DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
690 Walnut Ave.St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Casey, William
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-027079
Date Inspected: 28-Jan-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: 1530
Location: Job Site

CWI Name: Salvador Merino

Inspected CWI report:	☐ Yes	☐ No	☑ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ 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
C) Field Splice 13W-14W
D) QA NDT Verification

A). Lifting Lug Holes
13W (SPCM)
The QAI observed that welder Mike Jimenez, was fitting up location 13W-PP119.5-W4-W3 lifting lug hole the QC inspector checked the fit up tolerance for adherence to the Welding Procedure Specification (WPS) ABF-WPS-D15-1050A-CU which was found to be acceptable and verified by the QAI. The welder then proceeded to pre-heat the area prior to welding at 40 degrees Celsius (150 degrees F) which was verified using a tempstik and infrared gun by the QC. 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

electrode used for the root pass was 3.2mm diameter with welding amps verified as 154. The welder then changed to the 4.0mm diameter with welding amps of 177 which were within the specified WPS. The welder was using a chipping hammer, power grinder and power wire wheel for the interpass cleaning. After the welder had completed lifting lug hole W1 he proceeded to hole W3 where he was preparing the area for the fit up process. 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.

12W Repairs
The QAI observed that welder Rick Clayborn, was performing weld repairs on the lifting lug holes at 12W. The repairs were from the Ultrasonic Testing that was performed by the QC. The areas that were excavated are as follows;

12W-PP115-W3-W2
Length- 50mm
Width- 20mm
Depth- 7mm

12W-PP115-W3-W3
Length- 50mm
Width- 20mm
Depth- 12mm

12W-PP115-W4-W4
Length- 60mm
Width- 20mm
Depth- 14mm

The welder was using the Shielded Metal Arc Welding (SMAW) under Welding Procedure Specification (WPS) for these repairs is ABF-WPS-D15-1001R with the welder using the 3.2mm E7018 electrode in the flat (1G) position. The pre-heat for the repair areas prior to welding was at 40 degrees Celsius (150 degrees F) using a weed burner, which was verified using a tempstik and infrared gun by the QC. The electrode used for the root pass was 3. 2mm diameter with welding amps verified as 137. The welder was using a chipping hammer, power grinder and power wire wheel for the interpass cleaning. 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.

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

The QAI observed welder Rich Garcia, at the 12W-13W-A5 location between Y= 300mm and 3500mm. The contractor had previously removed the splice plates of 5 U-ribs as agreed upon between Caltrans and the contractor to allow access to the welds in the overhead (4G) position. The Welding Procedure Specification (WPS) ABF-WPS-D15-3110-4 for the Complete Joint Penetration weld using the Flux Cored Arc Welding (FCAW) process with the E71T-1M, 1.6mm electrode. The welding parameters were verified as 256 amps, 23.2volts and 1.

61 k/j Heat index. The area for welding was then pre-heated prior to welding at 40 degrees Celsius (150 degrees F) which was verified using a tempstik and infrared gun by the QC. The welder was placing the intermediate/cover weld passes for this location and using a power grinder and power wire wheel for the interpass cleaning. This QAI observed that the welder was removing porosity within the weld using Carbon Arc Cutting and a power grinder, after the porosity has been removed the QC inspector has used MT to verify that all the discontinuity has been removed and the remaining weld is down to sound weld metal for continued welding.. 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.

C). Field Splice 13W-14W-E1 & E2

The QAI observed welder Jeremy Dolman at the 13W-14W-F (Edge Plate upper portion of weld joint) in the vertical (3G) position. The Welding Procedure Specification (WPS) ABF-WPS-D15-3040B-3 for the Complete Joint Penetration weld using the Flux Cored Arc Welding (FCAW) process with the E71T-1M, 1.6mm electrode. The welding parameters were verified as 230 amps, 23.2volts and Heat index of 1.97 k/j. The area for welding was then pre-heated prior to welding at 40 degrees Celsius (150 degrees F) which was verified using a tempstik and infrared gun by the QC. The welder was placing the root/intermediate and cover weld passes for this location. The QC inspector for this location 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 QAI observed Welder Rory Hogan was at location 13W-14W-E2 (side Plate) in the flat (1G) position. The welder was using the semi-automated Bug O system for the FCAW process with the E71T-1M, 1.6mm electrode. The area for welding was then pre-heated prior to welding at 40 degrees Celsius (150 degrees F) which was verified using a tempstik and infrared gun by the QC. The Welding Procedure Specification (WPS) ABF-WPS-D15-3040B-3 for the Complete Joint Penetration weld using the Flux Cored Arc Welding (FCAW) process with the E71T-1M, 1.6mm electrode. The welding parameters were verified as 230 amps, 24.8 volts and Heat index of 2.15 k/j. The QC inspector for this location 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.

Once the welder had completed the FCAW welding 13W-14W-E2 he proceeded to the R4 repair at 12W-13W-D2. This QAI observed the welder, was performing weld repairs on the bottom plate at the exterior of 12W. The repairs were from the Ultrasonic Testing that was performed by the QC for the R3 repair. The areas that were excavated are as follows; Length- 70mm, Depth- 17mm.The welder was using the Shielded Metal Arc Welding (SMAW) under Welding Procedure Specification (WPS) for these repairs is ABF-WPS-D15-1001R with the welder in the overhead (4G) position. The pre-heat for the repair areas prior to welding was at 40 degrees Celsius (150 degrees F) using a weed burner, which was verified using a tempstik and infrared gun by the QC. The electrode used for the root pass was 3.2mm diameter with welding amps verified as 136. The welder was using a chipping hammer, power grinder and power wire wheel for the interpass cleaning. 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.

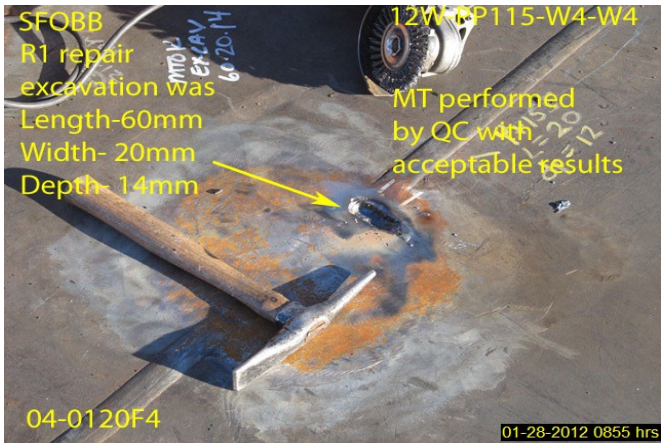
D). QA NDT Verification

This QAI performed Magnetic Particle verification (MT) and Ultrasonic Testing (UT) on the top deck of lift 12W. The location for this verification was for the lifting lug holes that had been previously tested by the QC Inspector and found to be acceptable. The locations for these tests are as follows;

UT and MT
12W-PP111-W4-W1~W4

This QAI performed a Visual Observation (VT) and the MT and UT verification and noted that the welds appeared to be within the contract documents at the time of this observation. For further information see document TL-6028 and TL-6027 submitted on this date.

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.



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

WELDING INSPECTION REPORT

(Continued Page 5 of 5)

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.

Inspected By:	Riley,Ken	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer