

**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-013984**Date Inspected:** 05-May-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>	Bernard Docena, Steve McConnell			<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

**Bridge No:** 34-0006**Component:** SAS OBG 1W/2W-C, 3W/4W-A, 4E/5E**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- C, 1W/2W-D/S and 4E/5E and the following observations were made:

**1W/2W-C1**

The QA Inspector randomly observed the ABF welders had previously started the induction heating blankets to ensure the minimum required preheat of 150°F was achieved prior to welding. The QA Inspector randomly verified utilizing a 150°F temperature indicating marker and noted the minimum required preheat had been achieved. The QA Inspector randomly observed the fill and cover pass appeared to be 80% complete in the weld segment C1. The QA Inspector randomly observed the top 900mm was not welded due the lack of access with the bug-o track system. The QA Inspector randomly observed the ABF welder Song Tao Huang preparing the top 900mm by grinding in preparation of welding the FCAW root/fill/cover pass manually. The QA Inspector randomly observed the SE QC Inspector identified as Bernard Docena set the FCAW machine to the parameters of the approved WPS. The QA Inspector randomly observed the FCAW parameters were 258 Amps, 23.2 Volts and a travel speed of 225mm/min. The QA Inspector randomly observed the ABF welder Song Toa Huang begin the FCAW root/fill pass. The QA Inspector noted the ABF welder was performing the FCAW fill/cover passes for the remainder of the QA Inspectors shift. The QA Inspector randomly observed and noted an ABF apprentice welder preparing the bottom portion of the weld joint identified as C2 for the FCAW root/fill passes. The QA Inspector noted the splice plates have been removed for welding.

**4E/5E-A**

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Upon the arrival of the QA Inspector at the above identified location the QA Inspector noted the orthotropic box girder (OBG) 5E was pushed into place. The QA Inspector performed a random visual inspection of the overall fit up and condition of the weld joint. The QA Inspector noted the weld joint at weld segments A, B, C and D had significant planar misalignment. The QA Inspector noted approximately 35mm of planar misalignment at all of the locations identified above. The QA Inspector randomly observed the ABF erection personnel perform additional fitting and erection tasks to bring the OBG 5E in general alignment with the OBG 4E. The QA Inspector noted additional fitting tasks will need to be performed by the ABF welding personnel prior to production welding.

The QA Inspector randomly observed and noted the transition longitudinal weld splices on the top deck plate identified as "A" appeared to have been ground and transitioned to allow the steel backing to fit up with intimate contact. The QA Inspector observed the contractor appeared to have over ground the 20mm to 14mm transition on the North side of the top deck plate or weld segment A1. The QA Inspector noted the 14mm top deck plate appeared to have been inadvertently over ground or dished out to a point where the 14mm top deck plate had been reduced to 10mm near the edge of the bevel (pictured). In addition the QA Inspector noted the longitudinal deck welds which were welded and completed at ZPMC in China did not appear to be ground or blended in a manner which would allow the steel backing to fit up the bottom the top deck plate with intimate contact or with a gap which is less than 2mm. The QA Inspector noted some grinding did appear to have been completed, but it was noted the grinding only appeared to have removed the paint coating and not sufficient weld reinforcement to allow the steel backing to fit tightly (pictured below). The QA Inspector informed the QA Task Lead Bill Levell and ABF Welding Quality Control Manager (WQCM) Jim Bowers of the above identified issue. (see summary of conversations)

1W/2W-D/S

D/S-13

The QA Inspector randomly observed the ABF welder James Zhen performing shielded metal arc welding (SMAW) root/fill passes at the above identified stiffener plates. The QA Inspector noted the ABF welder was utilizing 5/32" E7018 low hydrogen electrodes with 135 Amps. The QA Inspector noted the SMAW parameters appeared to be in general compliance with ABF-WPS-D1.5-1010. The QA Inspector randomly observed the above identified stiffener plate had been previously restored by welding, and the round bar stock removed. The SMAW was in process for the remainder of the QA Inspectors shift.

D/S-3

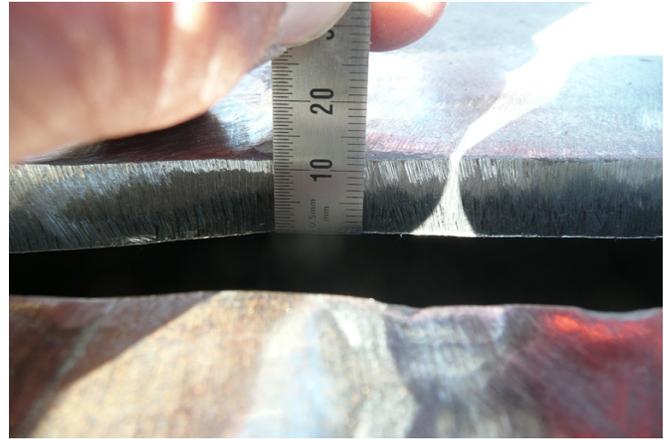
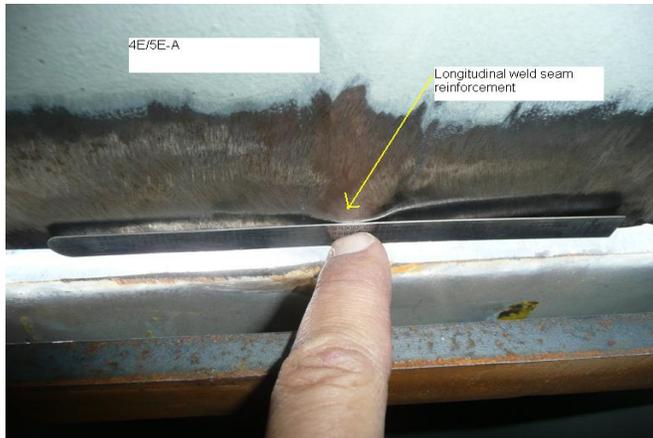
The QA Inspector randomly observed the ABF welder Chin Fai Tsui had installed round bar stock in the double V-groove opposite the side where joint restoration is being performed. The QA Inspector noted the round bar stock is in place in the groove vertically and SMAW butter passes are performed on the opposite side. The QA Inspector noted once the weld joint has been restored to the original joint configuration, the round bar stock will be removed and welding can be performed as described in the approved WPS identified as ABF-WPS-D1.5-2010-C. The QA Inspector randomly observed the above identified welder was performing SMAW butter passes on all three of the above identified weld joints during the QA Inspectors shift. The QA Inspector randomly observed the ABF welder to be utilizing 1/8" E7018 low hydrogen electrodes with 135 Amps. The QA Inspector noted the SMAW parameters appeared to be in general compliance with the contract requirements.

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## Summary of Conversations:

The QA Inspector Rick Bettencourt and Bill Levell had a meeting and a conversation with the WQCM Jim Bowers. Mr. Levell informed Mr. Bowers, the issues with the transition being over ground and the top deck plate being reduced to 10mm would be an easy fix at the current time to weld and grind the area. Mr. Levell went on to inform Mr. Bowers, the longitudinal butt weld reinforcement did not appear to have been ground sufficiently enough to allow the steel backing to fit up with intimate contact with the top deck plate. In addition Mr. Levell informed Mr. Bowers currently it would not be difficult to correct the issues, prior to the steel backing bar being fit up and wedged into place. Initially Mr. Bowers informed the QA Inspectors Bill Levell and Rick Bettencourt, it would be difficult to correct the above described issues and that ABF was not required to do so. In addition Mr. Bowers informed the QA Inspectors, If Caltrans METS would like those items fixed, then Caltrans would need to direct them to do so. Mr. Levell informed Mr. Bowers no such direction would be issued nor was Mr. Levell implying any direction was required. Mr. Levell reiterated that in past meetings ABF, Jim Bowers included informed Caltrans METS that ABF is and will do all that they can to allow the steel backing to fit up with a gap less than 2mm. In addition Mr. Levell informed Mr. Bowers, that by not grinding the longitudinal weld reinforcement flush and by not correcting the over ground area by welding, it did not appear ABF was doing all that they could to prevent and fit up deficiencies with the steel backing bar. Mr. Bowers responded it could not be determined at the current time whether any fit up issues would arise from the current condition of the weld joint. Mr. Levell agreed with Mr. Bowers but reiterated by correcting the issues pointed out, it would likely create insurance that the steel backing would fit up correctly and in compliance with no gaps exceeding 2mm. Mr. Bowers added again ABF was not required to perform any additional grinding or welding with out direction from Caltrans METS. In a later conversation with Mr. Bowers and Mr. Levell, Mr. Bowers agreed to make an attempt to correct the over ground area by welding and to perform additional grinding at the longitudinal weld reinforcement to ensure the steel backing fits up with intimate contact.

## 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