**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 #: 69.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Siegenthaler, Peter
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-022224
**Date Inspected:** 01-Apr-2011

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

**OSM Arrival Time:** 1900
**OSM Departure Time:** 700
**Location:** Shanghai, China

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **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:**

CWI Inspector: Mr. Lv Li Qing

On this date CALTRANS OSM Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. This QA Inspector observed the following:

OBG Bay 14

This QA Inspector observed ZPMC welder Mr. Kuai Wenshan, stencil 054013 used shielded metal arc welding procedure WPS-B-P-2214-TC-U4B-FCM-1 to make OBG segment 14E weld SEG3019BB-177. This QA Inspector observed a welding current of approximately 190 amperes (amps) the base materials were preheated with electrical heaters and Mr. Kuai Wenshan appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Zhao Guanglin, stencil 044779 used shielded metal arc welding procedure WPS-B-P-2214-TC-U4B-FCM-1 to make OBG segment 14E weld SEG3019D-1-011. This QA Inspector observed a welding current of approximately 185 amps the base materials were preheated with electrical heaters and Mr. Zhao Guanglin appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Wang Zhengbin, stencil 216086 used shielded metal arc welding procedure WPS-B-P-2214-TC-U4B-FCM-1 to make OBG segment 14E weld SEG3019D-1-011. This QA Inspector observed a welding current of approximately 180 amps the base materials were preheated with electrical heaters and Mr. Wang Zhengbin appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Zhao Guanglin, stencil 044779 used shielded metal arc welding procedure specification WPS-345-SMAW-4G(4F)-FCM-Repair -1 to make repairs to OBG segment 14E welds SEG3019S-343 and SEG1309V-227. ZPMC QC informed this QA Inspector that weld repair document B-WR-20407 documents both of these welds had been ultrasonically rejected. This QA Inspector observed a welding current of approximately 170 amps, the base materials were preheated with a torch and Zhao Guanglin appeared to be certified to make these welds. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Wu Hai Jun, stencil 201087 used shielded metal arc welding process to make OBG segment 14E tack welds SEG3019AV-046 and 051. This QA Inspector observed a welding current of approximately 170 amps, the base materials were preheated with electrical heaters and Mr. Wu Hai Jun appeared to be certified to make these welds. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC personnel performed heat straightening of segment 14E weld SEG3019BB-067. ZPMC has issued heat straightening document HSR #10247 for this activity. Items observed on this date appeared to generally comply with applicable contract documents.

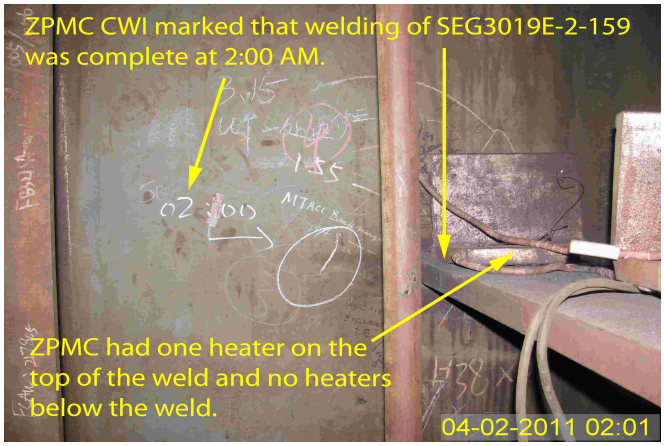
This QA Inspector observed ZPMC welder Mr. Wang Zhengbin, stencil 216086 used shielded metal arc welding procedure WPS-345-SMAW-4G(4F)-FCM-Repair -1 to make critical weld repairs to OBG segment 14E welds SEG3019E-2-159 and SEG3019E-2-155. ZPMC QC informed this QA Inspector that weld repair document B-CWR-2862 documents both of these welds had been ultrasonically rejected. This QA Inspector observed a welding current of approximately 170 amps, the base materials were preheated with electrical heaters to a minimum of 200 degrees Celsius prior to welding and Mr. Wang Zhengbin appeared to be certified to make these welds. Items observed on this date appeared to generally comply with applicable contract documents.

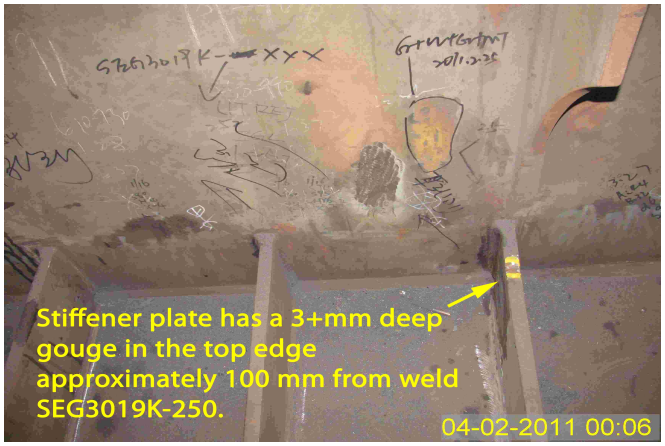
This QA Inspector observed ZPMC welder Mr. Yang Yunfeng, stencil 215553 used shielded metal arc welding procedure WPS-345-SMAW-4G(4F)-FCM-Repair -1 to make critical weld repairs to OBG segment 14E welds SEG3019E-2-146 and SEG3019E-2-158. ZPMC QC informed this QA Inspector that weld repair document B-CWR-2862 documents both of these welds had been ultrasonically rejected. This QA Inspector observed a welding current of approximately 170 amps, the base materials were preheated with electrical heaters to a minimum of 200 degrees Celsius prior to welding and Mr. Yunfeng appeared to be certified to make these welds. Items observed on this date appeared to generally comply with applicable contract documents.

