel Points 11 and 12. The Complete Joint Penetration (CJP) groove and fillet welding was performed by Rick Clayborn ID-2773 utilizing the Shielded Metal Arc Welding (SMAW) as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1010 Rev.1 and was also utilized by the Quality Control (QC) Inspector James Cunningham as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters. The welding was performed in the vertical (3G) position with the work placed in the vertical plane and the horizontal (2G) position with the work in an approximate vertical plane and the groove approximately horizontal. Later in the shift the QAI observed the QC inspector verifying the welding parameters and were noted as 135 amps. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified and monitored by the QC inspector. The welding was completed and the QC inspector performed a visual weld inspection which appeared to comply with the contract documents.

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 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.

The digital photographs on page 4 of this report illustrate the work observed during this scheduled shift.

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Project: SAS Superstructure
Contract: 04-0120F4
Description: OBG E1, Erection Access Hole.
CJP Welding of Deck Plate Insert.



Summary of Conversations:

There were general conversations with Quality Control Inspector Mike Johnson, John Pagliero and Tom Pasqualone at the start of the shift regarding the location of American Bridge/Fluor welding personnel and inspection/ N.D.E. testing 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.

Inspected By: Reyes, Danny

Quality Assurance Inspector

Reviewed By: Levell, Bill

QA Reviewer