

**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 #: 1x.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-012941**Date Inspected:** 07-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

<b>CWI Name:</b>	Bernie Docena and Mike Johnson			<b>CWI Present:</b>	<b>Yes</b>	<b>No</b>	
<b>Inspected CWI report:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Rod Oven in Use:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Electrode to specification:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Weld Procedures Followed:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Qualified Welders:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Verified Joint Fit-up:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Approved Drawings:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Approved WPS:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
				<b>Delayed / Cancelled:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Bridge No:</b>	34-0006			<b>Component:</b>	Orthotropic Box Girder		

**Summary of Items Observed:**

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At OBG L2E/L3E plate 'E1' (80 to 3250mm) inside, QA randomly observed ABF/JV qualified welder Sungtao, Huang ID # 3794 and Mitch Sittinger ID #0315 perform CJP groove (splice) welding fill to cover pass. The welder was observed welding in the 3G (vertical) position utilizing an automatic dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3042A-1. The joint being welded has a single V-groove butt joint with backing bar. The splice joint was preheated and maintained to greater than 150 degree Fahrenheit using electric resistance heating bands prior welding. During welding, ABF Quality Control (QC) Bernie Docena was noted monitoring the welding parameters of the welder. QA performed parameter readings during welding with the following results; 260 amperes, 23.5 volts and 200mm per minute travel speed which are deemed acceptable to contract specifications. The ABF welders have completed welding the cover of the splice butt joint in this mentioned area and was noted visually inspected by ABF QC Bernie Docena. QA also performed initial visual check on the completed weld and appears acceptable to contract requirements.

At OBG L3E/L4E plate 'F' (outside), QA randomly observed ABF/JV qualified welder James Zhen ID #6001 perform CJP groove (splice) welding root to fill pass. The welder was observed welding in the 3G (vertical) position utilizing an automatic dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS)

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ABF-WPS-D15-3040B-3. The joint being welded has a single V-groove butt joint with backing bar. The splice joint (18mm plate thickness) was preheated to greater than 150 degree Fahrenheit using propane gas torch prior welding. During welding, ABF Quality Control (QC) Mike Johnson was noted monitoring the welding parameters of the welder. The ABF welder was having porosity in his weld during root pass and this was attributed to the low supply of shielding gas. When QC measured the gas flow it was noted to be only 20 CFH. QC has instructed the welder to grind off/remove the porosity in the weld pass while other ABF personnel was fixing the gas problem. After completing grinding, QC have visually inspected the ground/removal of porosity and accepted. This QA confirmed the acceptance of the ground/removal of porosity. The welder resumed working on the splice joint by preheating the joint then welding. Welding parameters measured during welding were 240 amperes and 22.8 voltages which appear in compliance to the contract requirements.

At OBG L3E/L4E plate 'E1' inside (300mm long), ABF welder Chun Fai Tsui (ID # 3426) was noted welding in vertical (3G) position using Shielded Metal Arc Welding (SMAW). QA randomly observed the welder perform Complete Joint Penetration (CJP) groove (splice) welding root to fill pass. The welder was using E7018H4R, 1/8" diameter electrode implementing Caltrans approved ABF-WPS-D15-1040B. Welding parameter measured during welding was 135 amperes which is deemed in compliance to contract requirements. The short length of weld being welded is done due to the Bug-o machine cannot reach the area.

At OBG 3E/4E edge plate 'F' (18mm thickness) outside, this QA performed alignment check on the fit up prior welding the splice butt joint. QA noted that the top part of the splice has an offset of 2mm to 4mm to a length of 260mm while the bottom part has an offset of 2mm to 4mm to a length of 150mm. At OBG 3E/4E edge plate 'B' (25mm thickness) outside, QA also performed alignment check on the fit up while the splice joint is still idle. QA measured an offset reading of 2.5mm to 6.0mm to a length of 80mm to the top part while the bottom was measured with an offset reading of 2.5mm to 4.5mm to a length of 90mm. Areas that were mentioned out of alignment are considered unacceptable based on AWS D1.5 section 3 paragraph 3.3.3. QA informed ABF QC Jesse Cayabyab about the result but said QC takes their own measurement and submit them to ABF. Due to this infraction, QA issued a separate incident report for each edge plate.



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## Summary of Conversations:

As stated 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 SMR Mohammad Fatemi (916) 227-5298, who represents the Office of Structural Materials for your project.

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**Inspected By:** Lizardo, Joselito

Quality Assurance Inspector

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**Reviewed By:** Levell, Bill

QA Reviewer