

**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-027948**Date Inspected:** 10-Jul-2012**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** As noted 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:** SAS OBG**Summary of Items Observed:**

Quality Assurance Inspector (QA) Douglas Frey was at the American Bridge/Fluor (ABF) job site at Yerba Buena Island in California between the times noted above in order to monitor Quality Control functions and the in process work being performed by ABF personnel. The following items were observed:

## 12E-E2.1-C (Interior)

This QA Inspector randomly observed ABF/JV qualified welder Richard Garcia #5892 using the Flux Core Arc Welding (FCAW) process in the 2G horizontal position on 12E-E2.1-C starting at y+1000mm on the interior of the OBG. Work at this location was initiated on 7/5/2012. This QA Inspector observed QC Inspector Salvador Merino verify prior to the start of welding operations, that the minimum preheat temperature as per the approved WPS was established; and afterwards verified that the welding parameters (Amps, Volts and Travel Speed) were in accordance with ABF-WPS-D1.5-1-3040A-1. The welder was observed grinding and blending the start/stop edges of the work utilizing a small disc grinder and compressed air in between passes as QC measured the inter-pass temperatures with an infra-red temperature gun. This QA Inspector made subsequent observations throughout the shift to monitor quality and noted that the work at this location was in progress and appeared to be in general conformance with the contract documents.

This QA Inspector at random intervals, observed the FCAW process performed by ABF/JV qualified welder Jeremy Dolman #5042 at 12E-E2.1-C on the interior of the OBG. During welding, ABF Quality Control (QC) Salvador Merino was noted monitoring the welding parameters (Amps, Volts and Travel Speed) as they pertain to ABF-WPS-D1.5-1040A-1. This QA Inspector noted that between passes the welder was cleaning the work using a

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small disc grinder as QC measured the inter-pass temperatures with Tempilstik Heat Indicators. At the time of the observations no issues were noted by this QA Inspector. On subsequent observations to monitor quality, it was noted that the work is in progress and appeared to be in general conformance with the contract documents.

This QA Inspector at random intervals observed ABF/JV qualified welder Mike Jimenez #4671 performing the Shielded Metal Arc Welding (SMAW) process in the 1G flat position on 12E-E2.1-C on the interior of the OBG. The work at this location was initiated on 7/4/2012. QC Inspector Salvador Merino was observed measuring the preheat temperature and setting the parameters to ensure compliance with the welding procedure specification (WPS) ABF-WPS-D1.5-1040C-CU. The welder was observed using a small disc grinder to blend the start/stop edges of the work to provide a smooth transition. The welder was observed utilizing 3.2mm E7018-H4R electrodes drawing amperage of 128. The electrodes were obtained from a baking oven verified by this QA Inspector. On a subsequent observation this QA Inspector monitored the work for quality and noted that it was in progress and appeared to be in general conformance with the contract documents.

### 13E-E2.1 (Exterior)

This QA Inspector randomly observed Submerged Arc Welding (SAW) of the Corner Drop-In Plate at 12E-E2.1 on the exterior of the OBG. This QA Inspector observed heat induction blankets to provide pre-heat for the single bevel joint and verified the temperature was the required minimum of 150° F. It was also noted that the remote oven for the ESAB EN 760 Flux was in the on position with the dial set at 250° F as ABF welding personnel employed a flux recycling vacuum hose to empty the feeder hopper of the SAW unit. This QA Inspector observed the removal of the electrode spool which was discarded and replaced with a new F7A2-EM12KH8 electrode spool. QC Inspector Salvador Merino measured the parameters for amperage, volts, travel speed and the heat input as ABF welder Todd Jackson #4639 adjusted the controls on the Lincoln track mounted wire feeder. Upon approval for conformity with WPS-D1.5-4042B-1, the welder commenced welding operations on the joint in the 1G flat position. On a subsequent observation, this QA Inspector observed ABF welding personnel recycle the flux utilizing a vacuum hose and cleaning the edge of the work with a chipping hammer between passes. Mr. Zhen was observed adjusting the path of the feeder prior to each consecutive pass during the ongoing process and inspected each completed pass for indications and workmanship. QC was present to monitor the welding and the parameters so they remain within the requirements of the WPS. This QA Inspector made subsequent observations throughout the shift to monitor quality and noted that the work was in process and appeared to be in general conformance with the contract specifications.

