

**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-027575**Date Inspected:** 08-May-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 Docena			<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>

**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 outer East external diaphragm, QA randomly observed ABF/JV qualified welder Xiao Jian Wan continuing to perform Partial Joint Penetration (PJP) T-joint welding fill pass on 80mm thick shear plate to 45mm thick diaphragm plate weld joint #W102. The welder was observed welding in the 2G (horizontal) position utilizing a 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-D15-3160-1. The welder was using a track mounted welder holder assembly that was remotely controlled. The PJP T-joint was preheated to greater than 325 degrees Fahrenheit using Miller Proheat 35 Induction Heating System with the heater blankets located on top of the plate prior welding. During welding, ABF Quality Control (QC) Fred Von Hoff was noted monitoring the welding parameters of the welder. Measured welding parameters during welding were 235 amperes, 23 volts and 325mm travel speed. Calculated heat input was 0.998 Kjoules/mm which appears in compliance to the contract requirements. At the end of the shift, FCAW-G fill pass welding was still continuing and should remain tomorrow. The welder held the preheat using the same Miller Proheat 35 Heating System for three hours after welding as required.

At Tower Base 9 meter outer East external diaphragm, this QA Inspector randomly observed ABF personnel Richard Garcia continuing to perform 4F (overhead position) fillet production welding on the C10 channel to 45mm thick diaphragm plate fillet weld joint W098. The welder was noted welding 6mm fillet between one side

---

## WELDING INSPECTION REPORT

( Continued Page 2 of 3 )

---

of the channel top flange and diaphragm plate per detail 1 of the ZPMC drawing number FW3. The welder was using the 1/8" 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 being welded prior welding. This QA Inspector observed QC Inspector Bernie Docena 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 the 1/8" diameter electrode. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-F1200A. At the end of the shift, the welder has completed the 6mm fillet weld on North side of the outer West diaphragm.

At Tower Base Electro Slag Weld (ESW) weld joint E-045 location 'F' face 'A', QA randomly observed ABF/JV qualified welder Rory Hogan continuing to perform CJP groove welding repair. The welder was observed welding in the 3G (vertical) position utilizing Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E7018H4R electrode implementing welding procedure ABF-WPS-D15-1000-Repairs. The repair excavation of 230mm long X 35mm wide X 42mm deep located at Y axis +7600mm was preheated to more than 300 degree Fahrenheit using propane gas torch prior welding. The ESW weld joint mentioned above is being repaired per Caltrans approved Request for Weld Repair (RWR) #201205-002 dated May 2, 2012. During the shift, ABF QC Bernie Docena was noted monitoring the welder. Measured welding parameter during welding was 130 amperes on the 3.2mm E7018H4R electrode. The welder continued welding the repair during the shift wherein he has completed the repair from face A.

After the welding completion of the welding repair from face A of weld joint mentioned above, ABF welder Rory Hogan was noted carbon air arc gouging the other side (face B) of the repair. The repair joint has been inadvertently gouged from both sides (face A and B) and face A has already been fully welded. Face B is being carbon air arc gouged to remove the remaining defect that was detected by Ultrasonic Testing (UT). After the completion of the arc gouging, the welder ground smooth the gouged surface. ABF QC Jesse Cayabyab was noted performing Magnetic Particle Testing (MT) on the ground surface of the excavated defect and its vicinity. QC has found no relevant indication during the test. This QA also performed the same MT test and noted same result. The defect removal on face B of the repair was having an excavation dimension of 280mm long X 35mm wide X 18mm deep and it was located at Y=7570mm. There was no repair welding performed after the completion of MT. According to the welder, he will start welding the repair on face B tomorrow morning.

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, QA has randomly verified the QC VT/MT of the Partial Joint Penetration (PJP) T-joint weld joint. The QA verification was performed to verify that the welding and the VT/MT inspection performed by the QC inspector at 13 meter diaphragm meet the requirements of the contract documents. At the conclusion of the QA verification it appeared that the weld and the QC inspection complied with the contract documents.

