

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:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-014018**Date Inspected:** 17-May-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

A) Field Splice W1/W2

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S14 through S18. The welding was performed by the welding personnel James Zhen ID-6001 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3010-3 Rev. 0 during the Complete Joint Penetration (CJP) welding of the double-v-groove joint as per the AWS joint designation identified as B-U3-GF. The WPS was also used by the AB/F Quality Control (QC) Inspector Bonifacio Daquinag as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters during the CJP groove welding. The welding was performed in the vertical (3G) position with the work placed in the vertical plain. Later in the shift the QAI observed the QC inspector verifying the welding parameters and were noted as follows: 244 amps, 21.0 volts and a travel speed measured at 215mm/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 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

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The QAI also observed the Flux Cored Arc Welding (FCAW-G) of the bottom plate longitudinal stiffener field splices identified as Weld Number (WN): 1W-W2-D-S2. The welding was performed by the welding personnel Chun Fai Tsui ID-3426 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3011-3 Rev. 1 during the Complete Joint Penetration (CJP) welding of the double-v-groove joint identified B-U3-GF as per the AWS joint designation. The WPS was also used by the AB/F Quality Control (QC) Inspector Bonifacio Daquinag as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters during the CJP groove welding. The welding was performed in the vertical (3G) position with the work placed in the vertical plain. Later in the shift the QAI observed the QC inspector verifying the welding parameters and were noted as follows: 241 amps, 22.1 volts and a travel speed measured at 197mm/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 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

The QAI also observed the Ultrasonic Testing (UT) of the transverse CJP weld on the side plate field splice identified as WN: 1W-2W-E. The testing was performed by the QC technician Jesse Cayabyab utilizing a Krautkramer USM 35X. Mr. Cayabyab 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, Mr. Cayabyab indicated one rejectable indication.

B) Field Splice W2/W3

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the side plate field splice identified as Weld Number (WN): 2W-3W-E. The Complete Joint Penetration (CJP) groove welding was performed by welding personnel Song Tao Huang-3794 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1040-C Rev. 1. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena 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 138 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 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding length was approximately 650mm located at plate "D" to plate "E" connection.

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 process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift was not completed appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the

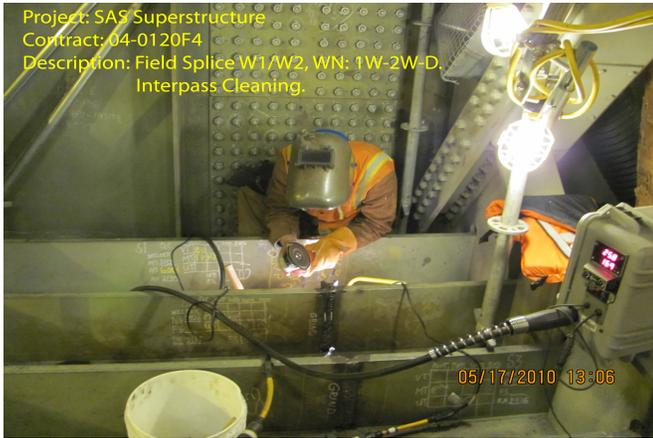
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surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The QAI also performed a random ultrasonic verification test of the Complete Joint Penetration (CJP) groove weld identified as WN: 3E-4E-B. 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.

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