

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
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Contract #: 04-0120F4Cty: SF/Ala Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-010213**Date Inspected:** 06-Nov-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **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:** Tower and OBG Components**Summary of Items Observed:**

On this date Caltrans OSM Quality Assurance Inspector George Goulet was present during the times noted above for observations relative to the work being performed.

Bay 11

This QA Inspector randomly observed the following work in progress in Bay 11:

SAW welding of weld joint WSD1-TL5-4C/F-34B located on PCMK west tower. Welder was identified as 042195. ZPMC QC was identified as CWI Zhang Zhi Neng (QC1). The welding variables recorded by QC1 appeared to comply with WPS-B-T-3221-B-U3c-S-1.

SAW welding of weld joint WSD1-TL5-2E/F-25A located on PCMK west tower. Welder was identified as 047304. ZPMC QC was identified as QC1. The welding variables recorded by QC1 appeared to comply with WPS-B-T-3221-B-U3c-S-1.

FCAW repair welding of weld joint with no weld number located on PCMK P175 and identified on ZPMC repair order T-CWR364 as strut plate bearing stiffener. Welder was identified as 042218. ZPMC QC was identified as QC1. The welding variables recorded by QC1 appeared to comply with WPS-485-FCAW-2G(2F)-FCM-repair as noted in ZPMC repair order T-CWR364.

Bay 10

This QA Inspector randomly observed the following work in progress in Bay 10:

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SMAW welding of weld joints ND1-A6002-2-21, 22 located on PCMK north tower, strut. Welder was identified as 040582. ZPMC QC was identified as CWI Wan Wen Zhong (QC2). The welding variables recorded by QC2 appeared to comply with WPS-B-T-2113.

SMAW welding of weld joints ND1-A6002-2-23, 24 located on PCMK north tower, strut. Welder was identified as 056364. ZPMC QC was identified as QC2. The welding variables recorded by QC2 appeared to comply with WPS-B-T-2113.

FCAW repair welding of weld joint ED1-A6001-3-11A located on PCMK north tower, strut. Welder was identified as 057258. ZPMC QC was identified as QC2. The welding variables recorded by QC2 appeared to comply with WPS-345-FCAW-2G(2F)FCM-repair.

SMAW welding of weld joint NSTL4-3B/L-5A located outside PCMK north tower, lift 4, skin B to skin C, at the upper rotation fender position between approximately 136M and 138M elevation. Welder was identified as 040581. ZPMC QC was identified as QC2. Assisting QC2 at this location and appearing to be monitoring the welding and recording data was ZPMC Sun Tian Liang, who was not a CWI. The welding variables recorded by QC2's assistant appeared to comply with WPS-B-P-2214-C-U2.

FCAW welding of weld joint NSTL4-3B/L-3A located outside PCMK north tower, lift 4, skin A to skin E, at the lower rotation fender position between approximately 120M and 122M elevation. Welder was identified as 040343. ZPMC QC was identified as QC2. Assisting QC2 at this location and appearing to be monitoring the welding and recording data was ZPMC Sun Tian Liang, who was not a CWI. The welding variables recorded by QC2's assistant appeared to comply with WPS-B-T-2232-C-U2-F.

FCAW repair welding of north tower, lift 1, skin C stiffeners (no weld number), layering at bottom ends of internal stiffeners. Welders were identified as 057244, 053116. ZPMC QC was identified as QC2. Assisting QC2 at this location and appearing to be monitoring the welding and recording data was ZPMC Li Peng Fei, who was not a CWI. The welding variables recorded by QC2's assistant appeared to comply with WPS-345-FCAW-3G(3F)-repair as noted on ZPMC repair order T-CWR087.

SAW welding of weld joint SSSL4-1B/L-3A located outside PCMK south tower, lift 4, skin A to skin E, between approximately 114M and 120M elevation. Welder was identified as 201750. ZPMC QC was identified as CWI Li Ming (QC3). The welding variables recorded by QC3 appeared to comply with WPS-B-T-2221-C-U2b-S-2.

SAW welding of weld joint SSSL4-1B/L-3A located outside PCMK south tower, lift 4, skin A to skin E, between approximately 122M and 130M elevation. Welder was identified as 051413. ZPMC QC was identified as QC3. The welding variables recorded by QC3 appeared to comply with WPS-B-T-2221-C-U2b-S-2.

SAW welding of weld joint SSSL4-1B/L-3A located outside PCMK south tower, lift 4, skin A to skin E, between approximately 130M and 136M elevation. Welder was identified as 207745. ZPMC QC was identified as QC3. The welding variables recorded by QC3 appeared to comply with WPS-B-T-2221-C-U2b-S-2.

SAW welding of weld joint SSSL4-1B/L-3A located outside PCMK south tower, lift 4, skin A to skin E, between

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approximately 138M and 144M elevation. Welder was identified as 050295. ZPMC QC was identified as QC3. The welding variables recorded by QC3 appeared to comply with WPS-B-T-2221-C-U2b-S-2.

Bay 9 – PMT

This QA Inspector monitored OBG Production Monitoring Test (PMT) #3005 for deck panels DP3005-001 and DP3010-001 at Gantry #2. Prior to the start of the PMT, this QA Inspector observed the root opening to be within the 0.0 to 0.5mm tolerance. The magnetic particle test (MT) of the tack welds was noted on the test panel as having been performed by ZPMC MT Inspector Ding A Cheng on 11/2/09. The visual inspection of tack welds and root gap was performed by ABF Representative Cao Hai Zhou (ABF), ZPMC CWI Guo Yanfei (QC), and this QA Inspector. The tack welds and root gap appeared to be within prescribed tolerances. This QA Inspector observed that the deck plate of the test panel was 14mm thick and the deck plates of the production panels DP3005-001 and DP3010-001 were 14mm thick. The start time for welding of the 3–12mm x 14mm specimens was approximately 0011 hours on 11/7/09 and the finish time was approximately 0058 hours. This QA Inspector randomly verified and documented the welding amperage, voltage, and travel speed during the gas metal arc welding (GMAW) and submerged arc welding (SAW) processes, welds 1 thru 6 at the completion of both the GMAW root pass and SAW cover pass. The welding variables recorded by QC appeared to comply with WPS-B-T-2342-U1-(U-rib)-4. The welds were visually inspected by ABF, QC and this QA Inspector. QC and ABF informed this QA Inspector that all six welds were acceptable and this QA Inspector concurred. This QA inspector randomly witnessed ZPMC ultrasonic testing (UT) inspector, identified as Ma Jilong, perform UT on each of the 500 mm test welds for depth of penetration and conformance. This QA Inspector selected fifteen designated locations for macroetch sampling per contract requirements. Each macroetch location was stamped by ZPMC personnel with the number 3005, the letter M laying on its side, chosen randomly by this QA Inspector as a verification mark, and an individual macroetch identifying number for each macroetch. After removal from each of the weld test specimens, polishing, and acid etching of the selected end, the macroetches were evaluated with a 7X optical magnifier and accepted by QC, ABF, and this QA Inspector.

All fifteen sample macros appeared to meet requirements and were noted to appear acceptable. See Caltrans U-ribs PMT Inspection Sheet, ZPMC production monitoring test plate inspection report, and Caltrans Macro Etch Log - all dated 11/7/2008 for additional information.

Unless otherwise noted, all work observed on this date appeared to generally comply with applicable contract documents.

### **Summary of Conversations:**

As noted 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 Serge Sinevod, 134-8257-0045, who represents the Office of Structural Materials for your project.

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**Inspected By:** Goulet, George

Quality Assurance Inspector

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**Reviewed By:** Dawson,Paul

QA Reviewer