

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-014504**Date Inspected:** 01-Jun-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 W3/W4
- C). Field Splice W4/W5
- D). Miscellaneous Observations

A). Field Splice W1/W2

The QAI observed the Ultrasonic Testing (UT) on the repairs of the longitudinal stiffener field splices identified as WN: 1W-2W-D, stiffeners S10 through S14. The testing was performed by the QC technician Tom Pasqualone utilizing a G.E./Krautkramer USM-35. The testing and evaluation of the repairs appeared to be performed utilizing the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. 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 technique during the testing for weld soundness. At the conclusion of this shift the QAI observed the QC technician has completed the testing four (4) of the R1 repairs and noted and the longitudinal stiffeners S12 and S13 as UT rejects which were verified by the QAI. The repairs identified as S10 and S14 were found to be acceptable. In regards to the R1 repairs identified as S10 and S14 see QAI Observation and Verification Summary.

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The QAI also observed Chun Fai Tsui ID-3426 perform the excavation and weld repair of the items marked for repair as a result of the UT examination by the QC inspector on the stiffeners identified as S9. Also 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 3.2mm electrode as per the Welding Procedure Specification (WPS) identified as ABF-WPS-1000 Repair Rev. 1. The WPS was also used by the QC inspector, Mr. Pasqualone as a reference to monitor and verify the Direct Current welding parameters and were noted as 119 amps. The welding was performed in the vertical position (3G) with the work positioned approximately in the vertical plane with the groove approximately vertical and the weld progression up.

Later in the shift, the QAI observed the initial Ultrasonic Testing (UT) of the transverse CJP weld of the side plate field splices identified as WN: 1W-2W-C and E. 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 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. The testing was performed on the "A" face (inside) of the weld joint. At the conclusion of the testing, Mr. McConnell noted eight (8) rejectable areas on the side plate identified as "C" and two (2) rejectable areas on the side plate identified as "E". In regards to side plate "C" the UT the scanning of the weld joint was in progress from the "B" face side (outside).

B). Field Splice W3/W4

The QAI observed the automatic Flux Cored Arc Welding (FCAW-G) on the "A" face of the weld joint identified as Weld Number (WN) 3W-4W-E, Segment E1. The welding was performed by welding personnel Song Tao Huang, ID-3794 utilizing the WPS ABF-D15-3042A-1 Rev. 0. The joint designation appeared to comply with AWS single-v-groove butt joint identified as B-U2a-G. The WPS was also used by the QC inspector Bernie Docena as a reference to monitor and verify the Direct Current Electrode Positive (DCEP) welding parameters which noted and recorded by the QAI as follows: 250 amps, 24.0 volts and a travel speed measured as 300mm per minute. The welding was performed in vertical position (3G) at an approximate incline of 22 degrees. The QAI inspector also verified the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. Later during the shift the QAI observed, at random intervals, the QC inspector monitoring the in process welding, the surface temperatures and verifying the DCEP welding parameters.

C). Field Splice W4/W5

The QAI observed the QC inspector, Mike Johnson, perform MPT at the field splice identified as WN: 4W-5W-A north transition (20mm to 14mm) of the Orthotropic Box Girder (OBG). The testing was performed at the conclusion of correcting (by welding) the slope of the transition. No rejectable indications were noted by Mr. Johnson. The testing was performed utilizing the procedure SE-MT-CT-D1.5-101 Rev. 4.

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D). Miscellaneous Observations

The QAI observed the alignment of the U-Ribs which was achieved by driving drift pins through the various plies of splice plates to bring the bolt holes in their proper alignment. Later in the shift the QAI observed the installation of the galvanized High Strength Bolts (HSB) at various U-Ribs. This task appeared to comply with the American Bridge/Fluor reference drawing identified as DE234AB Rev. 1.

QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS's 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 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 surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The QAI performed a random ultrasonic verification test on the Complete Joint Penetration (CJP) groove welds of the longitudinal stiffener field splices identified as WN: 1W-2W-D-S10 and S14 . Approximately 10% of the welds were 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 were discussed in regards to the project.

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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
Reviewed By:	Levell,Bill	QA Reviewer
