

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-017353**Date Inspected:** 13-Oct-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 Splice E6/E7
- B). Field Splice W7/W8

A). Field Splice E6/E7

The QAI observed the excavation of the unacceptable discontinuity on the deck plate field splice identified as WN: 6E-7E-A1, repair cycle # 3, flaw #2A. The rejectable discontinuity was discovered during the Ultrasonic Testing (UT) performed by the QC technician, Steve McConnell and appeared to run in the transverse direction of the longitudinal 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, Steve McConnell, performed a visual inspection and a Magnetic Particle Test (MPT) of the areas and one rejectable indication was noted by the QC inspector. Additional grinding was performed and the indication was removed by grinding and confirmed by MPT. 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 QC inspector verified the DC welding parameters as 116 amps and the minimum preheat temperature 40 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius which appeared to comply with the contract documents. The 3.2 mm electrode

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was utilized with the welding performed in the flat (1G) position with the work in an approximate horizontal plane and the weld metal deposited from the upper side. Prior to the welding the QAI verified the dimensions of the excavation and were noted and recorded as follows; Y=565 mm, L=120 mm and d=13 mm. The welding and the QC inspection was completed during this shift.

Later in the shift, the QAI observed the excavation of the unacceptable discontinuity on the deck plate field splice identified as WN: 6E-7E-A1, repair cycle # 3, flaw #2B. The rejectable discontinuity was discovered during the Ultrasonic Testing (UT) performed by the QC technician, Steve McConnell and appeared to travel in the longitudinal direction of the 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, Steve McConnell, performed a visual inspection and a Magnetic Particle Test (MPT) of the areas and one rejectable indication was noted by the QC inspector. Additional grinding was performed two times to remove the indication and at the conclusion of the grinding cycles removal of the indication was confirmed by QC/MPT. 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 QC inspector verified the DC welding parameters as 118 amps and the minimum preheat temperature 40 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius which appeared to comply with the contract documents. The 3.2 mm electrode was utilized with the welding performed in the flat (1G) position with the work in an approximate horizontal plane and the weld metal deposited from the upper side. Prior to the welding the QAI verified the dimensions of the excavation and were noted and recorded as follows; Y=590 mm, L=110 mm and d=18 mm. The welding and the QC inspection was completed during this shift. The welding and inspection was completed during this scheduled shift.

The QAI also observed the removal of the backing bar performed by the welders Rory Hogan and Jeremy Dolman. This work was performed on the "B" face of the weld joint identified as WN: 6E-7E-D1 and D2. The removal of the backing bar was performed utilizing the plasma arc cutting method.

B). Field Splice W7/W8

The QAI observed the Submerged Arc Welding (SAW) of the deck plate field splice identified as Weld Number (WN): 7W-8W-A1 through A2. The welding was performed by the welding operator Mike Maday ID-3391 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The QAI observed the QC inspector verifying the welding parameters and were noted as follows: 560 amps, 32.5 volts and a travel speed measured at 390 mm per minute. The QC inspector also measured the minimum preheat temperature of 60 degrees Celsius, the maximum interpass temperature of 230 degrees Celsius were observed and verified by the QAI.

The QAI also observed the Submerged Arc Welding (SAW) of the deck plate field splice identified as Weld Number (WN): 7W-8W-A3 through A5. The welding was performed by the welding operator James Zhen ID-6001 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The QAI observed the QC inspector verifying the welding parameters and were noted as follows: 550 amps, 32.5 volts and a travel speed measured at 400 mm per minute. The QC inspector also measured the minimum preheat temperature of 60 degrees Celsius, the maximum interpass temperature of 230 degrees Celsius were observed and verified by

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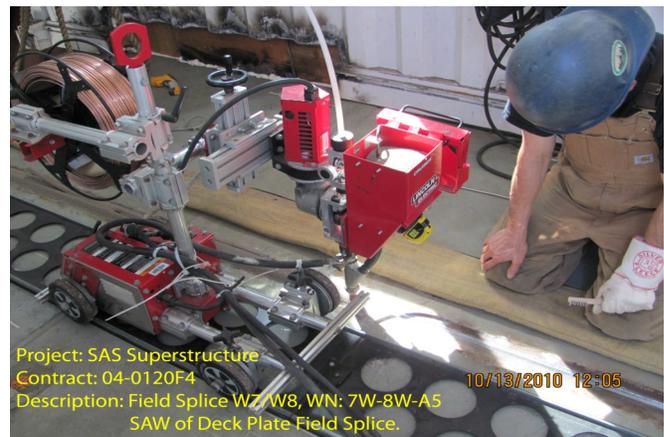
the QAI.

William Sherwood performed the QC inspection during the Complete Joint Penetration (CJP) of the deck plate field splice. Mr. Sherwood utilized the WPS identified as ABF-WPS-D15-4042B-1 Rev. 0 to monitor the welding and verify the DC welding parameters. The minimum preheat and the maximum interpass temperatures were also monitored by Mr. Sherwood. The CJP welding was not completed during this scheduled shift.

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 SAW welding 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.

The digital photographs below illustrate 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 Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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Inspected By: Reyes,Danny

Quality Assurance Inspector

Reviewed By: Levell,Bill

QA Reviewer