

**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-013214**Date Inspected:** 22-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

## A) Field Splice W1/W2

The QAI observed the automatic Flux Cored Arc Welding (FCAW-G) welding during the Complete Joint Penetration (CJP) groove welding of the side plate field splice performed by Songtao Huang ID-3794. The single-v-groove joint appeared to comply with the AWS joint designation identified as B-U2a-GF. The welder, Mr. Huang, utilized the FCAW-G welding process as per the WPS ABF-WPS-D15-3042A-4 Rev. 0 which was also used as a reference by the Quality Control (QC) inspector Tom Pasqualone to monitor and verify the welding parameters and the surface temperatures during the welding operation. The Direct Current Electrode Positive welding parameters were verified and noted by the QC inspector and were noted as follows: 254 amps, 23.8 volts and a travel speed measured at 258 mm/minute. The minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were maintained.

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## B) Field Splice W2/W3

The QAI 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 a total of seven (7) rejectable discontinuities noted by the QC technician at this time.

Later in the shift, the QAI observed the excavation of two (2) unacceptable discontinuities discovered during the Ultrasonic Testing (UT) performed by the QC Technician, Steve McConnell. The excavations were performed by welding personnel Mitch Sittinger ID-0315 utilizing a high cycle grinder to remove the defects. At the conclusion of the excavations the QC inspector, performed a visual inspection and a Magnetic Particle Test of the areas. No rejectable indications were noted by the QC inspector and Mr. Sittinger commence the welding of the excavations utilizing the WPS identified as ABF-WPS-D15-1000-Repair Rev. 2. The QAI verified the DCEP welding parameters as 135 amps and the minimum preheat 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The linear dimensions utilized the Y coordinate and were noted as Y=13885 and Y=15845. Later in the shift the QAI observed at random intervals the QC inspector monitoring and verifying the welding parameters.

## C) Field Splice W3/W4

The QAI observed the continuous tack welding of the backing bar to the deck plate field splice identified as WN: 3W-4W-A. The welding was performed by Jordan Hazelaar ID-2135 utilizing the WPS identified as ABF-WPS-D15-F1200A Rev. 1 which was also used by the QC inspector, Bonifacio Daquinag to monitor the tack welding and verify the welding parameters. The welding parameters were verified and recorded by the QAI as 130 amps. The minimum and maximum surface temperatures were also verified and recorded by the QAI. The QAI also observed the QC inspector Mr. Daquinag performing a dimensional survey of the gaps between the deck plate and the backing bar of the field splice. It was noted by the QC inspector seven areas exceed the maximum allowable gap of 2mm and locations and dimensions were recorded are as follows: 1) Y=2015mm, L=40mm, G= 2.5mm to 4mm 2) Y=9120mm, L=70mm, G=2.5mm, 3) Y=12155mm, L=170mm, G=2.5mm, 4) Y=18080mm, L=50mm, G=2.5mm 5) Y=18130mm, L=100mm, G=2.5mm, 6) Y=25220mm, L=65mm, G=2.5 to 4.0mm and 7) Y=25235mm, L=50mm, G=2.5 to 4.0mm. The QC inspector informed the QAI that the dimensional documents will be submitted to the Engineer by AB/F Welding Quality Control Manager (WQCM) Mr. Jim Bowers.

Legend: Y=Linear Dim., L=Length and G=Gap

## 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

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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 the backing bar splice for the W4 to W5 joint identified as WN: 4W-5W-A. 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

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**Reviewed By:** Levell,Bill

QA Reviewer