

**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-027255  
**Date Inspected:** 28-Feb-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

<b>CWI Name:</b>	Bernie Docena	<b>CWI Present:</b>	Yes	No
<b>Inspected CWI report:</b>	Yes No N/A	<b>Rod Oven in Use:</b>	Yes	No N/A
<b>Electrode to specification:</b>	Yes No N/A	<b>Weld Procedures Followed:</b>	Yes	No N/A
<b>Qualified Welders:</b>	Yes No N/A	<b>Verified Joint Fit-up:</b>	Yes	No N/A
<b>Approved Drawings:</b>	Yes No N/A	<b>Approved WPS:</b>	Yes	No N/A
		<b>Delayed / Cancelled:</b>	Yes	No N/A
<b>Bridge No:</b>	34-0006	<b>Component:</b>	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 9 meter external diaphragms, the following welding activities were observed;

1. Inner West diaphragm drop in plate WD1-A50 weld joint #067/#068, ABF welder Wai Kitlai was observed continuing to perform fill passes to cover passes welding on the PJP T-joint between the 45mm drop in plate and shear/tower skin plates and splice butt joint on drop in plate to diaphragm plate. The welder was noted welding at 1G (flat) 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. At the end of the shift, FCAW-G cover pass welding was completed and the welder has held the same preheat of more than 325°F for three hours after welding as required after welding.

2. After the completion of the above mentioned drop in plate, the welder has moved to other 9 meter external diaphragm drop in plate WD1-A59 weld joints #065 and #066. ABF welder Wai Kitlai was observed perform root pass welding on the PJP T-joint between the 45mm drop in plate and shear/tower skin plates and splice butt joint on drop in plate to diaphragm plate. The welder was noted welding at 1G (flat 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 plates were preheated and maintained to required 325°F temperature using Miller Proheat 35 Induction Heating System. After the welding

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completion of the root pass, ABF QC Bernie Docena was observed performing MT on the root welded T-joints and butt joint. No relevant indications were observed. This QA also performed random MT on the same welded root pass with noted same result. The welder resumed FCAW-G welding fill pass to cover pass until the end of the shift where the welder has completed the three weld joints #065-1, #065-2 and #066-1. The welder performed the post weld heat treatment (PWHT) using the same preheat temperature and heating machine and held it for three hours as required.

3. Inner West diaphragm drop in plate WD1-A50 weld joint #069 /#070, ABF welder Jin Pei Wang was observed perform root pass welding on the PJP T-joint between the 45mm drop in plate and shear/tower skin plates and splice butt joint on drop in plate to diaphragm plate. The welder was noted welding at 1G (flat 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 plates were preheated and maintained to required 325°F temperature using Miller Proheat 35 Induction Heating System. After the welding completion of the root pass, ABF QC Bernie Docena was observed performing MT on the root welded T-joints and butt joint. No relevant indications were observed. This QA also performed random MT on the same welded root pass with noted same result. The welder resumed FCAW-G welding fill pass to cover pass until the end of the shift where the welder has completed the three weld joints #069-1, #069-2 and #070-1. The welder performed the post weld heat treatment (PWHT) using the same preheat temperature and heating machine and held it for three hours as required.

4. Outer West external diaphragm drop in plate WD1-A57 weld joint #063-2, ABF welder James Zhen was observed performing root weld repair per Caltrans approved Weld Repair Report (WRR)201202-007 dated February 27, 2012. Prior welding, the 300mm long linear indication was ground removed and tested by ABF QC Bernie Docena using Magnetic Particle Testing (MT). There was no relevant indication noted during the test. This QA also performed MT on the same welded root repair removal with noted same result. The welder preheated the plates to more than 150 degrees Fahrenheit and performed the root pass repair using Shielded Metal Arc Welding (SMAW) with 1/8" diameter E7018H4R electrode implementing Caltrans approved ABF-WPS-D15-1001 Repair. The root pass was completed and MT tested by ABF QC Bernie Docena. The root pass MT was verified by this QA. The plates were preheated to more than 225 degrees Fahrenheit using propylene gas torch and the welder continued welding the fill pass to cover pass 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. At the end of the shift, the root pass repair and the subsequent fill and cover passes were completed on this particular joint. The welder held the preheat of 225°F for three more hours after welding for the post weld heat treatment as required.

5. Inner East external diaphragm drop in plates WD1-A50 and WD1-A59, ABF welder Luo Xioa Hua was observed performing fit up/tack welding on the four (4) drop in plates to shear plates and diaphragm plate. The welder was noted using Shielded Metal Arc Welding (SMAW) with 1/8" diameter E7018H4R electrode. Where the root gap was noted more than 5mm, the welder performed the buttering into the drop in plate to close the gap during fit up. At the end of the shift, all four (4) drop in plates marked WD1-A50 (2 pieces) and WD1-A59 (2 pieces) for the inner East external diaphragm were fitted and tack welded.

