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 #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Casey, William
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-027524
Date Inspected: 30-Apr-2012

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 700
OSM Departure Time: 1730
Location: Job Site

CWI Name: Fred Von Hoff and Steve Mc Connell

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 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 #W138-1. 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. After the welding completion of the root pass, ABF QC Fred Von Hoff performed Magnetic Particle Testing (MT) on the welded root pass with no relevant indication noted. This QA randomly verified the same root pass using the same test and noted same result. 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 Luo Xiao Hua 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 #W138-2. 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. After the welding completion of the root pass, ABF QC Fred Von Hoff performed Magnetic Particle Testing (MT) on the welded root pass with no relevant indication noted. This QA randomly verified the same root pass using the same test and noted same result. 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 outer East external diaphragm, ABF welder Xiao Jian Wan was observed continuing to perform buttering on the one side of the PJP T-joint W102 due to excessive root gap 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. The diaphragm plate being buttered was noted preheated to more than 150°F using Miller Proheat 35 Induction Heating System. During the shift, buttering on the PJP T-joint W102 was completed. After the buttering completion, ABF QC Fred Von Hoff was observed performing visual test (VT) and Magnetic Particle Testing (MT) on welded butter pass. The root opening measured after the butter pass was 2mm to 5mm which deemed acceptable to contract requirements. The MT performed by QC revealed no relevant indication during the test. This QA performed random VT and MT and noted same result.

ABF personnel were noted installing the Miller Proheat 35 Induction Heating System on the 80mm shear plate in preparation for the welding of the root. As soon as the preheat temperature reached the required preheat of more than 225°F, the same welder started welding the root pass. The welder was noted welding at 2G (horizontal position) using 4.0mm diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1160. The welder continued welding the root pass until the end of the shift without completing it.

At Tower Base shear plate above 9 meter between inner West and center external diaphragms, this QA Inspector randomly observed ABF personnel Jin Pei Wang continuing to perform multiple position fillet welding all around the 450mm wide X 50mm thick square shaped wall penetration doubler plate P638-3 A24. The welder was noted fillet welding the doubler plate to the 60 mm thick shear plate using Shielded Metal Arc Welding (SMAW) with 3. 2mm diameter E7018H4R electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-F1200A. This QA Inspector observed ABF personnel using propylene gas torch to preheat the plates to more than 150°F prior welding. This QA Inspector observed QC Inspector Steve Mc Connell using a

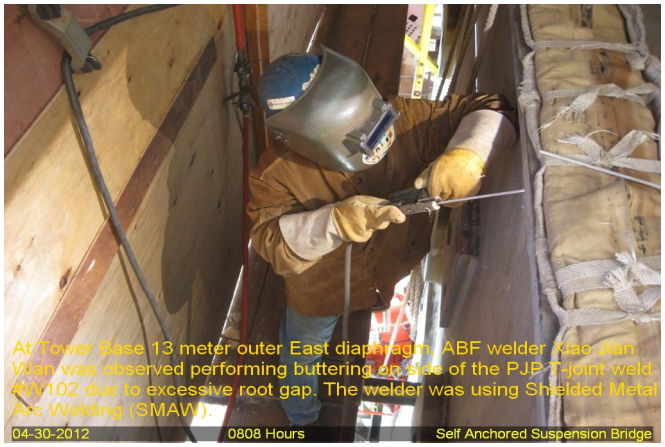
Fluke infra red temperature gauge to verify the preheat temperature of more than 150°F and measured the welding parameters to 125 amperes. At the end of the shift, SMAW fillet welding on doubler plate mentioned above was completed.

At Tower Base outer East bearing plate, ABF welder Richard Garcia was observed continuing to perform 3G (vertical position) Shielded Metal Arc Welding (SMAW) welding fill pass on 60mm thick stiffener plate shop marked P157 and weld joint #W008. The welder was noted using SMAW with 3.2mm diameter E7018H4R electrode on the fill pass. The 60mm thick stiffener has a 45 degree single bevel configured for a Partial Joint Penetration (PJP). The stiffener plate is being PJP welded to the 60 mm bearing plate. The plates were preheated to more than 150°F using propylene gas torch. This QA Inspector observed QC Inspector Steve Mc Connell using a Fluke infra red temperature gauge to verify the preheat temperature of more than 150°F. This QA Inspector performed a verification of the welding parameters and observed 130 amperes on 3.2mm E7018H4R electrode. At the end of the shift, fill pass welding was still continuing and should remain tomorrow.

At Tower Base outer West bearing plate, ABF welder Jeremy Dolman was observed continuing to perform 3G (vertical position) dual shielded Flux Cored Arc Welding (FCAW-G) welding fill pass on 60mm thick stiffener plate shop marked P157 and weld joint #W006. The welder was noted using FCAW-G with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3160-3. The 60mm thick stiffener has a 45 degree single bevel configured for a Partial Joint Penetration (PJP). The stiffener plate is being PJP welded to the 60 mm bearing plate. The plates were preheated to more than 225°F using Miller Proheat 35 Induction Heating System. This QA Inspector observed QC Inspector Steve Mc Connell 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 measured 250 amperes and 23.8 volts. At the end of the shift, fill pass welding was still continuing and should remain tomorrow.

WELDING INSPECTION REPORT

(Continued Page 4 of 4)



Summary of Conversations:

No significant conversation ocurred 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