

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-018572**Date Inspected:** 09-Dec-2010**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). Deck Access Hole
- B). Field Splice W6/W7
- B). Pipe Supports
- C). QC Inspection Request

A). Deck Access Hole

The QAI observed the Complete Joint Penetration (CJP) groove welding of the Deck Access Hole- Insert Plate (DAH-IP) identified as Weld Number (WN): 6W-PP46.5-W5-SE located on the "A" deck of the Orthotropic Box Girder (OBG) W6. The welder Jorge Lopez ID-6149 performed the welding utilizing the Shielded Metal Arc Welding (SMAW) process as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1010, Rev. 1. The WPS was also utilized by the QC inspector William Sherwood as a reference to monitor the welding and verify the welding parameters which was recorded as 134 amps by the QC inspector. The 3.2 mm low hydrogen electrode, E7018 H4R, was utilized during the welding performed in the flat (1G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the upper side. The groove joint appeared to comply with the AWS joint designation identified as B-U4a and the minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were verified by the QC inspector. The work performed during this shift appeared to comply with the contract documents.

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The QAI also observed the welder, Jin Pei Wang ID-7299, perform the CJP welding of the Deck Access Hole-Insert Plate (DAH-IP) identified as Weld Number (WN): 1W-PP10.5-W2-NW located on the "A" deck of the Orthotropic Box Girder (OBG) W1. The welding was performed utilizing the SMAW process as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1010, Rev. 1. The WPS was also utilized by the QC inspector Steve McConnell as a reference to monitor the welding and verify the welding parameters which was recorded as 125 amps by the QC inspector. The 3.2 mm low hydrogen electrode, E7018 H4R, was utilized with the welding performed which was performed in the overhead (4G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the underside. The groove joint appeared to comply with the AWS joint designation identified as B-U4a and the minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were verified by the QC inspector. The work performed appeared to comply with the contract documents.

The QAI observed the welder, Wen Han Yu ID-6317, perform the CJP groove welding of the transverse stiffener field splice identified as WN: 4W-PP24.5-W5-TS which was located at the Panel Point (PP) 24.5 Deck Access Hole (DAH) on the OBG W4 "A" deck.

The QAI also observed the welder, Mick Chan ID-9265, perform the CJP groove welding of the transverse stiffener field splice identified as WN: 2W-PP13.5-W5-TS which was located at the Panel Point (PP) 13.5 Deck Access Hole (DAH) on the OBG W2 "A" deck.

Later in the shift, the QAI observed the welder, Jin Pei Wang ID-7299, perform the CJP groove welding of the transverse stiffener field splice identified as WN: 1W-PP10.5-W2-TS which was located at the Panel Point (PP) 10.5 Deck Access Hole (DAH) on the OBG W1 "A" deck.

The welders, Mr. Yu, Mr. Chan and Mr. Wang utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1010, Rev.1 which was also utilized by the QC inspector Steve McConnell as a reference to monitor the welding and verify the welding parameters. The welding was performed utilizing a 3.2 mm E7018 H4R electrodes with the welding performed in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical with the weld progression up. The minimum preheat temperature of 65 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The welders utilized a slag hammer and a wire wheel attached to a 4" high cycle grinder to remove slag after deposit each fill pass.

B). Field Splice W6/W7

The QAI observed the excavation of the unacceptable discontinuities on the deck plate field splice identified as WN: 6E-7E-D2, repair cycle # 2. The rejectable discontinuities was discovered during the Ultrasonic Testing (UT) performed by the QC technician, Jesse Cayabyab. The discontinuities were marked on the weld surface appeared to travel in the longitudinal direction of the transverse weld. The excavation was performed by welding personnel Fred Kaddu ID-2188 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 excavation the QC inspector, William Sherwood, performed a visual inspection and a

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Magnetic Particle Test (MPT) of the areas and no indications were noted by the QC inspector. At this time the welder commenced the repair welding 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 3.2 mm low hydrogen electrode, E7018 H4R, was utilized during the welding, which was performed in the flat (1G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the upper side. The QC inspector verified the DC welding parameters as 140 amps and the minimum preheat temperature 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius which appeared to comply with the contract documents. Prior to the welding the QAI verified the dimensions of the excavations and were noted and recorded as follows; Y=3600 mm, L=250 mm and d=9 mm and Y=4000 mm, L=130 mm and d=8 mm. The welding and the QC inspection were completed during this shift.

C). Pipe Supports

The QAI observed the continued fillet welding of the pipe supports identified as PS-11 located along the pier column embeds at W2-E1. The welding was performed by David Garcia ID-8789 utilizing a 3.2 mm electrode as per the Welding Procedure Specification (WPS) identified as Fillet Murex. The fillet welding was performed in vertical (3F) position utilizing a 3.2 mm electrode. The QAI also observed the field fit-up and tack welding of the pipe supports along the E5 grid line located on top side of the OBG E2 "A" deck. The QC inspection was performed by Mike Johnson utilizing the WPS to monitor the welding and to verify the welding parameters.

C). QC Inspection Request

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, the QAI randomly verified the visual appearance of the Complete Joint Penetration (CJP) overhead (4G) welding of the following; Deck Access Hole (DAH) identified as WN: 1W-PP8.5-W4, Weld No. 4, 1W-PP8.5-W3, Weld Nos. 3 and 4. The QAI verification was performed to verify that the welding and visual inspection performed by the QC inspector, Mike Johnson, meet the requirements of the contract documents. At the conclusion of the QAI verification it appeared that the weld and the QC inspection complies 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 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 on page 4 of this report 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.

The QAI was advised by QA Supervisor, William Levell, that the Weld Repair submitted by AB/F was approved regarding the Ultrasonic R5 cycle repair located at the "A" deck field splice identified as WN: 7W-8W-A1. The weld repair was approved by Pat Lowry on Wednesday Dec. 09, 2010 at approximately 2055.

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

Reviewed By: Levell, Bill QA Reviewer