

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 #: 04-0120F4Cty: 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-027106**Date Inspected:** 24-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:** See Below**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**Summary of Items Observed:**

At the start of the shift this Quality Assurance Lead Inspector (QAI) traveled to the SAS project site and observed the work and the inspection performed by American Bridge/Fluor Enterprises (AB/F) Quality Control (QC) personnel. The observations and inspections were performed as noted below:

A). This Quality Assurance Lead Inspector (QALI) assigned the QA Inspectors to the following, but not limited to the work station(s) listed, to observe the welding and the QC inspection of the following:

Doug Frey-OBG Field Splice E12/E13 (Observation of welding and QC inspection of the deck plate splice identified as A3), OBG field splice E13/E14 (Observation of repair welding operation and QC inspection of the side plate splice identified as "D3"), OBG E12 and E13 (Observation of welding, repair welding and QC inspection of lifting lug holes) and QA NDE verification.

Ken Riley-(Submittal reviews)

NOTE: See QA daily Weld Inspection Reports (WIR) and NDE reports for additional information and details.

Quality Assurance Lead Inspector (QALI) Summary

This QA Lead Inspector (QALI) observed the QA Inspector's Douglas Frey monitor the work performed by the QC inspectors at random intervals and also observed the QA Inspectors verify the welding parameters, the minimum preheat and the maximum interpass temperatures for compliance with the contract specifications. The

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QAI's utilized a Fluke 337 clamp meter to measure the electrical welding parameters, Tempil Heat Indicators and/or a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. At the conclusion of the shift, this QA Lead Inspector discussed and reviewed the work performed by the QAI's in regards to the various observations and the verifications of the WPS's, consumables, welding parameters, preheat and interpass temperatures. The QAI observations of the QC inspection and verification of the welding parameters performed on this date appeared to comply with the contract specifications and no issues was noted on this date. This QAI also verified the following in progress work:

The QA verification of the above items appeared to comply with the contract specifications.

OBG W13 Lifting Lug Holes (SPCM)

Later in the shift the QAI observed the welder Mike Jiminez ID-4671 perform the welding of the Complete Joint Penetration (CJP) groove weld identified as 13W-PP118.5-W4, W2 on the "A" deck of the Orthotropic Box Girder (OBG) W13. The welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS identified as ABF-WPS-D15-1050A-CU, Rev. 0 which was also used by the QC inspector Sal Merino as a reference to monitor and verify the welding parameters. The welding parameters were observed and verified by the QAI as 191 amps utilizing the 4.0 mm electrode as per the WPS. The welding was performed in the flat (1G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the upper side. The groove joint appeared to comply with the AWS joint designation identified as B-U4a. The minimum preheat temperature of 40 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were verified by the QC inspector. The welding was completed during this shift. Later in the shift this QAI observed the QC inspector, Mr. Merino, perform the fit-up inspection of the insert plate of the weld joint identified as 13W-PP118.5-W4, W1. The fit-up and welding performed on this date appeared to comply with the contract documents.

OBG Field Splice W12/W13

The QAI observed the welder, Fred Kaddu ID-2188, perform the repair welding of the area marked as UT rejects on the Complete Joint Penetration (CJP) groove weld identified as WN: 12W-13W-D1, R2. The welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and the 3.2 mm electrode as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1001 Repair Rev. 0. The WPS was also used by the QC inspector, Sal Merino, as a reference to monitor and to perform the in progress weld inspection. The welding parameters were noted as 134 amps and the minimum preheat temperature and the maximum interpass temperature appeared to comply with the contract specifications. The welding was performed in the flat position (1G) with the work positioned approximately in a horizontal plane and the weld metal to be deposited from the upper side.

Prior to welding, this QAI observed the QC inspector perform the measuring of the excavation which was noted as follows: 1) Y=1360 mm, d=23 mm, L=120 mm and also observed the Magnetic Particle Testing (MPT) of the excavation with no rejectable indications noted by the QC inspector.

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OBG Field Splice W12/W13 (SPCM)

This QAI also observed the welder Richard Garcia ID # 5892 perform the CJP welding of the weld joint identified as WN: 12W-13W-A5. The Flux Cored Arc Welding w/gas (FCAW-G) welding process was utilized as per the WPS identified as ABF-WPS-D15-3110-4, Rev. 0. The QC inspector, Sal Merino, monitored the work and the welding performed on this date utilizing the WPS as a reference. The welding parameters were noted by the QC inspector and verified by this QAI as follows: 275 amps, 23.3 volts and a travel speed measured as 150 mm/m. This QAI also observed the QC inspector verify the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding was performed in the overhead position (4G) with the work positioned approximately in a horizontal plane and the weld metal to be deposited from the underneath side. The welding and QC inspection appeared to comply with the contract specifications.

OBG Field Splice W13/W14

The QAI observed the CJP groove welding of the bottom plate splice identified as 13W-14W-D3. The welding was performed by the welder Jeremy Dolman ID-5042 utilizing the FCAW-G welding process as per the WPS ABF-WPS-D15-3040A-1, Rev. 0. The WPS was also utilized by the QC inspector, Sal Merino, as a reference to monitor and verify the welding parameters and surface temperatures. The welding parameters were measured and noted by the QC inspector as follows: 252 amps, 23.3 volts and 250 mm/m and the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. This QAI observed the welding and QC inspection at random intervals. The in progress welding appeared to comply with the contract specifications.

This QAI also observed the CJP welding of the weld joint identified as 13W-14W-E1. The welding was performed by the welder Rory Hogan ID-3186 utilizing the SMAW welding process as per the WPS identified as ABF-WPS-D15-1040A, Rev. 1. The QC inspection was performed by Sal Merino who utilized the WPS as a reference to monitor the welding and to perform QC inspection during the in progress production welding. The welding of face "A" commenced at the Y dimension 0 mm to approximately 300 mm starting at "F" edge and running parallel to "E" side plate field splice. The in progress welding was not completed during shift and appeared to comply with the contract specifications.

QC/NDE

The QAI observed Bernard Docena perform Ultrasonic Testing (UT) of the Lifting Lug Holes (LLH) identified as WN: 12W-PP114-W4, W1. The testing was performed by the QC technician utilizing the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. The QC technician performed the required shear wave technique during the testing for weld soundness utilizing a G.E./Krautkramer USM 35X and a .75 x .75 rectangular transducer mounted on a 70 degree plastic wedge. At the conclusion of the testing the QC technician noted one (1) Class "A" indication as a UT reject.

FW Spencer/Pipe Welding of Utility Systems

This QALI observed the fit-up and CJP welding of the pipe splices of the 2.5" and 4" utility service systems. The

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welding was performed by FW Spencer personnel Damian LLanos, identification # 6645, utilizing the WPS identified as 1-12-1 and this WPS was also utilized as a reference by the QC Inspector, Steve Jensen. The average amperage reading was noted as 87 amps. The work performed on this date was located at the west OBG W4 through W6 along grid line W2 between PP27 and PP39. Later in the shift, Mr. Jensen, requested QA verification of the following pipe welds:

WATER SYSTEM	COMPRESSED AIR SYSTEM
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21/2.5/41/NW	21/4.0/41/NW
22/2.5/43/NW	22/4.0/43/NW
23/2.5/45/NW	23/4.0/45/NW
24/2.5/47/NW	24/4.0/47/NW
25/2.5/49/NW	25/4.0/49/NW

QA Summary

The QC inspection and welding performed on the lifting lug holes and pipe welding was observed at random intervals by this QA Inspector. The QAI observations included verification of the welding parameters, the minimum preheat and the maximum interpass temperatures for compliance with the contract specifications. This QAI utilized a Fluke 337 clamp meter to measure the electrical welding parameters, Tempil Heat Indicators and/or a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The random observations, verifications of the welding and QC inspection, WPS's, consumables, welding parameters, preheat and interpass temperatures appeared to comply with the contract specifications.

This QA Inspector continued the daily review of field inspection reports and update of the field document control tracking records regarding the Orthotropic Box Girders (OBG, Longitudinal and Transverse "A" Deck Stiffeners, Deck Access Holes and the Tower Shear plates).

Summary of Conversations:

There were general conversations with Quality Control Lead Inspector, Bonifacio Daquinag, Jr., at the start of the shift regarding the location of welding, inspection personnel scheduled for this shift.

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:	Reyes, Danny	Quality Assurance Inspector
Reviewed By:	Levell, Bill	QA Reviewer