1. 13 meter diaphragm PJP T-joint #W121 – weld cover QA verified

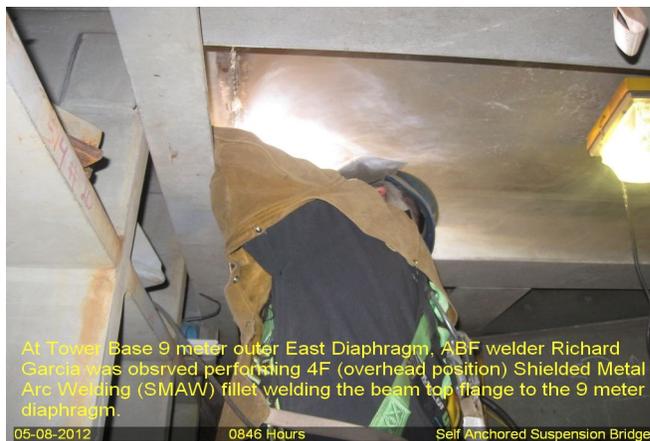
# WELDING INSPECTION REPORT

( Continued Page 3 of 3 )



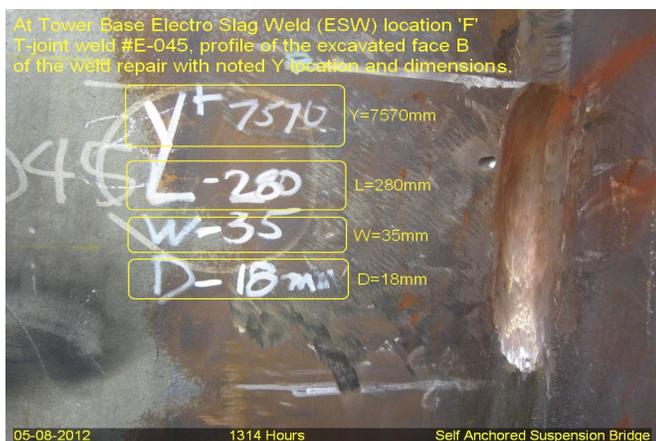
At Tower Base 13 meter outer East external diaphragm, ABF personnel were noted using the Miller Proheat 35 Induction Heating System to preheat, maintain and PWHT the PJP T-joint weld #W102 that is being welded.

05-08-2012 1603 Hours Self Anchored Suspension Bridge



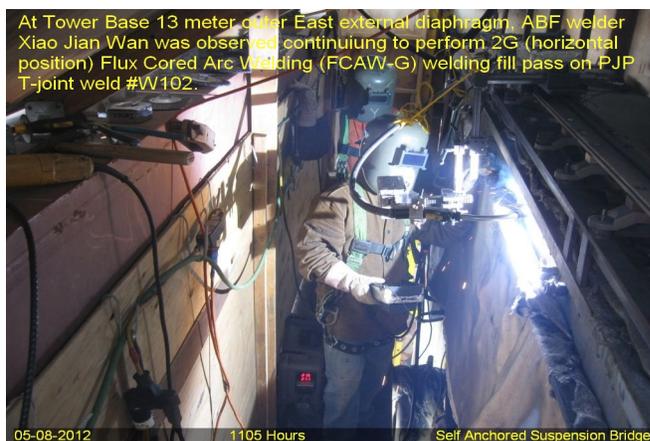
At Tower Base 9 meter outer East Diaphragm, ABF welder Richard Garcia was observed performing 4F (overhead position) Shielded Metal Arc Welding (SMAW) fillet welding the beam top flange to the 9 meter diaphragm.

05-08-2012 0846 Hours Self Anchored Suspension Bridge



At Tower Base Electro Slag Weld (ESW) location 'F' T-joint weld #E-045, profile of the excavated face B of the weld repair with noted Y location and dimensions.

05-08-2012 1314 Hours Self Anchored Suspension Bridge



At Tower Base 13 meter outer East external diaphragm, ABF welder Xiao Jian Wan was observed continuing to perform 2G (horizontal position) Flux Cored Arc Welding (FCAW-G) welding fill pass on PJP T-joint weld #W102.

05-08-2012 1105 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.

**Inspected By:** Lizardo, Joselito

Quality Assurance Inspector

**Reviewed By:** Levell, Bill

QA Reviewer