

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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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-027467**Date Inspected:** 20-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

CWI Name:	William Sherwood and Fred Von Hoff			EWI 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 meters diaphragm, weld joint number W123, QA randomly observed ABF certified welder James Zhen ID #6001 continuing to perform 1G (flat position) Submerged Arc Welding (SAW) on the Partial Joint Penetration (PJP) T- joint between the 45mm thick Tower South shaft skin plate and the 45mm outer West diaphragm plate. The welder was utilizing F7A6-EM12K-H8, 3.2mm electrode with corresponding Esab OK Flux 10.62 flux and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-4062-1. Prior welding, ABF QC Fred Von Hoff was observed performing the Magnetic Particle Testing (MT) on previously SMAW welded root pass. The MT revealed no relevant indication during the test. This QA performed the same verification MT and noted same result. The joint being welded has a 45 degree bevel groove T- joint. The plates were preheated to more than 225 °F using Miller Proheat 35 Induction Heating System with one heater blanket located on top of each plate prior/during welding. ABF/QC Fred Von Hoff was noted monitoring the welding parameters of the welder with measured working current of 550 amperes, 32.5 volts with travel speed of 380 mm per minute and calculated heat input of 2.8 Kjoules/mm. QA noted the welding parameters, the workmanship and appearance of the completed fill satisfactory. At the end of the shift, SAW cover pass welding on PJP T-joint mentioned above was still continuing and should remain tomorrow.

At Tower Base 13 meters diaphragm, weld joint number W103, W117 and W119 QA randomly observed ABF certified welder Luo Xiao Hua perform 1G (flat position) Shielded Metal Arc Welding (SMAW) on the Partial

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Joint Penetration (PJP) T- joint termination ends. The welder was utilizing SMAW with 4.0mm E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1110A Rev. 1. Prior welding, ABF QC Fred Von Hoff was observed performing the Magnetic Particle Testing (MT) on the transitioned ends of the previously SAW welded T-joints. The MT revealed no relevant indication during the test. This QA performed the same verification MT and noted same result. At the end of the shift, SMAW welding on the termination of one end of the joints mentioned above was completed.

At Tower Base 9 meter external diaphragm, this QA Inspector randomly observed ABF personnel Jin Pei Wang perform 2F (horizontal position) fillet production welding on the 1” thick fit lug to the 45mm thick inner West 9-meter diaphragm plate on one side and to the 60mm thick vertical stiffener plate on the other side. The welder was using the dual shielded 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-F3200-2. This QA Inspector observed ABF personnel using Miller Proheat 35 Induction Heating System to preheat the plates being welded prior welding. This QA Inspector observed QC Inspector William Sherwood 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 270 amperes and 23.5 volts. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-F3200-2. At the end of the shift, the welder has completed the 22mm fillet weld on two sides of the fit lugs marked W092-37 to W092-40. The welder held the same preheat using the same heating system and held it for three hours as required.

At Tower Base 9 meter external diaphragm, this QA Inspector randomly observed ABF personnel Wai Kitlai perform 2F (horizontal position) fillet production welding on the 1” thick fit lug to the 45mm thick inner West 9-meter diaphragm plate on one side and to the 60mm thick vertical stiffener plate on the other side. The welder was using the dual shielded 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-F3200-2. This QA Inspector observed ABF personnel using Miller Proheat 35 Induction Heating System to preheat the plates being welded prior welding. This QA Inspector observed QC Inspector William Sherwood 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 265 amperes and 24.5 volts. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-D15-F3200-2. At the end of the shift, the welder has completed the 22mm fillet weld on two sides of the fit lugs marked W092-41 to W092-44. The welder held the same preheat using the same heating system and held it for three hours as required.

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, QA has randomly verified the QC VT/MT of the fillet welding of four (4) perimeter C10 channel to the bottom side of the diaphragm joints. The QA verification was performed to verify that the welding and the VT/MT inspection performed by the QC inspector at 13 meter South external 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. W134-1 perimeter C10 channel to diaphragm fillet weld joint – weld cover QA verified
2. W134-2 perimeter C10 channel to diaphragm fillet weld joint – weld cover QA verified
3. W134-3 perimeter C10 channel to diaphragm fillet weld joint – weld cover QA verified
4. W134-4 perimeter C10 channel to diaphragm fillet weld joint – weld cover QA verified

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At Tower Base 13 meter diaphragm, ABF QC William Sherwood was observed performing Magnetic Particle Testing (MT) on fillet welded perimeter C10 channel to the bottom side of the diaphragm.



At Tower Base 13 meter diaphragm, ABF personnel Devan Murphy was noted continuing to perform carbon arc gouging on the ends/termination of the welded PJP T-joints W104, W105 and W120.

At Tower Base 13 meter diaphragm, ABF QC Fred Van Hoff was observed performing Magnetic Particle Testing (MT) on previously welded (PJP) pass of PJP T-joint W123 prior to SAW fill pass welding.



At Tower Base 13 meter diaphragm, final surface profile of the carbon arced and ground ends/termination of the welded PJP T-joints W104, W103 and W120 prior welding.

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
