

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-019810**Date Inspected:** 26-Jan-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). Field Splice W9/W10
- B). DAH Access Hole/Longitudinal Stiffener
- C). DAH Access Hole
- D). Pipe Supports
- E). QC Inspection Request

A). Field Splice W9/W10

The QAI observed the Shielded Metal Arc Welding (SMAW) process of the edge plate field splice identified as Weld Number (WN): 6E-7E-B1. The welding was performed by Jorge Lopez ID-6149 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1110A, Rev. 1. The WPS was also used by the Quality Control (QC) Inspector William Sherwood to verify the Direct Current Electrode Positive (DCEP) welding parameters and to monitor the Complete Joint Penetration (CJP) welding. The QAI observed the QC inspector verifying the welding parameters and were noted as 132 amps. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with contract documents. The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane with the groove approximately vertical.

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B). DAH Access Hole/"A" Deck Stiffener

The QAI observed the welder, Hua Qiang Hwang ID-2930, performed fit-up and the CJP groove welding on the longitudinal stiffener field splice identified as WN: 1W-PP10.5-W5-LS-E. The fit-up and alignment appeared to comply with the contract specifications and the welder proceeded with the welding operation utilizing 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 Erhsam as a reference. The amperage was recorded as 123 amps and the minimum preheat of 100 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 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 of 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. At the time of the observation no issues were noted by the QAI.

C). DAH PP10.5

The QAI observed the excavation of the unacceptable discontinuities on the deck plate field splice identified as WN: 7W-8W-A, repair cycle # R2. The rejectable discontinuities were discovered during the Ultrasonic Testing (UT) performed by the QC technician, Steve McConnell. The discontinuities appeared to travel in the longitudinal direction of the weld axis. The excavations of the rejected areas was performed by the welder Jin Pei Wang ID-7299 utilizing a high cycle grinder to remove the defects and a rotary file to bring the excavated area into compliance with the Weld Procedure Specification (WPS) ABF-WPS-D15-1001 Repair, Rev. 0. At the conclusion of the excavations the QAI observed the QC inspector, Steve McConnell, performed a visual inspection and a Magnetic Particle Test (MPT) of the excavated areas and no rejectable indications were noted. At the conclusion of the VT and MPT, the welder commenced the welding of the repair which was identified with the following Y coordinate; Y=70 mm, L=200 and d=14 mm. The welding was performed by Jin Pei Wang utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS which was also utilized by the QC inspector to monitor the welding and to verify the DC welding parameters. The QC inspector verified the DC welding parameters as 161 amps and the minimum preheat temperature of 40 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The welding was performed in the flat (1G) position utilizing a 3.2 mm and 4.0 mm low hydrogen electrode. The welding of the repairs was completed during the scheduled shift. Later in the shift, the QAI also verified the dimensions of the excavations and were noted and recorded as follows; , Y=375, L=80 mm, d=17 mm, Y=545 mm, L=70 mm, d=14 mm, Y=730 mm, L=40 mm, d=18 mm, Y=2370 mm, L=15, d=20 and Y=3235 mm, 75 mm and d=12 mm.

D). Field Splice E9/W10

The QAI observed the welder Kitlai Wai ID-2953 perform the repair welding of the areas marked as UT rejects on the Complete Joint Penetration (CJP) groove welds identified as WN: 9E-10E-A5, R1cycle repairs . Also at the conclusion of the excavations the QC technician Fred Von Hoff performed a Magnetic Particle Test (MPT) of the

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excavated areas and no rejectable indications 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. The repair welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and 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. Von Hoff, as a reference to monitor and verify the Direct Current welding parameters and were noted as 125 amps. The welding was performed in the flat position (1G) with the work placed in an approximately horizontal plane and the weld metal deposited from the upper side.

