

**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-027983  
**Date Inspected:** 16-Jul-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:** 1830  
**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 Electro Slag Weld (ESW) location 'P' face B (N-043), QA randomly observed ABF/JV qualified welder Wai Kitlai continuing to perform CJP groove welding repair. The repair excavation being welded has Caltrans approval per Request for Weld Repair (RWR) #201206-074. The welder was observed perform automatic welding in the 3G (vertical) position utilizing a Bug -o track mounted 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-D15-3000-3 Repair. The repair excavation was preheated and continuously maintained to more than 350 degree Fahrenheit using Miller Proheat 35 Induction Heating System prior/during welding. The ESW repair being welded is located at ESW 'P' face B, from Y=5020mm to Y=5350mm having dimensions of 330mm long X 55mm wide X 52mm deep. During the shift, ABF QC Bernie Docena was noted monitoring the welder with measured working current of 270 amperes, 22.6 volts with travel speed of 220mm per minute and calculated heat input of 1.66Kjoules per mm. At the end of the shift, 3G FCAW-G repair welding at location mentioned above was still continuing and the welder held the same preheat of 350°F on the excavation repair for three hours after welding as required.

After the welding completion of the weld repair mentioned above, the welder has moved to same ESW joint location but from Y=4080mm to Y=4500mm which is a combination of two excavations. These two combined excavations are being welded per Caltrans approved RWR #201206-072 and 201206-073. At the end of the shift,

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## WELDING INSPECTION REPORT

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FCAW-G repair welding was still continuing and should remain tomorrow. The welder held the same preheat of 350°F on the excavation repair for three hours after welding as required.

Location	Weld No.	Y-dim.	Length	Width	Depth	Remarks
1. 'P'	N-043	5060mm	330mm	55mm	52mm	Completed.
2. 'P'	N-043	4080/4250mm	800mm	70mm	55mm	In progress.

At Tower Base Electro Slag Weld (ESW) location 'Q' face B (E-043), QA randomly observed ABF/JV qualified welder James Zhen perform CJP groove welding repair. The repair excavation being welded has Caltrans approval per Request for Weld Repair (RWR) #201206-083. The welder was observed perform automatic welding in the 3G (vertical) position utilizing a Bug –o track mounted 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-D15-3000-3 Repair. The repair excavation was preheated and continuously maintained to more than 350 degree Fahrenheit using Miller Proheat 35 Induction Heating System prior/during welding. The ESW repair being welded is located at ESW 'Q' face B, from Y=4030mm to Y=5410mm having dimensions of 1380mm long X 60mm wide X 55mm deep. During the shift, ABF QC Bernie Docena was noted monitoring the welder with measured working current of 265 amperes, 22.5 volts with travel speed of 200mm per minute and calculated heat input of 1.7Kjoules per mm. At the end of the shift, 3G FCAW-G repair welding at location mentioned above was still continuing and the welder held the same preheat of 350°F on the excavation repair for three hours after welding as required.

Location	Weld No.	Y-dim.	Length	Width	Depth	Remarks
1. 'Q'	E-043	4030mm	1380mm	60mm	55mm	In progress.

At Tower Base Electro Slag Weld (ESW), this QA observed ABF welder Lou Xiao Hua (who took over from Han Wen Yu) continuing to perform repair excavation at location 'Q' face B (E-043) Y=6160mm due to Ultrasonic Testing (UT) detected defect. The repair excavation is being undertaken per Caltrans approved Request for Weld Repair RWR #201206-084. The welder was noted using carbon air arc gouging followed by grinding using a die grinder. The excavation was alternately gouged and ground then Magnetic Particle Testing (MT) tested by ABF QC Bernie Docena and this QA. The following excavation events were noted during the repair excavation;

ESW location	Y-dim	Depth of excavation	Noted defect
1. 'Q' (B)	6160mm	32mm	2-5mm long linear indication noted.
2. 'Q' (B)	6160mm	>32mm	Excavation in progress.

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At Tower Base Electro Slag Weld (ESW) location 'Q' face B (E-043), ABF welder James Zhen was observed performing 3G (vertical) position Flux Cored Arc Welding (FCAW-G) welding repair on welded ESW at location Y=4030mm to Y=5410mm.



07-16-2012 1343 Hours Self Anchored Suspension Bridge

At Tower Base Electro Slag Weld (ESW) location 'Q' face B (E-043), ABF welder Lou Xiao Hua was noted continuing to excavate UT detected defects on welded ESW at Y=6160mm.



07-16-2012 1255 Hours Self Anchored Suspension Bridge

At Tower Base Electro Slag Weld (ESW) location 'P' face B (N-043), ABF welder Wai Kitlai was observed performing 3G (vertical) position Flux Cored Arc Welding (FCAW-G) welding repair on welded ESW at Y=5020mm.



07-16-2012 0919 Hours Self Anchored Suspension Bridge

## 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