

**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:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-012997**Date Inspected:** 13-Apr-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site

<b>CWI Name:</b>	Bnifacio Daquinag, Tony Sherwood, Bernard Docena	<b>CWI Present:</b>	Yes	No
<b>Inspected CWI report:</b>	Yes No N/A	<b>Rod Oven in Use:</b>	Yes	No N/A
<b>Electrode to specification:</b>	Yes No N/A	<b>Weld Procedures Followed:</b>	Yes	No N/A
<b>Qualified Welders:</b>	Yes No N/A	<b>Verified Joint Fit-up:</b>	Yes	No N/A
<b>Approved Drawings:</b>	Yes No N/A	<b>Approved WPS:</b>	Yes	No N/A
		<b>Delayed / Cancelled:</b>	Yes	No N/A
<b>Bridge No:</b>	34-0006	<b>Component:</b>	SAS OBG 1W/2W-D	

**Summary of Items Observed:**

The Quality Assurance (QA) Inspector, Rick Bettencourt was on site at the job site between the times noted above. The QA Inspector was on site to randomly observe the in process welding and inspection of the weld joints identified as 1W/2W-D, 2W/3W-A and the following observations were made:

**1W/2W-A**

Upon the arrival of the QA Inspector it was randomly observed the production welding at the above identified location had been previously completed. The QA Inspector randomly observed the Smith Emery (SE) Quality Control (QC) Inspector Steve Mc Connell performing ultrasonic testing (UT) of the complete joint penetration (CJP) groove weld identified above. The QA Inspector randomly observed the QC Inspector locate and indicate several UT rejections directly on the weld. The QA Inspector noted the UT was still in progress at the end of the QA Inspectors shift.

**1W/2W-D**

Upon the arrival of the QA Inspector at the above identified location it was observed that a shielded metal arc welding (SMAW) root pass had been previously completed. The QA Inspector randomly observed several locations directly under the longitudinal stiffeners where the CJP groove weld had been welded out root/fill/cover. The QA Inspector noted the areas that were welded out to completion were approximately 100mm on either side of the longitudinal stiffeners a total weld length of 200mm. The QA Inspector randomly observed the SE QC Inspector Bernard Docena was present at the above identified location monitoring and recording the in process production welding.

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### D11/D12

The QA Inspector randomly observed the American Bridge/Fluor (ABF) welding operator Jordan Hazelaar setting up to perform submerged arc welding between the areas which had been previously completed utilizing the shielded metal arc welding (SMAW) process. Upon the arrival of the QA Inspector, it was observed and noted the in process weld appeared to have been maintained above 200°F since the previous day shift ended. The QA Inspector verified the preheat utilizing a 225°F temperature indicating marker. The QA Inspector randomly observed the ABF welding operator Jordan Hazelaar begin welding the SAW fill pass in the center in weld segment D12 and weld to the stiffener at D11. The QA Inspector randomly observed the SAW parameters and they were 602 Amps, 32.5 Volts and a travel speed of 420mm/min. The QA Inspector noted the SAW parameters appeared to be in general compliance with ABF-WPS-D1.5-4042B-1. The QA Inspector randomly observed the ABF welding operator move location to D11 and continued performing the SAW fill/cover passes. It was observed after only two SAW fill/cover passes at either weld segment identified above, the ABF welding operator stopped welding to let the interpass temperature cool down. The QA Inspector noted the maximum interpass temperature was not exceeded during the production welding. The QA Inspector noted the same processes identified above were repeated until the two weld segments identified as D11/D12 were welded to completion. The QA Inspector noted the welding was completed at approximately 1030 and the minimum required preheat of 200°F was maintained for a minimum of three hours after the weld was completed.

### 2W/3W-A

Upon the arrival of the QA Inspector at the above identified location, the QA Inspector randomly observed the ABF welders James Zhen, Mitch Sittinger and Chun Fai Tsui performing SMAW tack welding of the steel backing. The QA Inspector noted the ABF welders were utilizing 5/32" E7018 low hydrogen electrodes with approximately 157 Amps for all three welders. The QA Inspector noted the SMAW parameters appeared to be in general compliance with ABF-WPS-D1.5-F1200A. The QA Inspector performed random visual and dimensional testing of the fit up prior to and during the SMAW tack welding. The QA Inspector noted several areas of planar misalignment that exceeds that allowed by AWS D1.5-02 section 3.3.3 In addition the QA Inspector noted several areas where the gap at the steel backing and the bevel exceed 2mm which exceeded the maximum allowable by AWS D1.5-02 section 3.3.1.1. The following locations of the above identified issues are as described below:

The unacceptable planar misalignment was located at the following locations:

A1-y=0mm-130mm 8mm-3mm misalignment (130mm in length)

A1-y=3770mm-3945mm 3-5mm misalignment (205mm in length)

A4-y=1890mm-2400mm 3-4mm misalignment (410mm in length)

The gaps exceeding 2mm between the steel backing and the bevel were located at the following locations:

A1-y=2015mm-2125mm, gap at steel backing 7mm-3mm (length 110mm) 2W side of groove

A1-y=1970mm-2130mm, gap at steel backing 9mm-3mm (length 160mm) 3W side of groove

The QA Inspector noted the two members' identified as 2W/3W-A were joined by welding on both sides of the steel backing bar. It was noted no additional fit up tasks would be performed after the members were joined by welding. The QA Inspector wrote and submitted Incident Reports for the unacceptable fit up issues described above. The pictures below represent examples of the planar misalignment and gaps at the steel backing.

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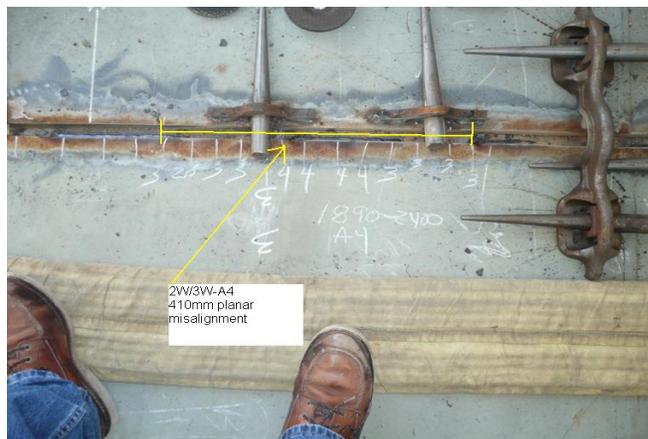
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## Summary of Conversations:

The QA Inspector informed the SE QC Inspector Bnifacio Daquinag of the planar misalignment and the gaps at the steel backing bar. The QA Inspector physically pointed out and described the issues to the QC Inspector. The QC Inspector informed the QA Inspector, he was aware of the issues described above and he has noted them in his daily fit up or inspection report. The QC Inspector informed the QA Inspector he did concur with the findings described by the QA Inspector in the above report and Incident Reports written and submitted.

The QA Task Lead Inspector Bill Levell informed the QA Inspector the SE QC Inspector identified as William Anthony Sherwood was approved to perform CWI and magnetic particle testing functions on the project.

## 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:** Bettencourt,Rick

Quality Assurance Inspector

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**Reviewed By:** Levell,Bill

QA Reviewer