

**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-010056**Date Inspected:** 25-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 (QA) Inspector George Goulet was present during the times noted above for observations relative to the work being performed.

**Trial Assembly Area**

This QA Inspector randomly observed the following work in progress in the trial assembly area:

SMAW repair welding of weld joint OBE2A-004 located at the joint of 2AE/2BE, bottom plate to bottom plate exterior. Welders were identified as 067183, 066261. ZPMC QC was identified as Xu Yumin (QC1). Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC Wang Zhu, who was not a CWI. The welding variables recorded by QC1 and QC1's assistant appeared to comply with WPS-345-SMAW-4G(4F)-repair-1 as listed on the ZPMC repair order B-CWR859. Also at this location and appearing to be monitoring the welding operation was ABF Representative He Yong.

**Bay 10**

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

FCAW welding of weld joint SSSL3-11/K-140, 141 located inside PCMK south tower, lift 3. Welder was identified as 050041. ZPMC QC was identified as Chen Ying Xin (QC2). Assisting QC2 at this location and appearing to be monitoring the welding and recording data was ZPMC Jiang Xiao Bo, who was not a CWI. The welding variables recorded by QC2's assistant appeared to comply with WPS-B-T-4332-TC-P4-F for weld 140 and WPS-B-T-4333-TC-P4-F for weld 141.

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FCAW welding of weld joint SSTL3-1I/K-50, 53 located inside PCMK south tower, lift 3. Welder was identified as 057244. ZPMC QC was identified as QC2. Assisting QC2 at this location and appearing to be monitoring the welding and recording data was ZPMC Jiang Xiao Bo, who was not a CWI. The welding variables recorded by QC2's assistant appeared to comply with WPS-B-T-4332-TC-P4-F for weld 50 and WPS-B-T-4333-TC-P4-F for weld 53.

SMAW tack welding of weld joint NSTL4-3B/L-1A located outside PCMK north tower, lift 4, skin C to skin D. Welders were identified as 061938, 048777. ZPMC QC was identified as CWI Wan Wen Zhong (QC3). Assisting QC3 at this location and appearing to be monitoring the welding and recording data was ZPMC Yuan Hui Gang, who was not a CWI. The welding variables recorded by QC3's assistant appeared to comply with WPS-B-P-2212-C-U2.

### Outside yard behind Bay 13

This QA Inspector was informed by day shift Caltrans OSM Quality Assurance personnel of a probable ZPMC inspection notification for magnetic particle test (MT) in OBG section 6AW and that water from washing out the segment would be removed and lighting provided. This QA Inspector received no ZPMC inspection notification. Between 2100 and 2200 hours, this QA Inspector observed standing water throughout the low areas of segment 6AW and no lighting.

### Bay 9 – PMT and MT

This QA Inspector monitored OBG Production Monitoring Test (PMT) #3003 for deck panels DP3003-001 and DP3032-001 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 10/23/09. The visual inspection of tack welds and root gap was performed by ABF Representative Wang Wen Shong (ABF), ZPMC CWI Guo Yan Fei (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 20mm thick and the production panels DP3003-001 and DP3032-001 were 14mm and 20mm thick respectively. The start time for welding of the 3–12mm x 20mm specimens was approximately 0018 hours on 10/26/09 and the finish time was approximately 0044 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 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 3003, the number 8, 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.

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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 10/26/2008 for additional information.

This QA Inspector performed approximately 15% MT verification of OBG deck panel U-rib tack welds after ZPMC initial MT inspection. ZPMC personnel have made repairs of areas found unacceptable. ZPMC has not performed the final MT of the repair areas. This QA Inspector did not generate MT report for above inspection. No relevant indications were found during this in-process inspection. The following panels were tested:

DP3003-001-001 through 008

DP3032-001-001 through 006

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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<b>Inspected By:</b>	Goulet,George	Quality Assurance Inspector
<b>Reviewed By:</b>	Dawson,Paul	QA Reviewer

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