### 13E-E2.8 Repair Welding (Interior)

This QA Inspector randomly observed ABF welder Rick Clayborn #2773 performing the back-gouge operation of ultrasonic rejectable indications on the locations listed below. This QA Inspector observed QC Inspector Sal Merino perform a Magnetic Particle Inspection (MT) of the excavation to determine the soundness of the metal. Upon completion of the testing this QA Inspector observed that no rejectable indications were present. This QA Inspector randomly observed the welder performing the repair welding operation as per the SMAW process in the (4G) overhead position. This QA Inspector observed the use of E7018-H4R electrodes and QC Inspector Sal Merino verify that the preheat temperature was at least the minimum required and that the welding parameters were in accordance with WPS D1.5-1004- Repair. On a subsequent observation, the welder was noted as continuing the repair welding and between passes the QC Inspector verified the welding parameters and surface

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temperatures utilizing a Fluke 337 clamp meter to measure the electrical welding parameters and Tempilstik Heat Indicators for verifying the preheat and inter-pass temperatures. This QA Inspector noted that the electrodes were stored in electrically heated, thermostatically controlled oven after removal from the sealed containers. The exposure limits of the electrodes appeared to comply with the minimum storage oven temperature of 120 degrees Celsius as per the contract documents. Thermal heating blankets were placed for a period of 1 hour at 450°-650° as specified in the WPS. RWR's referenced for these welds are: listed below. This QA Inspector noted that the work was in progress.

13E PP120.6

Y+85mm: 90mm in length, 18mm wide and 11m deep. RWR pending

13E-E2.3

Y+3300mm: 50mm in length, 30mm wide and 8mm deep. RWR-201206-059

Y=1770mm: 50mm in length, 16mm wide and 8mm deep. RWR-201206-058

13E/14E-A2.1 (Exterior)

This QA Inspector randomly observed ABF welder Eric Sparks #3040 performing the back-gouge operation of ultrasonic rejectable indications on the locations listed below. This QA Inspector observed QC Inspector Sal Merino perform a Magnetic Particle Inspection (MT) of the excavation to determine the soundness of the metal. Upon completion of the testing this QA Inspector observed that no rejectable indications were present. This QA Inspector randomly observed the welder performing the repair welding operation as per the SMAW process in the (4G) overhead position. This QA Inspector observed the use of E7018-H4R electrodes and QC Inspector Sal Merino verify that the preheat temperature was at least the minimum required and that the welding parameters were in accordance with WPS D1.5-1004- Repair. On a subsequent observation, the welder was noted as continuing the repair welding and between passes the QC Inspector verified the welding parameters and surface temperatures utilizing a Fluke 337 clamp meter to measure the electrical welding parameters and Tempilstik Heat Indicators for verifying the preheat and inter-pass temperatures. This QA Inspector noted that the electrodes were stored in electrically heated, thermostatically controlled oven after removal from the sealed containers. The exposure limits of the electrodes appeared to comply with the minimum storage oven temperature of 120 degrees Celsius as per the contract documents. Thermal heating blankets were placed for a period of 1 hour at 450°-650° as specified in the WPS. RWR's referenced for these welds are: listed below. This QA Inspector noted that the work was completed on this date.

13E/14E-A2.1

Y+1235mm: 75mm in length, 20mm wide and 13mm deep. RWR-201207-012

Y=590mm: 60mm in length, 20mm wide and 13mm deep. RWR-201207-011

13E PP123.6

Y+550mm: 79mm in length, 20mm wide and 12mm deep.- No RWR

A TL-15 is pending on the above weld.

QA NDT (Exterior)

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This QA Inspector performed an Ultrasonic (UT) inspection on approximately 10% of the welds listed below. These welds were previously accepted by QC Ultrasonic technicians in accordance with AWS D1.5-2002, section 6, table 6.3. This QA generated a TL-6027 UT report on this date. The testing was performed in accordance with AWS.D1.5-2002 Section 6, table 6.3.

13E PP121.2- UT OK.

13E PP121.6- y+1150mm – Class A rejectable indication 6mm in length at 15-19mm in depth. (See UT report this date).

### Summary of Conversations:

Conversation with Quality Control Inspector Salvador Merino concerning the weld repair at 12E PP123.6 without approval.



### 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>	Frey,Doug	Quality Assurance Inspector
<b>Reviewed By:</b>	Levell,Bill	QA Reviewer

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