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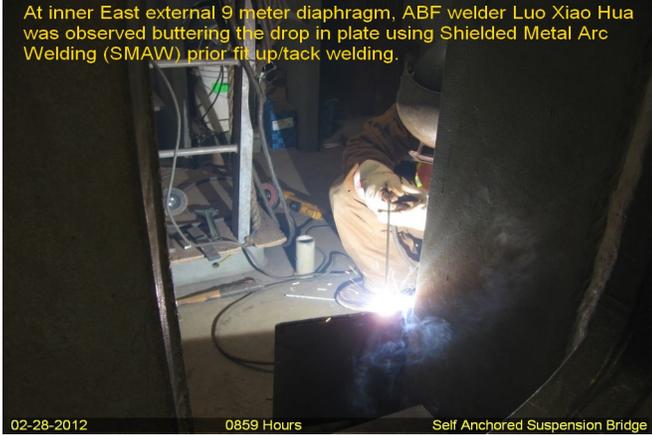
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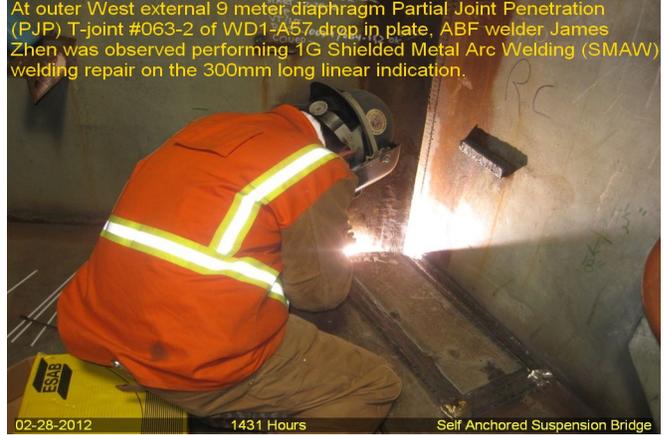
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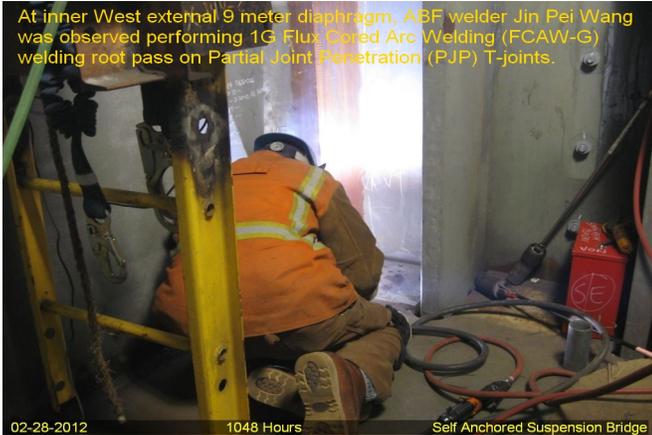
At inner East external 9 meter diaphragm, ABF welder Luo Xiao Hua was observed buttering the drop in plate using Shielded Metal Arc Welding (SMAW) prior fit up/tack welding.



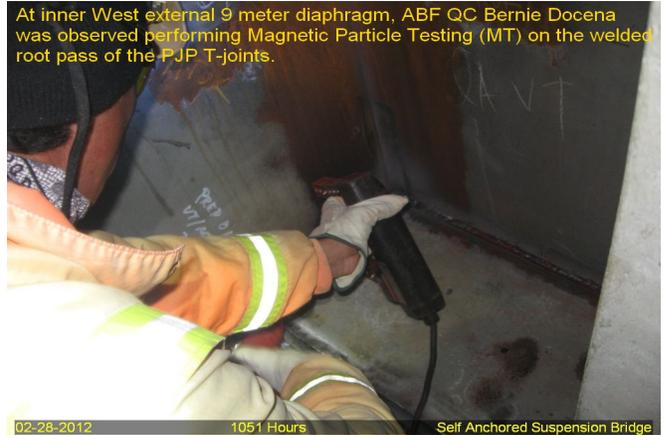
At outer West external 9 meter diaphragm Partial Joint Penetration (PJP) T-joint #063-2 of WD1-A57 drop in plate, ABF welder James Zhen was observed performing 1G Shielded Metal Arc Welding (SMAW) welding repair on the 300mm long linear indication.



At inner West external 9 meter diaphragm, ABF welder Jin Pei Wang was observed performing 1G Flux Cored Arc Welding (FCAW-G) welding root pass on Partial Joint Penetration (PJP) T-joints.



At inner West external 9 meter diaphragm, ABF QC Bernie Docena was observed performing Magnetic Particle Testing (MT) on the welded root pass of the PJP T-joints.



## 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