DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-015839
Date Inspected: 27-Jul-2010

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 1000
OSM Departure Time: 1830
Location: Job Site

CWI Name: See Below

Inspected CWI report:	☐	**Yes**	☑	**No**	☐	**N/A**		
Electrode to specification:	☑	**Yes**	☐	**No**	☐	**N/A**		
Qualified Welders:	☑	**Yes**	☐	**No**	☐	**N/A**		
Approved Drawings:	☑	**Yes**	☐	**No**	☐	**N/A**		

CWI Present:	☑	**Yes**	☐	**No**				
Rod Oven in Use:	☑	**Yes**	☐	**No**	☐	**N/A**		
Weld Procedures Followed:	☑	**Yes**	☐	**No**	☐	**N/A**		
Verified Joint Fit-up:	☑	**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 W1/W2
B). Field Splice W2/W3
C). Field Splice W3/W4
D). Field Splice W4/W5
E). Field Splice W5/W6

A). Field Splice W1/W2

The QAI observed the excavation of the unacceptable discontinuities discovered during the Ultrasonic Testing (UT) of bottom plate field splice identified as 1W-2W-D2 performed by the QC Technician, Steve McConnell and Jesse Cayabyab. The excavations were performed by welding personnel Fred Kaddu ID-2188 utilizing a high cycle grinder to excavate and remove the defects. At the conclusion of the excavations the QC technician Tom Pasqualone performed a Magnetic Particle Test (MPT) of the 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 the 3.2mm electrode as per the Welding Procedure Specification (WPS) identified as ABF-WPS-1000 Repair Rev. 2. The WPS was also used by the QC inspector, Mr. Pasqualone, as a reference to monitor and verify the Direct Current welding parameters which were noted as 132 amps. The welding was

performed in the flat (1G) position with the work approximately in the horizontal plane and the weld metal deposited from the upper side. The minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was monitored and maintained by the QC inspector during the repair welding.

B). Field Splice W2/W3

The QAI observed the Ultrasonic Testing (UT) of the Complete Joint Penetration (CJP) weld and the repairs on the edge plate field splice identified as WN: 2W-3W-B1. The testing was performed by the QC technician Steve McConnell utilizing a G.E./Krautkramer USM 35X. Mr. McConnell also utilized the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 as a reference 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. No rejectable indications were noted by the QC technician.

C). Field Splice W3/W4

The QAI observed Steve McConnell perform Ultrasonic Testing (UT) of the edge plate field splice identified as WN: 3W-4W-F1. The testing was performed by the QC technician utilizing the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. The QC technician performed the required longitudinal wave test for base metal soundness utilizing a 1" diameter transducer and at the conclusion of the longitudinal wave examination, the QC technician performed the shear wave examination utilizing a .75 x .75 rectangular transducer. At the conclusion of the shear wave examination the QC technician noted six (6) UT rejects. The UT examination was performed from the "B" face side of the weld joint.

D). Field Splice W4/W5

The QAI observed the continued back gouging of the single-v-groove joint performed by the operator Mike Maday. The work was performed on the bottom plate field splice identified as Weld Number (WN): 4W-5W-D. The back gouging was performed utilizing the plasma arc cutting method.

E). Field Splice W5/W6

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the edge plate field splice identified as Weld Number(WN): 5W-6W-B1. The Complete Joint Penetration (CJP) groove welding was performed by welding personnel Xiao Jian Wan ID-9677 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3040B-3 Rev. 0. The WPS was also used by the AB/F Quality Control (QC) Inspector William Sherwood as a reference during the monitoring of the in process field welding and when performing the QC verification of the Direct Current Electrode Positive (DCEP) welding parameters. The groove joint appeared to comply with the AWS joint designation identified as B-U2a-GF. The QAI also observed the QC inspector verify the average welding parameters and were observed as follows: 242 amps, 21.5 volts and a travel speed measured at 183 mm/minute. The minimum preheat temperature of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was also verified by the QC inspector. The welding was performed on the "A" face side of the weld joint and was completed during this shift. The completion of the welding concluded at approximately 1400 hours. The

three hour post heat commenced at this time and concluded at approximately 1700 hours.

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 FCAW-G 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 QAI also reviewed the Request for Information (RFI)document identified as ABF-RFI-00611R00 regarding the verification of the 16mm and 20mm multi-pass fillet welds located at the floorbeam web to skin plate weld at the Orthotropic Box Girder (OBG) suspender brackets located at various areas as noted in the RFI. The QAI performed visual inspection to verify that the correct size fillet welds meet the requirements of the this RFI located along girder Face "B", for 1100mm from the OBG corner on girder Face "A", and for 800mm from the OBG corner on girder Face "C". At the conclusion of the verification the QAI noted issues at OBG Lift W6, PP40, PP44 and PP46. The issues at hand appear to be insufficient throat and/or incorrect leg size.

The digital photographs below illustrate the work observed during this scheduled shift.

Summary of Conversations:

There were general conversations with Quality Control Inspector's Mike Johnson, Tom Pasqualone and Steve McConnell at the start of the shift regarding the location of American Bridge/Flour 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.

WELDING INSPECTION REPORT

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Inspected By:	Reyes,Danny	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer