

**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-027812**Date Inspected:** 22-Jun-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>	Bernie Docena and William Sherwood			<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 OBG 3W-W2.1 @ 10100 location Y=1600mm to 2800mm top deck drop-in plate butt joint inside, QA randomly observed ABF certified welder Mike Jimenez continuing to perform 4G (overhead position) Shielded Metal Arc Welding (SMAW) back welding cover pass on the CJP SPCM splice butt joint. The welder was utilizing 3.2mm diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1040C-CU. The joint being welded had a single V-groove butt joint with copper plate backing bar that was originally welded from the top using a combination of SMAW and Submerged Arc Welding (SAW) then removed the copper backing plate using carbon air arc gouging and ground smooth. The plates were preheated to more than 150 degree Fahrenheit using Miller Proheat 35 Induction Heating System prior welding. Welding parameters were monitored by ABF/QC William Sherwood. QA noted the working welding parameters of 130 amperes on the 3.2mm diameter E7018H4R electrode. The workmanship and appearance of the completed cover pass deemed satisfactory. During the shift, welding observation on the weld joint mentioned above was turned over to Lead QA Danny Reyes due to other job assignment given.

At OBG 13W-PP122.2 @ 8650 location Y=2500mm to Y=5000mm and 13W-W121.2 @ 1900 location Y=0mm to Y=1900mm inside, ABF welders Rory Hogan and Han Wen Yu were noted continuing to flush grind the overhead weld cover they welded yesterday.

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At OBG 13W/14W longitudinal stiffeners inside, this QA performed fit up verification on the weld joints to be welded today. The fit up measurements were noted below;

	Measured offset	Measured root opening
1. 13W/14W LS1	7mm	8mm
2. 13W/14W LS2	1mm	4mm
3. 13W/14W LS3	4mm	4mm
4. 13W/14W LS4	4mm	0mm
5. 13W/14W LS5	7mm	2mm

According to ABF QC William Sherwood, offset issue for items number 1 and 5 were sent to ABF QC Manager Jim Bowers for approval and responded informing ABF QC that there was already a verbal approval from Caltrans. The two other items # 3 and 4 could still be fixed to acceptable offset.

At Tower Base Electro Slag Weld (ESW) this QA observed ABF welder James Zhen perform repair excavation at location 'T' face A due to Ultrasonic Testing (UT) detected defect. The observation was turned over by fellow QA William Clifford when the excavation was already at 28mm deep. The welder continued the excavation using carbon air arc gouging followed by grinding using a die grinder. During the excavation, the indications at depth 35mm were two indications measuring 80mm long. At 45mm deep excavation, the length of the indication was still 80mm and at 47mm deep the top indication was removed with the remaining indication at the bottom measuring 35mm long. Again, the welder excavated a little bit more at 50mm deep and the indication was measured 30mm long. At 52mm deep excavation, the indication was no longer evident and the final boat shape excavation was measured from Y=2240mm to Y=2440mm with 200mm long X 50mm wide X 52mm deep. At this point, all the indications that were chased deemed clear after testing using Magnetic Particle Testing (MT).

At Tower Base Electro Slag Weld (ESW) weld joint 'V' face A (W-043), ABF QC Bernie Docena informed Lead QA Danny Reyes thru telephone that the repair excavation at Y=300mm was completed and ready for QA's final VT and MT. Mr. Danny Reyes instructed this QA to perform the necessary verification as requested by QC. This QA went to the job site and performed the MT and noted the linear indication at Y=300 still exist with measured length of 42mm. QC Bernie Docena was informed about the existence of the indication and conveyed to this QA that the MT was done by another QC Andrew Keach. Since the depth of the excavation was already 55mm and at the maximum depth excavation allowed (2/3 T), Mr. Docena again informed this QA that ABF will go ahead with the repair based on the approved Request for Welding Repair (RWR) #201206-42 and excavate the remaining linear indication from the other side (face B) after the repair at face A. All this information was relayed to lead QA Danny Reyes who also told to this QA to document such observations.

