

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-021329**Date Inspected:** 03-Mar-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site

<b>CWI Name:</b>	See Items Observed		
<b>Inspected CWI report:</b>	Yes	No	N/A
<b>Electrode to specification:</b>	Yes	No	N/A
<b>Qualified Welders:</b>	Yes	No	N/A
<b>Approved Drawings:</b>	Yes	No	N/A

<b>CWI Present:</b>	Yes	No	
<b>Rod Oven in Use:</b>	Yes	No	N/A
<b>Weld Procedures Followed:</b>	Yes	No	N/A
<b>Verified Joint Fit-up:</b>	Yes	No	N/A
<b>Approved WPS:</b>	Yes	No	N/A
<b>Delayed / Cancelled:</b>	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 W7/W8
- B). Deck Access Hole
- C). QC Inspection Request
- D). QA UT Verification
- E). Pipe Welds
- F). Miscellaneous Task

A). Field Splice W7/W8

The QAI observed the welder, Fred Kaddu ID-2188, perform the repair welding of the bottom plate field splice identified as WN: 7W-8W-D1 and D2, R1 repair cycle. The welder performed the welding utilizing the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1001Repair, Rev.0. The WPS was also utilized by the QC inspector, Jesse Cayabyab, as a reference to verify the amperage and to monitor the welding. The average amperage of 121 amps was verified by the QC inspector and observed by the QAI. The welding was performed in the overhead (4G) position with the work placed in an approximate horizontal plane and the filler metal deposited from the underneath side. The minimum preheat temperature of 40 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The electrodes were stored in electrically heated, thermostatically controlled oven after removal from the sealed containers. The

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exposure limits of the electrodes 3.2 mm electrode ,identified as E7018-H4R, and the minimum storage oven temperature of 250 degrees Celsius appeared to be in compliance with the contract documents. At the time of the observation no issues were noted by the QAI. The repair welding was completed during this shift.

### B). Deck Access Hole

The QAI observed the Complete Joint Penetration (CJP) welding of the deck access hole located at the Panel Point 13.5 identified as WN: 2E-PP13.5-E5-NE. The welding was performed by Xiao Jin Wan ID-9677 utilizing the Shielded Metal Arc Welding (SMAW) process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1010A, Rev. 1. The WPS was also utilized by the QC inspector Gary Pat Swain as a reference to monitor the welding operation and verify the welding parameters. The amperage was observed by the QAI and recorded as 121 amps. The welder utilized the 3.2 mm electrode and the welding performed in the vertical (3G) position with the work placed in an approximate vertical plane and the groove approximately vertical. The minimum preheat temperature of 10 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The welder utilized a slag hammer and a wire wheel attached to a 4" high cycle grinder to remove slag after deposit of each fill pass. The electrodes were stored in electrically heated, thermostatically controlled oven after removal from the sealed containers. The exposure limits of the electrodes identified as E7018-H4R and the minimum storage oven temperature of 250 degrees Celsius appeared to be in compliance with the contract documents. At the time of the observation no issues were noted by the QAI.

### C). QC Inspection Request

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, the QAI randomly verified the QC visual inspection of the Complete Joint Penetration (CJP) welding of the following; WN: 3W-4W-A-LS4 through LS6 and WN: 8W-9W-C1 and C2. The QAI verification was performed to verify that the welding and the visual weld inspection performed by the QC inspector meet the requirements of the contract documents. At the conclusion of the QAI verification it appeared that the welds and the QC inspection complies with the contract documents.

### D). QA UT Verification

The QAI performed a random Ultrasonic Test (UT) of the Complete Joint Penetration (CJP) groove welds identified as WN: 3W-PP19.5-W2-LSE, LSW and TS, WN: 3W4W-A-LS4, LS5 and LS6. A total area of approximately 10% was tested to verify the weld and the testing performed by QC meet the requirements of the contract documents. An ultrasonic test report TL-6027 was generated on this date.

### E). Pipe Welding

The QAI observed the welder, Rick Kiikvee-ID-5319, perform the Complete Joint Penetration (CJP) welding of the field pipe splice of the 4" compressed air lines at the W2E1 pier column located at the grade elevation. The welding was performed utilizing the Weld Procedure Specification (WPS) identified as 1-12-1 which was also utilized by the QC inspector, Steve Jensen, to monitor the welding and to verify the welding parameters. The QC inspector verified the welding parameters and were observed as 67 amps.

At the request of the QC inspector, the QAI performed a Visual Verification of the following pipe welds;

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1-4-W2-E, 2-4-W2-E, 3-4-W2-E, 8-4-W2-E and 9-4-W2-E. At the conclusion of the visual observation the welding appeared to comply with the contract specifications.

## F). Miscellaneous Task

The QAI also performed a review and update of the project progress utilizing QA field reports and NDT reports. The updated project information was documented into the various QA tracking logs.

## 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 inspectors 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 welding process 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 digital photographs below illustrate some of the work observed during this scheduled shift.



## Summary of Conversations:

There were general conversations with Quality Control Inspector Jesse Cayabyab and William Sherwood at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel 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 Nina Choy (510) 385-5910, 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