

**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:** Casey, William**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-027511**Date Inspected:** 27-Apr-2012**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>	Fred Von Hoff and Bernie Docen			<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 Base 13 meter diaphragm, ABF welder Wai Kitlai was observed continuing to perform 3G (vertical position) Shielded Metal Arc Welding (SMAW) welding root pass to fill pass on 250mm long X 60mm thick corner stiffener plate shop marked 356 and weld joint #W138-7. The welder was noted using SMAW with 3.2mm diameter E7018H4R electrode on the root pass and 4.0mm diameter same electrode for the fill pass implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1170. The 60mm thick corner stiffener has a 45 degree double bevel configured for a Partial Joint Penetration (PJP) per detail drawing FWT28 of FWDT-2 Field Welding Schedule drawing. The stiffener plate is being welded to the top of 60 mm shear plate on one side and to the tower skin plate on the other side. The welder was noted welding alternately from one side to the other to avoid distortion. Prior welding, the plates were preheated to more than 225°F using propylene gas torch. This QA Inspector observed QC Inspector Fred Von Hoff using a Fluke infra red temperature gauge to verify the preheat temperature of more than 225°F. This QA Inspector performed a verification of the welding parameters and observed 130 and 186 amperes on the 3.2mm and 4.0mm diameter electrode respectively. During the shift, the 3G (vertical position) PJP T-joint SMAW welding was completed. The welder held the preheat using Miller Proheat 35 Heating System for three hours after welding as required.

At Tower Base 13 meter diaphragm, ABF welder Xiao Jian Wan was observed continuing to perform 3G (vertical position) Shielded Metal Arc Welding (SMAW) welding root pass to fill pass on 250mm long X 60mm thick

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corner stiffener plate shop marked 356 and weld joint #W138-8. The welder was noted using SMAW with 3.2mm diameter E7018H4R electrode on the root pass and 4.0mm diameter same electrode for the fill pass implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1170. The 60mm thick corner stiffener has a 45 degree double bevel configured for a Partial Joint Penetration (PJP) per detail drawing FWT28 of FWDT-2 Field Welding Schedule drawing. The stiffener plate is being welded to the top of 60 mm shear plate on one side and to the tower skin plate on the other side. The welder was noted welding alternately from one side to the other to avoid distortion. Prior welding, the plates were preheated to more than 225°F using propylene gas torch. This QA Inspector observed QC Inspector Fred Von Hoff using a Fluke infra red temperature gauge to verify the preheat temperature of more than 226°F. This QA Inspector performed a verification of the welding parameters and observed 133 and 180 amperes on the 3.2mm and 4.0mm diameter electrode respectively. During the shift, the 3G (vertical position) PJP T-joint SMAW welding was completed. The welder held the same preheat using Miller Proheat 35 Heating System for three hours after welding as required.

At Tower Base 13 meter diaphragm, ABF welder Luo Xiao Hua was observed continuing to perform 2G (horizontal position) Shielded Metal Arc Welding (SMAW) welding root pass to fill pass on 250mm long X 70mm thick corner stiffener plate shop marked 203 and weld joint #W137-4. The welder was noted using SMAW with 3.2mm diameter E7018H4R electrode on the root pass and 4.0mm diameter same electrode for the fill pass implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1170. The 70mm thick corner stiffener has a 45 degree double bevel configured for a Partial Joint Penetration (PJP) per detail drawing FWT28 of FWDT-2 Field Welding Schedule drawing. The stiffener plate is being welded to the top of 80 to 60 mm transitioned shear plate on one side and to the tower skin plate on the other side. The welder was noted welding alternately from one side to the other to avoid distortion. Prior welding, the plates were preheated to more than 225°F using propylene gas torch. This QA Inspector observed QC Inspector Fred Von Hoff using a Fluke infra red temperature gauge to verify the preheat temperature of more than 225°F. This QA Inspector performed a verification of the welding parameters and observed 130 and 180 amperes on the 3.2mm and 4.0mm diameter electrode respectively. During the shift, the 2G (horizontal position) PJP T-joint SMAW welding was completed.

The same welder has moved to ESW location 'A' weld joint #137-3 and performed 2G root pass using the same process as mentioned above. After the completion of the root pass ABF QC Bernie Docena performed the Magnetic Particle Testing (MT) and noted no relevant indication during the test. This QA performed MT verification on the same root pass and noted same result. The welder resumed welding until its completion and leaving the 3G (vertical portion) of the joint outstanding.

Again, after the completion of the above mentioned corner stiffener weld joint, the welder has moved to another ESW location 'F' weld joint W138-5 and performed 2G root pass using the same process. The welder performed fill pass welding until the end of the shift without completing the PJP T-joint.

At Tower Base 13 meter outer East external diaphragm, ABF welder Xiao Jian Wan was observed performing buttering on the one side of the PJP T-joint W102 due to excessive root as previously reported. The welder was noted buttering at overhead position using Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-F1200A. At the end of the shift, buttering on the PJP T-joint W102 was still continuing and should remain tomorrow.

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At Tower Base 13 meter diaphragm, ABF personnel were noted using Miller Preheat 35 Induction Heating System to perform the post weld heat treatment (PWHT) on welded corner stiffener joint after welding as required.



04-27-2012 1322 Hours Self Anchored Suspension Bridge

At tower Base 13 meter diaphragm, ABF welder Xiao Jian Wan was observed performing 3G (overhead position) Shielded Metal Arc Welding (SMAW) welding fill pass on corner stiffener PJP T-joint W138-8.



04-27-2012 0923 Hours Self Anchored Suspension Bridge

At Tower Base 13 meter diaphragm, ABF QC Benita Docena was observed performing Magnetic Particle Testing (MT) on SMAW welded root pass of corner stiffener PJP T-joint W138-7.



04-27-2012 0815 Hours Self Anchored Suspension Bridge

At tower Base 13 meter diaphragm, ABF welder Xiao Jian Wan was observed performing overhead butting on the excessive root gap of PJP T-joint weld joint W192 between the 80mm thick shear plate and 45mm diaphragm plate.



04-27-2012 1637 Hours Self Anchored Suspension Bridge

## 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

**Reviewed By:** Levell, Bill

QA Reviewer

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