

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
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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-027468
Date Inspected: 21-Apr-2012

Project Name: SAS Superstructure **OSM Arrival Time:** 700
Prime Contractor: American Bridge/Fluor Enterprises, a JV **OSM Departure Time:** 1530
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. During the shift, SAW cover pass welding on PJP T-joint mentioned above was completed. After the completion of the joint, ABF QC Fred Von Hoff was observed performing Magnetic Particle Testing (MT) on the root pass of the previously welded PJP T-joint W124. The weld joint will be the next to be SAW welded. During the MT, QC noted no relevant indication. This QA performed MT verification and noted same result.

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At Tower Base 13 meters diaphragm, weld joint number W101, W103, W105 and W120, QA randomly observed ABF certified welder Luo Xiao Hua perform 1G (flat position) Shielded Metal Arc Welding (SMAW) on the Partial 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 Electro Slag Welding (ESW) weld joint 'L' (S-042), QA randomly observed ABF/JV qualified welder Rory Hogan perform CJP groove welding repair at the bottom of the weld joint where the sump starting plate was cut and removed. The repair was located at Y=115mm with excavation dimensions of 100mm long X 25mm wide x 11 mm deep. The welder was observed welding in the 2G (horizontal) position utilizing Shielded Metal Arc Welding (SMAW) with 1/8" diameter E7018H4R electrode implementing welding procedure ABF-WPS-D15-1000-Repair Rev. 2. The repair excavation was preheated to more than 300 degree Fahrenheit using propane gas torch prior welding. During the shift, ABF QC William Sherwood was noted monitoring the welder with measured working current of 130 amperes during welding. At the end of the shift, the welding repair of weld joint mentioned above was completed.

At Tower Base 13 meter diaphragm, this QA randomly observed ABF/JV qualified welder Luo Xiao Hua perform root pass welding repair at the Partial Joint Penetration (PJP) T-joint W113 between the 45mm thick center diaphragm plate and 60mm thick shear plate. The root pass repair is being performed per Caltrans approved Request for Welding Repair (RWR) #201204-001. The welder was observed welding in the 1G (flat) position utilizing Shielded Metal Arc Welding (SMAW) with 4.0mm diameter E7018H4R electrode implementing welding procedure ABF-WPS-D15-1000-Repair Rev. 2. The repair excavation was preheated to more than 150 degree Fahrenheit using propane gas torch prior welding. Prior welding, the previously SMAW welded root pass was completely removed. After the completion of the root pass, ABF QC Fred Von Hoff was observed performing Magnetic Particle Testing (MT) on the welded root pass and noted no relevant indication during the test. This QA performed the MT verification and noted same result. The welder resumed welding the fill pass and cover pass until the 100mm long weld was completed. ABF QC Fred Von Hoff was noted monitoring the welder with measured working current of 170 amperes during welding. At the end of the shift, the welding repair of weld joint mentioned above was completed.

This Quality Assurance (QA) Inspector was on job site when told by Lead QA Danny Reyes to witness the Procedure Qualification Record (PQR) of T-joint fillet weld soundness test. At the job site, QA met with Quality Control (QC) Inspector William Sherwood who informed the QA Inspector that ABF welder Xiao Jian Wan would be welding a Fillet Weld Soundness Test in accordance with AWS D1.5-02, paragraph 5.10.3 and the contract special provisions.

