

**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-026994**Date Inspected:** 04-Jan-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:** Salvador Merino**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:** 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) NDT
- B) Repair welding Field Splice
- C) Field Splice
- D) Lifting Lug Holes

A). NDT

This QAI received notification from Lead QAI Daniel Reyes, to perform a random verification utilizing Magnetic particle (MT) and Ultrasonic Testing (UT) for lifting lug holes and field splice 13/14W. This QAI selected a random area of the welds and performed the verifications. The areas tested were as follows.

Field Splice

13W/14W- A2.2/A3

Lifting Lug

11W-PP100-W3-Weld 3

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11W-PP100-W3-Weld 4  
11W-PP100-W4-Weld 1  
11W-PP100-W4-Weld 2

This QAI observed QC inspector John Pagliero performing UT testing at location 11E-PP100-E3-Weld 4 during the testing at this location the QC Inspector discovered a rejectable indication approximately 5mm deep at Y= 70. The QC informed the contractor who will be performing the needed repair for this location. This will be repair 2 (R2) for his location. Due to these findings this weld joint was canceled for QAI review.

## B). Field Splice Repairs for D3 and D2

### D3

The QAI observed welder Jeremy Dolman ID-5042, performing Shielded Metal Arc Welding (SMAW) using electrode E7018 under Welding Procedure Specification (WPS) ABF-WPS-D15-1001R for the Complete Joint Penetration weld repair. The preheat was observed as being a minimum of 60 degrees Celsius (125 Degrees Fahrenheit) with the welding current observed at 126 amps for welder 5042. The welder was observed using the 3.2mm electrode for this repair. The location of the welding was on the west bound lane (WB) at field splice bottom plate 12w/13w located at D3 with the repair location being Y=485 (length 940mm). The welder was observed as placing intermediate/Cover weld passes at this location. QC inspector Salvador Merino was observed onsite overseeing the welding operations for this location. Mr. Merino was observed verifying and documenting the welding parameters for this location. Also noted was the welder informed this QAI that during the root and hot pass of this repair location the welder had burned through the weld at two (2) locations. The welder stated that once this happened the contractor place a flat bar over both locations to perform the repair. Once the repairs have been completed on D1, D2 and D3 the contractor will go to the interior of the Orthotropic Bridge Girders (OBG) and remove the backing bars placed excavated to sound weld metal and perform MT of the excavation prior to completing the weld. This area is not Seismic Performance Critical Member (SPCM) so a Critical Weld Report (CWR) is not required for this location.

### D2

The QAI observed welder Fred Kaddu ID-2188, performing Shielded Metal Arc Welding (SMAW) using electrode E7018 under Welding Procedure Specification (WPS) ABF-WPS-D15-1001R for the Complete Joint Penetration weld repair. The preheat was observed as being a minimum of 60 degrees Celsius (125 Degrees Fahrenheit) with the welding current observed at 136 amps for welder 2188. The welder was observed using the 3.2mm electrode for this repair. The location of the welding was on the west bound lane (WB) at field splice bottom plate 12w/13w located at D2 repair location 3. The welder was observed as starting the root pass for repair location 3. The cavity that was excavated had been MT tested by QC inspector Salvador Merino with acceptable results. QC inspector Salvador Merino was observed onsite overseeing the welding operations for this location. Mr. Merino was observed verifying and documenting the welding parameters for this location.

## C). Field Splices

The QAI observed welder Rich Garcia ID-5892, at location 13w/14w-A5 (Y-0 ~ 1550mm) where the contractor had removed 5 bolted rib splices of the deck plates for this location which was agreed upon by Caltrans. The welder then proceeded with using Flux Cored Arc Welding (FCAW) process in the overhead (4G) position under

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Welding Procedure Specification (WPS) ABF-WPS-D15-3110-4 for the Complete Joint Penetration weld with electrode E71T-1M. The pre-heat was observed as being a minimum of 65 degrees Celsius (150 Degrees Fahrenheit). The amperage was recorded as 263 amps and 23.1 for welder 5892. The welder appeared to be placing intermediate/cover passes for this location. The QC inspector was observed onsite overseeing the welding operations, along with verifying, and documenting the welding parameters for this location. At the time of the observations no issues were noted by the QAI.

### D). Lifting Lug Holes

The QAI observed that welder Mike Jimenez had completed the welding of lifting lug holes, 11W-PP103-W2 & W4 at the W4 line at the end of the shift on 1-3-12. At the beginning of the shift today the welder had started on 11W-PP104-W1 & W3 at the W4 line. The welder back gouged both welds in the overhead (4G) position and MT of the back gouged area was performed by QC inspector Salvador Merino with acceptable results for sound weld metal. The welder then proceeded to place the welds using the Shielded Metal Arc Welding (SMAW) process using electrode E7018 under Welding Procedure Specification (WPS) ABF-WPS-D15-1110A for the Complete Joint Penetration weld at this location. The pre-heat was observed as being a minimum of 40 degrees Celsius with the welding current observed at; 130 amps for the 3.2mm electrode. Later in the shift the welder had completed this location and was grinding the welds flush in preparations of a final Visual Inspection and MT inspection. The welder was observed moving and setting up for the holes W2 & W4 at the 11W-PP104 for the Carbon Arc Cutting (CAC) process. The QC inspector was observed onsite overseeing the operations, along with verifying, and documenting the welding parameters for this location. At the time of the observations no issues were noted by the QAI.

The QAI observed welder Todd Jackson ID 4639 had completed deck plate hole insert welding at PP-111 hole W2 on the W3 line. The welder then moved to lifting lug hole W3 where the QC inspector was observed checking the fit-up prior to welding and noted that the fit-up was acceptable. The QC inspector had also placed 2 center punch marks on the face of the inserts to assist with identifying the “Y” location of the weld when performing Non-Destructive Testing (NDT). Welder 4639 then started performing the Shielded Metal Arc Welding (SMAW) process using electrode E7018 under Welding Procedure Specification (WPS) ABF-WPS-D15-1050CU for the Complete Joint Penetration weld with copper backing. The electrode size being used for the root pass was 3.2 mm with welding parameters of 121 amps. The pre-heat was observed as being a minimum of 40 degrees Celsius as verified by the QC inspector. Who was also observed onsite overseeing the welding operations, along with verifying, and documenting the welding parameters for this location. At the time of the observations no issues were noted by the QAI.

### 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.

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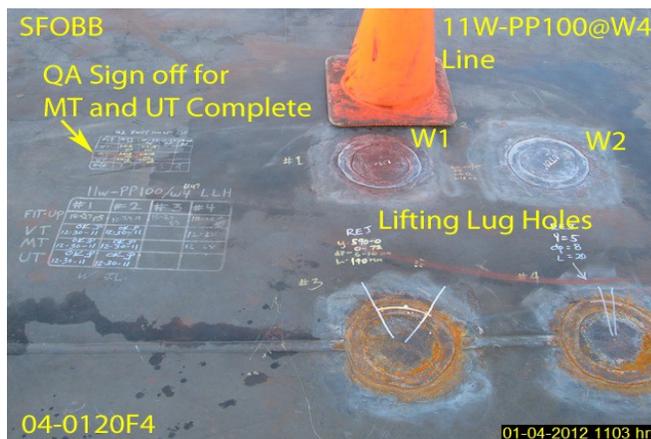
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Unless noted otherwise, all work observed on this date appeared to be in general compliance with the contract documents at the time of observations.



## Summary of Conversations:

Basic conversation, 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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**Inspected By:** Riley, Ken

Quality Assurance Inspector

**Reviewed By:** Levell, Bill

QA Reviewer