

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
690 Walnut Ave. St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-013198**Date Inspected:** 21-Apr-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1100**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**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 W1/W2
- B). Field Splice W2/W3
- C). Field Splice W3/W4
- D). Field Splice W4/W5

A) Field Splice W1/W2

The QAI observed the Shielded Metal Arc Welding (SMAW) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S3. The welding was performed by the welding personnel Jordan Hazelaar ID-2135 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1011 Rev. 0 to correct the excessive root openings of the double-v-groove joint identified as per the AWS joint designation B-U3b. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena as a reference to perform the monitoring and verifying the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding. Later in the shift the QAI observed the QC inspector monitoring the welding parameters and were noted as 139 amps. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

WELDING INSPECTION REPORT

(Continued Page 2 of 4)

B) Field Splice W2/W3

The QAI also observed the continued Ultrasonic Testing (UT) of the deck plate field splice identified as WN: 2W-3W-A. The testing was performed by the QC technician Steve McConnell utilizing a Krautkramer USM 35X. Mr. McConnell also utilized the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 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. At the end of the shift there appears to be approximately three (3) rejectable discontinuities noted by the QC technician at this time.

C) Field Splice W3/W4

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the bottom plate field splice identified as Weld Number (WN): 3W-4W-D, Segment D1. The Complete Joint Penetration (CJP) groove welding was performed by welding personnel Chun Fai Tsui ID-3426 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3040A-1 Rev. 0. The WPS was also used by the AB/F Quality Control (QC) Inspector William Sherwood as a reference when performing QC verification of the Direct Current Electrode Positive (DCEP) welding parameters during the CJP welding. The groove joint appeared to comply with the AWS joint designation identified as B-U2a. The QAI also observed the QC inspector verify the average welding parameters and were observed as follows: 233 amps, 23.4 volts and a travel speed measured at 314mm/minute with the heat input calculated at 1.04 kj/minute. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

The welding length appeared to be approximately 1580mm (Y=0mm to 1580mm). The welding of the Segment D1, "A" Face, was completed during this shift.

Later in the shift the QAI observed the welder, Mr. Tsui, performing the CJP welding at the Segment D2, "A" Face. The Y axis location appeared to be 7740mm to 8500mm (length=760mm).

The QAI also observed the fillet welding of the fitting gear to the side plate field splice to be utilized during the alignment process of the field splice. The work was performed on the weld joint identified as WN: 3W-4W-E. The welding and the assembly fit-up was performed by Rick Clayborn ID-2773 utilizing the SMAW process during the welding as per the WPS ABF-WPS-D15-F1200A Rev. 1. The WPS was also used by the QC inspector Mike Johnson as a reference to verify the DCEP welding parameters and were noted as follows: 129 amps. Later in the shift the QAI observed the QC inspector verify the surface temperatures and were noted as follows: 20 degrees Celsius (preheat temperature) and the maximum interpass temperature of 230 degrees Celsius.

D. Field Splice W4/W5

The QAI observed the fit-up of the four backing bar field splices and the CJP welding of the single-v-groove to be utilized as backing for the weld joint identified as 4E-5E-A. The fit-up and the welding was performed by Salvador Sandoval ID-2202 utilizing the WPS identified as ABF-WPS-D15-1030 Rev. 0. The WPS was also used by the QC inspector Barry Drake as a reference during the monitoring and the verifying of the welding parameters which were noted as 138 amps. The back grinding of the "B" Side of the weld joint was tested utilizing the

WELDING INSPECTION REPORT

(Continued Page 3 of 4)

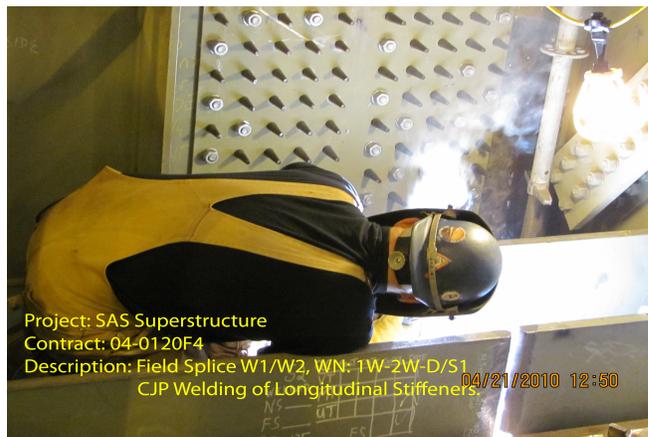
Magnetic Particle Testing (MPT) method and no rejectable indications were noted by the Mr. Drake.

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's 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 was not completed, except as noted, 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 performed a random ultrasonic verification test of the Complete Joint Penetration (CJP)groove weld identified as WN: 1E-2E-C. 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 a ultrasonic test report, TL6027, was generated on this date.

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



Summary of Conversations:

There were no pertinent conversations discussed in regards to the project except as noted above.

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.

Inspected By: Reyes,Danny

Quality Assurance Inspector

WELDING INSPECTION REPORT

(Continued Page 4 of 4)

Reviewed By: Levell,Bill

QA Reviewer