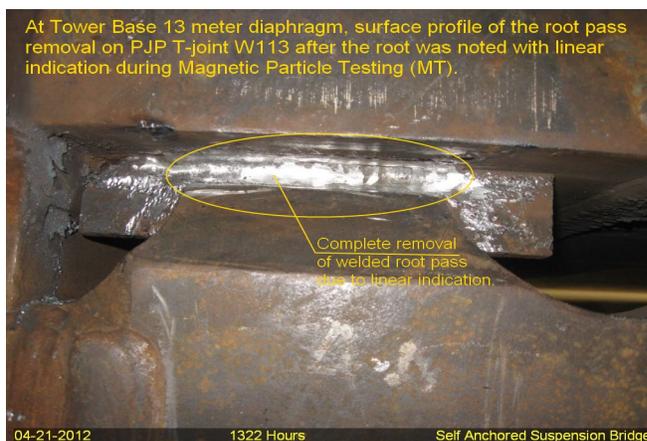
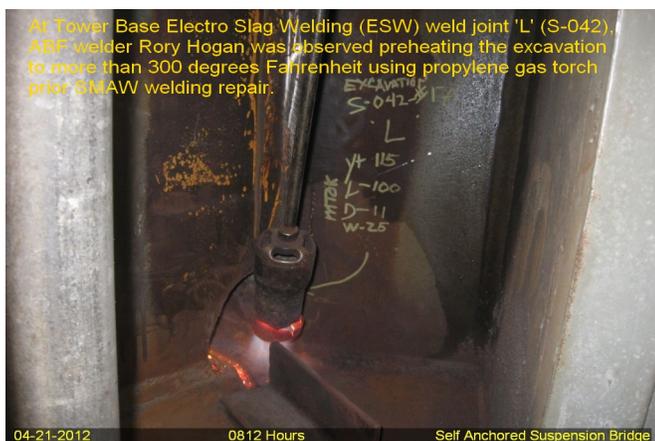
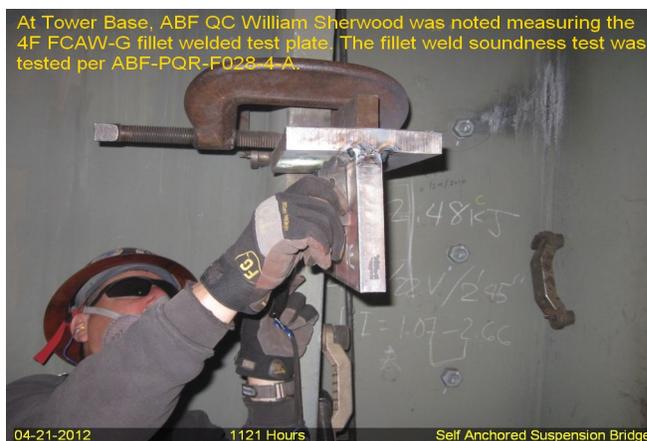
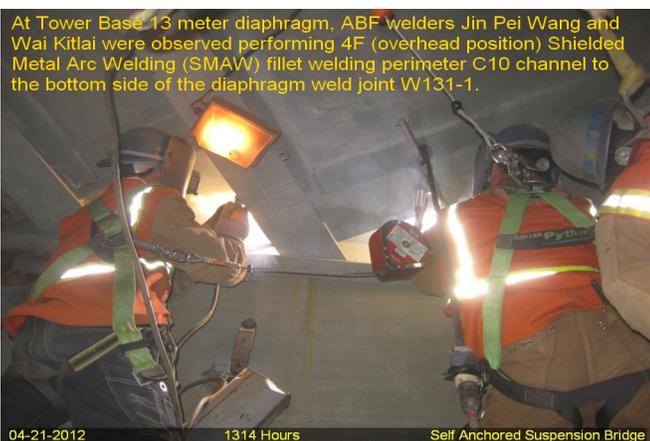
Welding foreman James Zhen informed the QA Inspector and QC Inspector that the fillet weld soundness tests would be welded with the maximum single pass fillet weld. The QA Inspector performed dimensional verification of the test coupons to determine they were in compliance with AWS D1.5 figure 5.8. After the dimensional (305mm long X 150mm wide X 25mm thick) verification, the QA Inspector noted the test plate appeared to be in

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general compliance with the contract requirements.

The QA Inspector was informed by ABF QC Inspector William Sherwood that the target size to be welded on the maximum single pass fillet will be 8mm. The QA Inspector randomly observed the welder perform the 4F (overhead) position single pass fillet welding on one side of the test plate. The welder was utilizing dual shielded Flux Cored Arc Welding (FCAW-G). The single pass fillet welding parameters were: 22.5 volts, 250 amperes and travel speed of 145mm per minute with calculated heat input of 2.3Kjoules/mm. After the completion of the PQR, this QA Inspector randomly observed the QC Inspector perform visual testing (VT) of the final weld. Mr. Sherwood informed the QA Inspector the single pass fillet weld for the above identified PQR appeared to be acceptable. The QA Inspector performed random VT and noted the single pass fillet to be 8.0mm fillet and the weld quality appeared to be in general compliance with the contract requirements. The QA Inspector issued the above identified PQR plate Caltrans index lot #B231-003-12A.



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
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Reviewed By:	Levell, Bill	QA Reviewer
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