

**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-025185**Date Inspected:** 14-Jul-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>	Steve Jensen 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>	SAS Tower		

**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 Tower West Shaft Splice #3 @Elevation 114 meters;

At Northwest (C-D) corner, lower splice plate; This QA Inspector randomly observed ABF welding personnel Salvador Sandoval continuing to perform production welding on the top half of the lower splice plate using the self shielded Flux Cored Arc Welding (FCAW) process with 1.8mm diameter E71T-8 wire electrode implementing Caltrans approved (WPS) ABF-WPS-D15-F2200-3. The welder was noted 3F (vertical) fillet welding the splice plate to interior corner closure plate of the tower shaft. This QA Inspector observed ABF personnel using Miller Proheat 35 Induction Heating System and propylene gas torch to preheat the plates to be welded prior to welding. This QA Inspector observed QC Inspector Steve Jensen using a Fluke infra red temperature gauge to verify the preheat temperature of more than 300°F. Welding parameters measured during welding were 330 amperes and 24.5 volts. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-F2200-3. During the shift at noon time, the job was turned over to fellow QA Doug Frey for the continuation of observations on the welding of the splice.

At Tower Base Elevation 13Meters Shear Plate Electro Slag Welding (ESW);

This QA was present at the Tower Base to observe the Electro Slag Welding of the weld number S-043 located at

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'T' position per ABF weld map. The weld joint to be welded is an 80-100mm transition butt at corner 'B' and 'C' of Tower South Shaft. ABF intends to implement Caltrans approved welding procedure ABF-WPS-ESW-80-100TR in performing the ESW.

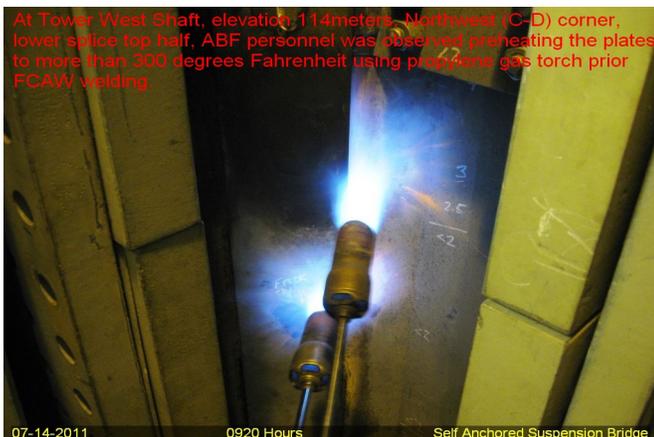
Upon QA's arrival, ABF personnel were noted preparing to weld the shear plate butt joint by checking all the necessary electrical and water hose weld shoe cooling connections are all in place prior to commence ESW. It was noted that three weld shoes were in position at each opposing side of the joint and so with the consumable guide tube that was placed in between the joint gap which was separated by consumable ceramic insulators. Other ABF personnel that were noted assisting the preparation of the ESW include ABF Production Manager John Callaghan, ABF Senior Field Engineer Daniel Hester and Dan Danks of Oregon Institute of Technology.

The fit up alignment was previously checked by ABF QC Jesse Cayabyab and this QA. The root gap was measured from bottom to top and the result noted was 16mm minimum and 25mm maximum which deemed in compliance to the WPS. The offset exceeded the maximum allowed on various locations from 4mm to 9mm and this was brought to ABF and Caltrans for review.

At 1245hours, ABF Operations Superintendent Dan Ieraci and ABF QC Mike Johnson performed the check list verification and noted it was all OK.

At 1250hours, all ABF personnel involved in the ESW converged and performed a pre-operations meeting reminding each and everyone's role in performing their job. After the meeting, each personnel went to their own respective assignment and positioned themselves and got ready for the start.

Initial firing of the ESW has started at 1312 hours but this was considered false start due to one filler wire was not moving and got stuck somewhere inside the consumable guide tube. ABF personnel momentarily stopped the operation and fixed the filler wire issue. After fixing and checking the filler wire, ABF has re-started the ESW at 1317hours. This time, the firing of the ESW was successful and that both filler wires were moving and the welding parameters have stabilized. The ESW has continued without a hitch until the completion of the joint at around 1738 hours for a total of four (4) hours and twenty one (21) minutes welding time. Overall, the ESW was completed without any major issues during the operation and the surface profile of the completed transition butt joint appears satisfactory.



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## Summary of Conversations:

No significant conversation occurred today.

## 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 Nina Choy 510-385-5910, 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