At Tower Base Electro Slag Welding (ESW) 100mm/80mm transition weld joint 'V' face A (S-042), QA randomly observed ABF/JV qualified welder Xiao Jian Wan perform CJP groove welding repair at Y=300mm to Y=580mm with excavation dimensions of 280mm long X 70mm wide x 55 mm deep. 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-Repair Rev. 2. The repair excavations was preheated to more than 300 degree Fahrenheit using propane gas torch prior welding. During the shift, ABF QC Bernie Docena was noted monitoring the welder with measured working current of 124 amperes during welding. At the end of the shift, the welding repair of weld joint mentioned above was still continuing and

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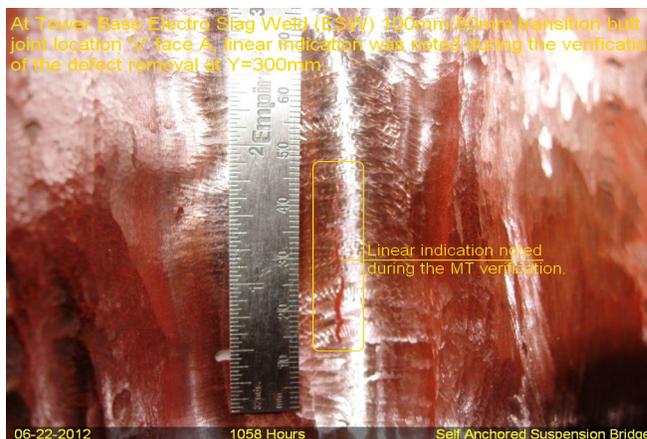
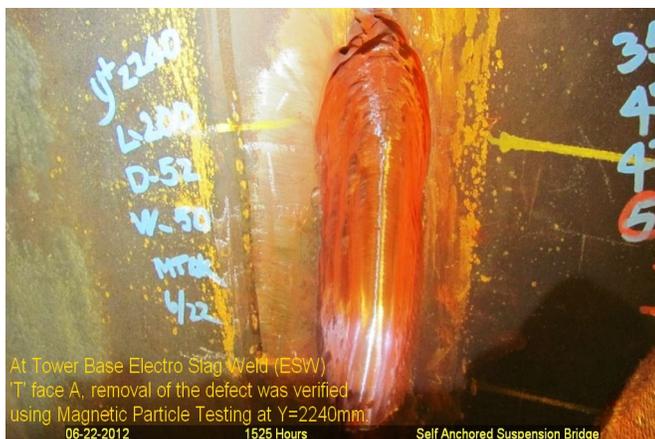
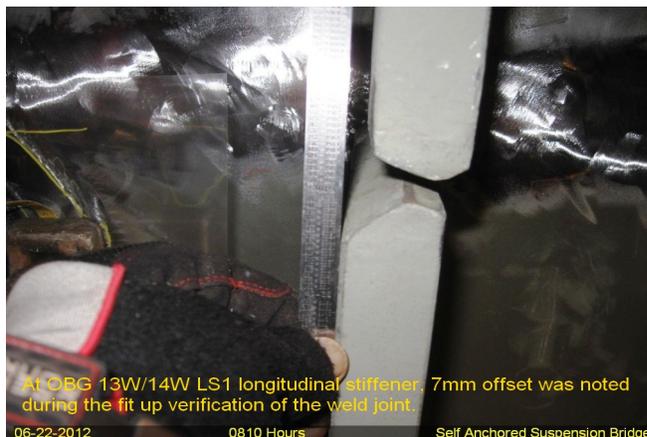
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should remain tomorrow.



## Summary of Conversations:

1. Due to two third thickness limitation on the excavation of UT detected defect on ESW location 'V' Y=300mm, ABF QC Bernie Docena informed this QA that ABF will go ahead with the repair on face A of the ESW welded joint and after its completion ABF will excavate the face B of the same location and remove the remaining linear indication then perform the repair on face B.

2. According to ABF QC William Sherwood, the unacceptable offset that was noted on the 13W/14W LS1 & LS5 was sent to ABF QC Manager Jim Bowers for review and he responded thru e-mail that it has been verbally approved.

## 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

**Reviewed By:** Levell, Bill

QA Reviewer

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