

**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-027130  
**Date Inspected:** 02-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

**CWI Name:** Salvador Merino  
**Inspected CWI report:** Yes No N/A  
**Electrode to specification:** Yes No N/A  
**Qualified Welders:** Yes No N/A  
**Approved Drawings:** Yes No N/A

**CWI Present:** Yes No  
**Rod Oven in Use:** Yes No N/A  
**Weld Procedures Followed:** Yes No N/A  
**Verified Joint Fit-up:** Yes No N/A  
**Approved WPS:** Yes No N/A  
**Delayed / Cancelled:** Yes No N/A

**Bridge No:** 34-0006**Component:** OBG Components**Summary of Items Observed:**

On this date, Quality Assurance Inspector (QAI) Kenneth Riley was present at the San Francisco Oakland Bay Bridge job site at Yerba Buena Island to observe erection and welding activities for the San Francisco Oakland Bay Bridge (SFOBB) project. This Quality Assurance Inspector (QAI) observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

- A) Lifting Lug Holes
- B) Field Splice 12W-13W Repairs
- C) Field Splice 13W-14W

## A). Lifting Lug Holes 13W (SPCM)

The QAI observed that welder Mike Jimenez, was placing the cover passes for location 13W-PP121.5-W4-#2 lifting lug hole. The welder was using the Shielded Metal Arc Welding (SMAW) using electrode E7018 for the Complete Joint Penetration weld with copper backing in the flat (1G) position under Welding Procedure Specification (WPS) ABF-WPS-D15-1050A-CU. The welder had pre-heat the area prior to welding using a weed burner at 40 degrees Celsius (150 degrees F) which was verified using a tempstik and infrared gun by the QC. The electrode used was 4.0mm diameter with welding amps verified as 188. The welder was using a chipping hammer, power grinder and power wire wheel for the interpass cleaning. The QC inspector for this location was Steve Jenson and was observed verifying and documenting the welding parameters for this location, along with overseeing the welding operations. At the time of the observations no issues were noted by the QAI.

Later in the shift the welder had completed the weld location above and had moved the 13W-PP121.5-W4-#3

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lifting lug hole. The QAI observed that welder Mike Jimenez, was fitting the 20mm plate insert at this location with the copper backing. The QC inspector verified the fit-up and found it to be acceptable. This information was relayed to the QAI. The welder was using the Shielded Metal Arc Welding (SMAW) using electrode E7018 for the Complete Joint Penetration weld with copper backing in the flat (1G) position. The welder then preceded using Welding Procedure Specification (WPS) ABF-WPS-D15-1050A-CU after he had pre-heated with a weed burner to 40 degrees Celsius (150 degrees F) which was verified using a tempstik and infrared gun by the QC. The 4.0mm diameter electrode welding amps were checked and verified by QC and the QAI as 187. The welder was using a chipping hammer, power grinder and power wire wheel for the interpass cleaning. The QC inspector for this location was Steve Jenson and was observed verifying and documenting the welding parameters for this location, along with overseeing the welding operations. At the time of the observations no issues were noted by the QAI.

### B). Field Splice 12W-13W Repairs (SPCM)

The QAI observed that welder Rich Garcia, was at the 12W-13W-A5 transverse weld seam to perform 4 repairs where QC had noted rejectable indications with Ultrasonic Testing (UT). The welder prepared the locations for excavations by pre-heating the areas to 110 degrees Celsius (225 degrees F) prior to Carbon Arc Cutting as outlined within the Welding Procedure Specification (WPS) ABF-WPS-D15-1004-Repair. The WPS also outlines that a minimum preheat temperature for welding shall be 110 degrees Celsius (325 degrees F) and once the repair has been completed it is required to perform Post Weld Heat Treatment (PWHT) at 230 degrees Celsius (450 degrees F) minimum and 315 degrees Celsius (600 degrees F) maximum for a period set of 1 hour for each 25mm of weld metal deposited (but not less than 1 hour). The QAI observed that the welder was using the Shielded Metal Arc Welding (SMAW) using electrode E7018 for the Complete Joint Penetration weld repair in the flat (1G) and overhead (4G) position under specified WPS. The QC inspector for this location was Salvador Merino and was observed verifying and documenting the welding parameters for this location, along with overseeing the welding operations. At the time of the observations no issues were noted by the QAI. The following are the excavation for each location;

#1

Y-1300mm

Length-120mm

Depth-10mm

Width-22mm

#2

Y-1800mm

Length-95mm

Depth-10mm

Width-20mm

#3

Y-2580mm

Length-150mm

Depth-11mm

Width-22mm

#4

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Y-2880mm  
Length-120mm  
Depth-11mm  
Width-23mm

Each location was excavated 50mm beyond each end and tapered with a 2 to 1 slope as required by the WPS. Also the PWHT was performed at each location at 230 degrees Celsius (450 degrees F) for one (1) hour.

## C). Field Splice 13W-14W-F1

The QAI observed welder Jeremy Dolman at the 13W-14W-E1/E2 (side plate) in the overhead (4G) position. The welder used the Carbon Arc Cutting (CAC) process to remove the back-up bar and back gouge the weld. The welder was grinding the cavity to a bright metal. The location was still in process at the end of this QAI's shift

## 13W-14W-D2/D3 (Bottom Plate)

The QAI observed welder Rory Hogan at the 13W-14W-D3/D2 (bottom plate) in the overhead (4G) position. The welder used the semi-automated Plasma Cutting process to perform the back gouging for the CJP weld. This QAI noted that the Plasma equipment was set up with the Bug O system. The welder was making multiple passes at this location and had an apprentice assisting him with the set up and grinding. The welder was working this location with this process until the end of the shift.

## QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding utilizing the WPS's as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspectors utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The consumables utilized for the welding process stated appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators. Unless noted otherwise, all work observed on this date appeared to be in general compliance with the contract documents at the time of observations.



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## Summary of Conversations:

Basic conservation, fundamental to completion of the tasks at hand, occurred between this QAI and ABF QC personnel.

## 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 Nina Choy (510) 385-5910, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Riley, Ken	Quality Assurance Inspector
<b>Reviewed By:</b>	Levell, Bill	QA Reviewer

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