

**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-027449**Date Inspected:** 12-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:** 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 outer East external diaphragm, this QA Inspector randomly observed ABF personnel Xiao Jian Wan continuing to perform 4F (overhead position) fillet production welding on the perimeter C10 channel to 45mm thick diaphragm plate fillet weld joint W130-2. The welder was noted welding 6mm fillet between one side of the channel top flange and diaphragm plate per detail 1 of the FW3 drawing. The welder was using the 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 being welded 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. This QA Inspector performed a verification of the welding parameters and observed 125 amperes on the 3.2mm diameter electrode. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-F1200A. At the end of the shift, SMAW fillet welding was still continuing and should remain tomorrow.

At Tower Base 13 meter outer East external diaphragm, this QA Inspector randomly observed ABF personnel Luo Xiao Hua continuing to perform 4F (overhead position) fillet production welding on the perimeter C10 channel to 45mm thick diaphragm plate fillet weld joint W131-2. The welder was noted welding 6mm fillet between one side of the channel top flange and diaphragm plate per detail 1 of the FW3 drawing. The welder was using the 3.2mm diameter E7018H4R electrode and implementing Caltrans approved Welding Procedure Specification (WPS)

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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 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 128 amperes on the 3.2 diameter electrode. The welding appeared to comply with Welding Procedure Specification (WPS) ABF-WPS-F1200A. At the end of the shift, SMAW fillet welding was still continuing and should remain tomorrow.

At Tower Base 9 meter outer East diaphragm below the drop in plate SD1-A55, ABF welder Wai Kitlai was observed performing 2F/4F (flat/overhead positions) Shielded Metal Arc Welding (SMAW) fillet welding the 45mm thick stiffener plate to the tower skin plate, shear plate and vertical stiffener plate weld joint P439-7. The welder was using SMAW with 4.0mm diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-F1200A. The plates being welded were preheated to more than 150°F using propylene gas torch and Miller Proheat 35 Induction Heating System prior welding. ABF QC Steve Mc Connell was noted monitoring the welder's parameter with measured working current of 200 amperes on a 4.0mm E7018 electrode. During the shift, fillet welding of the stiffener plate mentioned was completed.

After the completion of the above mentioned stiffener plate, the welder has moved to another stiffener plate below drop in SD1-A53 weld joint P439-5. The welder was noted using the same process mentioned above. At the end of the shift, fillet welding was still continuing and should remain tomorrow.

At Tower Base 9 meter outer East diaphragm above the drop in plate SD1-A55, ABF welder Jin Pei Wang was observed performing 2F (flat position) Shielded Metal Arc Welding (SMAW) fillet welding the 45mm thick stiffener plate to the tower skin plate, shear plate and vertical stiffener plate weld joint P439-8. The welder was using SMAW with 4.0mm diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-F1200A. The plates being welded were preheated to more than 150°F using propylene gas torch and Miller Proheat 35 Induction Heating System prior welding. ABF QC Steve Mc Connell was noted monitoring the welder's parameter with measured working current of 180 amperes on a 4.0mm E7018 electrode. During the shift, fillet welding of the stiffener plate mentioned was still continuing and should remain tomorrow.

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 Bernie Docena who informed the QA Inspector that ABF welder Wai Kitlai 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 verification the QA Inspector noted the test plate appeared to be in general compliance with the contract requirements.

The QA Inspector was informed by ABF QC Inspector Steve Mc Connell that the target size to be welded on the maximum single pass fillet will be 8mm. The QA Inspector randomly observed the welder preheat the test plate to

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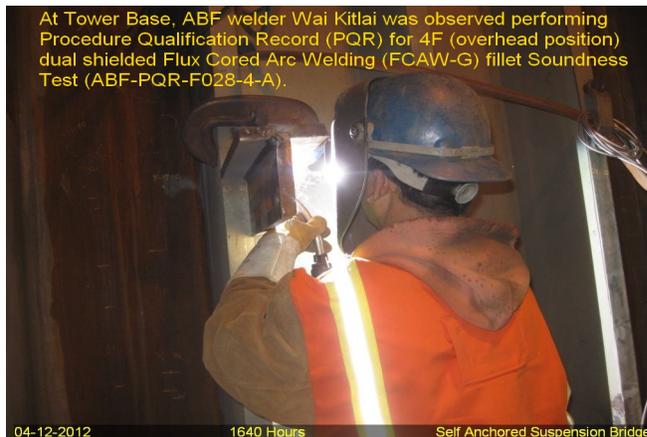
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more than 150 degrees Fahrenheit prior to perform the 4F (overhead) position single pass fillet welding on one side of the test plate. The welder was utilizing dual shielded Flux Cored Arc Welding (FCAW-G). The single pass fillet welding parameters were: 21.8 volts, 250 amperes and travel speed of 101mm per minute with calculated heat input of 3.23Kjoules/mm. After the completion of the PQR, ABF Superintendent Dan Ieraci rejected the test specimen due to unacceptable fillet weld profile.

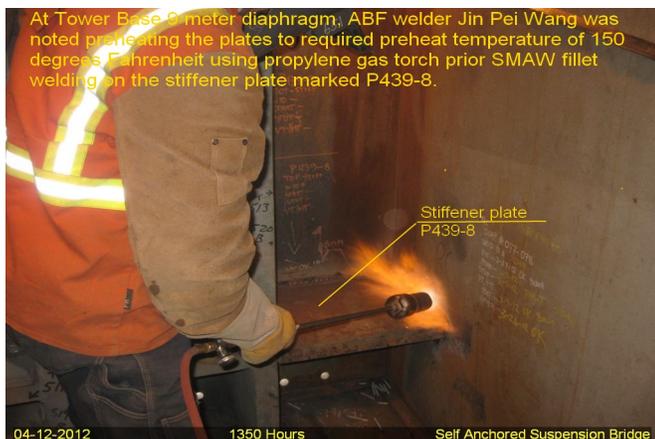
At Tower Base 9 meter diaphragm, ABF welder Jin Pei Wang was observed performing 4F (overhead position) Shielded Metal Arc Welding (SMAW) fillet welding the stiffener plate P439-8 to 3 sides; tower skin plate, shear plate & vertical stiffener plate.



At Tower Base, ABF welder Wai Kitlai was observed performing Procedure Qualification Record (PQR) for 4F (overhead position) dual shielded Flux Cored Arc Welding (FCAW-G) fillet Soundness Test (ABF-PQR-F028-4-A).



At Tower Base 9 meter diaphragm, ABF welder Jin Pei Wang was noted preheating the plates to required preheat temperature of 150 degrees Fahrenheit using propylene gas torch prior SMAW fillet welding on the stiffener plate marked P439-8.



At Tower Base 13 meter diaphragm, ABF welder Luo Xiao Hua was noted preheating the plates to more than 150 degrees Fahrenheit using propylene gas torch prior SMAW fillet 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.

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**Inspected By:** Lizardo, Joselito

Quality Assurance Inspector

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**Reviewed By:** Levell, Bill

QA Reviewer