E). Field Splice E9/E10

The QAI observed the Shielded Metal Arc Welding (SMAW) process of the edge plate field splice identified as Weld Number (WN): 9E-10E-F1. The welding was performed by Fred Kaddu ID-2188 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1110A, Rev. 1. The WPS was also used by the Quality Control (QC) Inspector Fred Von Hoff to verify the Direct Current Electrode Positive (DCEP) welding parameters and to monitor the Complete Joint Penetration (CJP) welding. The QAI observed the QC inspector verifying the welding parameters and were noted as 140 amps. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with contract documents. The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane with the groove approximately vertical.

D). Pipe Supports

The QAI observed the welder, Rick Kiikvee-ID-5319, perform the Complete Joint Penetration (CJP) 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 W-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 66 amps.

The QAI also observe the on going installation, field fit-up and tack welding of the pipe supports along the E5 grid line located on top side, "A" Deck, of the OBG's identified as E10. The QC inspection was performed by Mr. Jensen utilizing the WPS identified as Fillet Murex to monitor the welding and to verify the welding parameters. The welding parameters were observed and recorded as 98 amps utilizing 2.4 mm electrodes with the welding performed in the 2F and 3F position. The welding of the pipe supports identified as 110125-01 through 110125-018 was performed by the welder David Garcia ID-8789.

E). QC 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 Lifting Lug Holes (LLH); WN: 3W-PP15-W3-Welds No's. 1, 2, 3 and 3W-PP17-W3, Weld No.'s 3 and 4. The QAI verification was performed to verify that the overhead welding (4G) 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.

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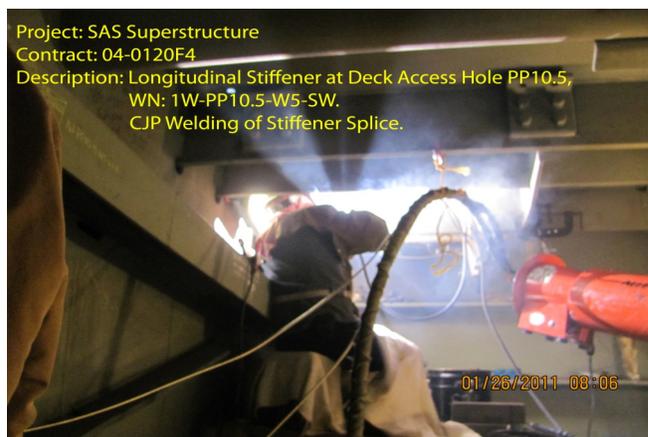
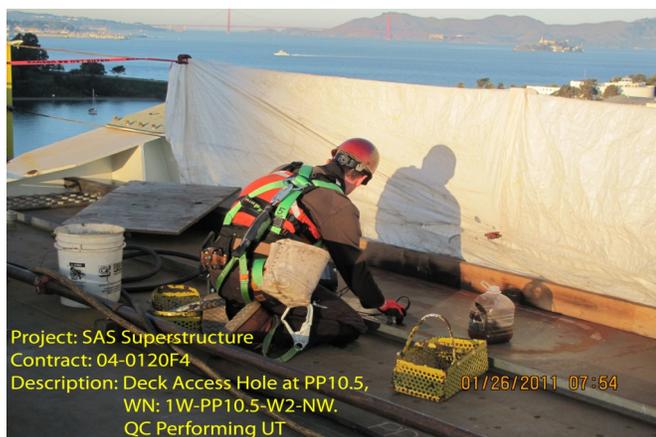
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At the conclusion of the VT verification, the QAI performed a random ultrasonic verification test of the Complete Joint Penetration (CJP) groove welds mentioned above. A total area of approximately 10% was ultrasonically tested to verify the weld and testing by QC meet the requirements of the contract documents. The examination was performed in the first and second leg and an ultrasonic test report TL-6027, 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 Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

Inspected By: Reyes, Danny

Quality Assurance Inspector

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Reviewed By: Levell,Bill

QA Reviewer