

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-020318**Date Inspected:** 02-Feb-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**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). DAH Access Hole
- B). "A" Deck Stiffeners
- C). Pipe Welding
- D). Inspection Request

A). Deck Access Hole

The QAI observed the welder Wen Han Yu ID-6317 perform the repair welding of the areas marked as UT rejects on the Complete Joint Penetration (CJP) groove weld identified as WN: 2W-PP13.5-W5-SW, R1 cycle repair. The repair welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and the 3.2mm electrode as per the Welding Procedure Specification (WPS) identified as ABF-WPS-1001 Repair Rev. 0. The WPS was also used by the QC inspector, Mr. Erhsom, as a reference to monitor and verify the Direct Current welding parameters which were noted as 134 amps. The welding was performed in the overhead (1G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the underneath side.

B). "A" Deck Stiffeners

The QAI observed the welder, Hua Qiang Hwang ID-2930, perform the CJP groove welding of the longitudinal

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stiffener field splice identified as WN: 2W-3W-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 was also utilized by the QC inspector Gary Erhsom as a reference. The amperage was recorded as 126 amps and the minimum preheat of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified.

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 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 the 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 repair welding during this shift. At the time of the observation no issues were noted by the QAI.

The QAI also observed the Ultrasonic Testing (UT) of the R1 repair on the longitudinal stiffener identified as WN: 1W-2W-A-LS4, R1. The testing was performed by the QC technician John Pagliero utilizing a G.E./Krautkramer USM 35X. The examination of the repair was conducted utilizing UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 and the applicable contract documents. The QC technician performed the required longitudinal wave technique, utilizing a 25.4mm diameter transducer, to perform the examination for base metal soundness and the shear wave technique for the examination of weld soundness which was performed utilizing a 16mm x 19mm rectangular transducer.

Later in the shift, the QAI observed the Ultrasonic Testing (UT) of the R1 repair on the transverse stiffener identified as WN: 1W-2W-A-LS4, R1. The testing was performed by the QC technician John Pagliero utilizing a G.E./Krautkramer USM 35X. The examination of the repair was conducted utilizing UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 and the applicable contract documents. The QC technician performed the required longitudinal wave technique, utilizing a 25.4mm diameter transducer, to perform the examination for base metal soundness and the shear wave technique for the examination of weld soundness which was performed utilizing a 16mm x 19mm rectangular transducer. At the conclusion of the testing no rejectable indications were noted by the QC technician.

C). Pipe Welding

The QAI observed the welder, Rick Kiikvee-ID-5319, perform the Complete Joint Penetration (CJP) groove welding of the field pipe splices for the 4" compressed air service and 2.5" utility water lines located at the W2 Bent Cap of the E-line. The welding was performed utilizing the Weld Procedure Specification (WPS) identified as 1-12-1 which was also utilized by the QC inspector, Steve Jensen, to monitor the welding and to verify the welding parameters. The QC inspector verified the welding parameters and were observed as 67 amps.

D). Inspection Request

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, the QAI randomly verified the QC visual inspection of the Complete Joint Penetration (CJP) welding of the following; WN: 1W-2W-A-LS4 through LS6

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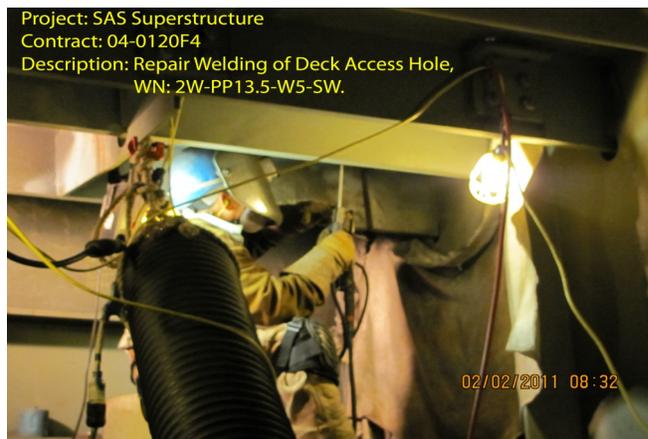
and 1W-PP10.5-W5-LS-East, West and TS. The QAI verification was performed to verify that the welding and the visual weld inspection performed by the QC inspector meet the requirements of the contract documents. At the conclusion of the QAI verification it appeared that the welds and the QC inspection complies with the contract documents.

At the conclusion of the VT verification, the QAI performed a random Magnetic Particle (MPT) verification test of the Complete Joint Penetration (CJP) groove welds mentioned above. A total area of approximately 10% was ultrasonically tested to verify the weld and testing by QC meet the requirements of the contract documents. A MPT report, TL-6028, was generated on this date.

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 inspectors 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 welding 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 below illustrate some of 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.

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 Sang Le (916) 764-5650, who represents the Office of Structural Materials for your

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project.

Inspected By: Reyes,Danny

Quality Assurance Inspector

Reviewed By: Levell,Bill

QA Reviewer