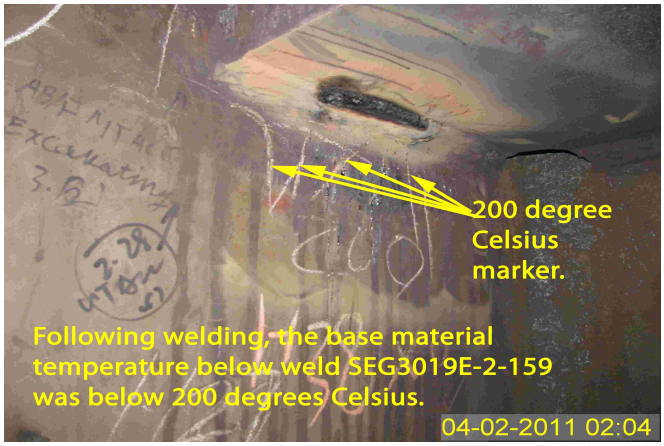
This QA Inspector observed that critical weld repair document B-CWR-2862 states the welds should receive “Post heat treatment for 2 hours @ 200 degrees Celsius”. This QA Inspector asked ZPMC CWI Mr. Lv Li Qing if he is familiar with this requirement and if he has informed ZPMC heating personnel of the need to perform the

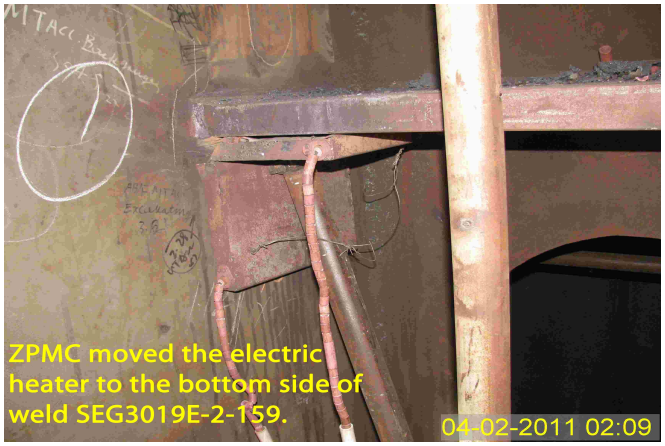
post weld heating of the welds that had been repaired in accordance with the CWR. Mr. Lv Li Qing said he will arrange to have the welds post weld heated following the completion of the welding. After weld SEG3019E-2-159 was completed this QA Inspector observed that ZPMC had an "L" shaped heater on the top of the horizontal member that had been weld repaired and that the bottom surface below the weld was below 200 degrees Celsius. This QA Inspector informed ZPMC CWI Mr. Lv Li Qing that the steel below the weld was below the minimum post weld heat temperature and Mr. Lv Li Qing had the heater moved to the bottom side of the plate and approximately 10 minutes later this area appeared to be a minimum of 200 degrees Celsius. This QA Inspector along with other QA Inspectors monitored that ZPMC had energized electrical heaters on welds SEG3019E-2-146, SEG3019E-2-155, SEG3019E-2-158 and SEG3019E-2-159 for a minimum of two hours. See the photographs below for additional information.

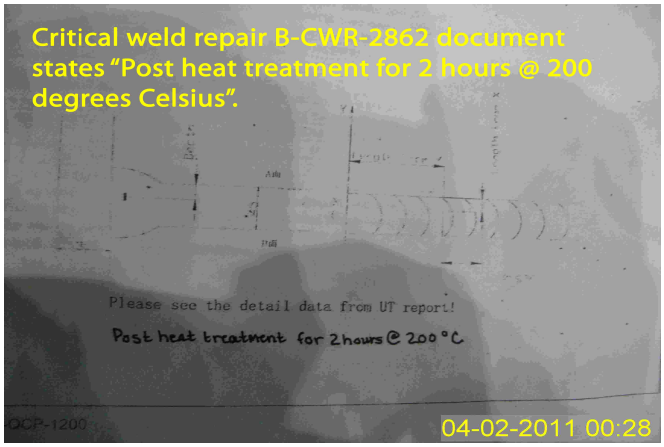
This QA Inspector observed segment 14E stiffener plate adjacent to weld SEG3019K-250 has a gouge in the top edge. This gouge is located approximately 100mm from the weld and has a depth of approximately 3mm. This QA Inspector showed the gouged area to ZPMC CWI Mr. Lv Li Qing and this QA Inspector sent an email with photographs attached to dayshift QA Inspectors to allow them to ensure this area is repaired. See the photographs below for additional information.






**Summary of Conversations:**

See Above.

**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 James Devey +8615000026784, who represents the Office of Structural Materials for your project.

| | | |
|---|---|---|
| **Inspected By:** | Dawson,Paul | Quality Assurance Inspector |
| **Reviewed By:** | Riley,Ken | QA Reviewer |