

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
690 Walnut Ave. St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

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-025367**Date Inspected:** 27-Jul-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** Pat Swain**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** 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 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 E-041 located at 'R' position per ABF weld map. The weld joint to be welded is a 60mm shear plate to 60mm Tower skin plate 'E' T-joint at corner 'D' and 'E' of Tower East Shaft. ABF intends to implement Caltrans approved welding procedure ABF-WPS-ESW-120T in performing the ESW.

Upon QA's arrival, ABF personnel were noted preparing to weld the shear plate T-joint by checking all the necessary electrical and water hose weld shoe cooling connections are all in place prior to commence ESW. The cooling water hoses were noted new with the ½" diameter supply line rated 200 psi while the ½" diameter return line was rated 250 psi. The weld shoes that will be used today were also sent for machining to a nearby shop to fix for possible fitting leakage and returned with new fittings. 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 Senior Field Engineer Daniel Hester and Dr. Dan Danks of Oregon Institute of Technology.

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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 17 mm minimum and 23.4 mm maximum which deemed in compliance to the WPS.

At 0730 hours, ABF Operations Superintendent Dan Ieraci and ABF QC Pat Swain performed the check list verification and noted it was all OK.

Since all the ABF personnel that are involved in the ESW operation are already familiar with their roles during welding, ABF Superintendent Dan Ieraci did not call for the usual pre-meeting prior welding but reminded ABF personnel through the radio to be wary in performing their usual respective tasks.

Initial firing of the ESW has started at 0739 hours and it was successful and that the welding parameters have stabilized and continued until a power failure occurred. The power failure occurred at 0800 hours and completed 700mm long of ESW. Per ABF electricians, two (2) Lincoln Electric DC 1000 welding machine circuit breakers tripped. ABF personnel momentarily stopped the operation and fixed the power supply issue. Two ABF electricians traced and tried to fix the source of the problem. After checking and fixing the power supply issue, ABF has decided to perform the restart the ESW today. But prior to the restart, the following observations were noted;

1. The ESW has welded a total length of 700mm prior to the DC-1000 power failure.
2. From the top of the welded ESW, ABF personnel have carbon arced and removed around 60mm from the top.
3. After carbon arcing/removing 60mm from the top of the weld, ABF personnel have also carbon arced and made an angle (approximately 45 degrees) towards the inside of the joint. The carbon arced weld area as well as the adjacent base metal were ground smooth by ABF personnel using die grinder.
4. After grinding, the root opening between the plates was measured 28mm.
5. The consumable guide tube was removed and replaced with new one. The bottom of the new guide tube was cut to match the angle of the carbon arced and ground top of the weld.
6. A 5" x 5" x 2 1/2" thick steel block was ground on one side then made a groove at the top then tack welded to the bottom of the slope to serve as the sump during the ESW.
7. The new consumable guide tube was put in place and the consumable insulators were also inserted.
8. At around 1330 hours, almost all preparations for the ESW were completed.
9. At 1345 hours, the initial flux charge was put in place.
10. At 1349 hours, the ESW has restarted and continued until the successful completion at 1807 hours.

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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.

Inspected By: Lizardo, Joselito

Quality Assurance Inspector

Reviewed By: Levell, Bill

QA Reviewer