

**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-009552**Date Inspected:** 12-Oct-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:

SMAW welding of various weld joints attaching upper and lower shaft rotator fenders on PCMK east tower, lift 4, skin A to skin B corner. Welders at the upper location were identified as 049099 and 040611. Welders at the lower location were identified as 040733 and 040655. ZPMC QC was identified as You Qi Guo (QC1). Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Inspector Li Jun, who was not a CWI. The welding variables recorded by QC1 and QC1's assistant appeared to comply with WPS-B-T-2114.

FCAW welding of weld joints WSD1-FBSA3-2B/C-11, 12 located inside PCMK west tower, lift 3, skin B to skin C, stiffener connection plate inside 89M double diaphragm. Welder was identified as 042218. ZPMC QC was identified as CWI Li Lin (QC2). The welding variables recorded by QC2 appeared to comply with WPS-B-T-2333-TC-P4-F.

**Bay 10**

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

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FCAW welding of weld joints SSSL4-1B/L-54, 55 located inside PCMK south tower, lift 4, skin C, stiffener to fit lug and fit lug to 116M diaphragm. Welder was identified as 053870. ZPMC QC was identified as CWI Wang Chuan Qing (QC3). Assisting QC3 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Inspector Li Peng Fei, who was not a CWI. The welding variables recorded by QC3 and QC3's assistant appeared to comply with WPS-B-T-2333-TC-P4-F.

FCAW welding of weld joints SSSL4-1C/L-128, 129 located inside PCMK south tower, lift 4, skin C, stiffener to fit lug and fit lug to 119M diaphragm. Welder was identified as 057180. ZPMC QC was identified as QC3. Assisting QC3 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Inspector Li Peng Fei, who was not a CWI. The welding variables recorded by QC3 and QC3's assistant appeared to comply with WPS-B-T-4333-TC-P4-F for weld #128 and WPS-B-T-2333-TC-P4-F for weld #129.

FCAW welding of weld joints SSSL4-1G/L-62, 63 located inside PCMK south tower, lift 4, skin C, stiffener to fit lug and fit lug to 127M diaphragm. Welder was identified as 054069. ZPMC QC was identified as QC3. The welding variables recorded by QC3 appeared to comply with WPS-B-T-4333-TC-P4-F for weld #62 and WPS-B-T-2333-TC-P4-F for weld #63.

FCAW welding of weld joints SSSL4-1F/L-129, 130 located inside PCMK south tower, lift 4, skin C, stiffener to fit lug and fit lug to 123M diaphragm. Welder was identified as 057266. ZPMC QC was identified as QC3. The welding variables recorded by QC3 appeared to comply with WPS-B-T-4333-TC-P4-F for weld #129 and WPS-B-T-2333-TC-P4-F for weld #130.

### Bay 9 – PMT

This QA Inspector monitored OBG Production Monitoring Test (PMT) #3008 for deck panels DP3008A-001, DP3010A-001, and DP3025-001 at Gantry #2. Prior to the start of the PMT, 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 10/12/09. The visual inspection of tack welds and root gap was performed by ABF Representative Wang Wan Shong (ABF), ZPMC CWI Sun Bo (QC), and this QA Inspector. The start time for welding of the 3 – 12mm x 20mm specimens was approximately 0011 hours on 10/13/09. This QA Inspector randomly verified and documented the welding amperage, voltage, and travel speed during the gas metal arc welding (GMAW) process, welds 1 thru 6 at the completion of the GMAW root 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 informed this QA Inspector that weld #5 was not acceptable because it displayed more than 100mm of overlap. Gantry #2 was moved to a new location where another test panel was already positioned for PMT testing.

This QA Inspector again began monitoring OBG Production Monitoring Test (PMT) #3008 for deck panels DP3008A-001, DP3010A-001, and DP3025-001 at Gantry #2. Prior to the start of the PMT, 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 10/12/09. The visual inspection of tack welds and root gap was performed by ABF Representative Wang Wan Shong (ABF), ZPMC CWI Sun Bo (QC), and this QA Inspector. The start time for welding of the 3 – 12mm x 20mm specimens was approximately 0049 hours on 10/13/09 and the finish time was approximately 0111 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

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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 Tang Xingshan, 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 3008, the letter M, 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 generally comply with applicable contract documents 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 10/13/2009 for additional information.

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

### **Summary of Conversations:**

No relevant conversations except 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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<b>Inspected By:</b>	Goulet,George	Quality Assurance Inspector
<b>Reviewed By:</b>	Dawson,Paul	QA Reviewer

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