

**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 #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-003749**Date Inspected:** 31-Aug-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 1930**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 800**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:** OBG/Tower**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and or discovered the following.

**OBG Sub-Assembly Shop – Bay 1 (Deck Panel)**

Quality Assurance (QA) Inspector Brannon was present to monitor activities associated with the Production Monitoring Test (PMT) of Orthotropic Box Girder (OBG) Deck Panel U-rib welds. The PMT representing Deck Panels DP543-001 a 3 closed rib panel and DP415-001 a 5 closed rib panel was monitored on Gantry #2. After MT of the tack welds was accepted by ZPMC Level II MT Technician, Bo Tin Yue, the three ribs (six welds) were simultaneously welded to the simulated deck plate in the horizontal groove (2G) welding position on (3) a single steel plate. The Welding Procedure Specification (WPS) used was WPS-B-T-2342-U1(Urib)-4. It is a combination procedure using gas metal arc welding (GMAW) for the root pass and submerged arc welding (SAW) for the cover or fill pass. The filler metals being used were verified to be as specified on the WPS; 1.4 mm diameter, ER70S-6 (JM-56) for GMAW and 4.8 mm diameter EH14K (H14) for SAW. During the test, QA Inspector Brannon recorded the parameters of amperage, voltage, and travel speed on the U-Ribs PMT Inspection Sheet, dated 09-01-2008, for both welding processes. The name of the gantry operator and each of the six welding operators' identification numbers were also recorded on the U-Ribs PMT Inspection Sheet. ZPMC Certified Welding Inspector (CWI), Mr. Li Yan Hua and ABF QA Inspector Mrs. Lv Yun were present during welding.

After ZPMC Certified Welding Inspector (CWI), Mr. Li Yan Hua and ABF QA Inspector Mr. Mrs. Lv Yun performed visual inspection, Quality Assurance (QA) Inspector Brannon performed random visual inspection of

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the GMAW tack welds, GMAW root pass and the SAW cover pass, items observed appear to comply with project specifications. Following completion of the welding ZPMC QC CWI Inspector Mr. Li Yan Hua marked a 500 mm length of the welds as being the areas that are to be representative of this PMT test. QA Inspector Brannon observed ZPMC NDE inspector Mr. Ma Ji Long performing ultrasonic testing on the partial penetration evaluation of each of the six welds in the areas where Mr. Li Yan Hua had marked for PMT testing. Following Mr. Long's UT acceptance the QA Inspector Brannon marked a total of 15 locations where macroetch samples are to be obtained. ZPMC then cut and prepared the macroetch samples. ZPMC QC CWI Inspector Mr. Li Yan Hua, ABF representative Mrs. Lv Yun and Caltrans QA Inspector Brannon visually inspected these macroetch samples and documented their acceptance on the ZPMC "Production Monitoring Test Plate Inspection Report sheet dated 09-01-2008, items observed by the QA Inspector Brannon appear to generally comply with project specifications.

The QA Inspector recorded information for all fifteen PMT specimens on an Excel spreadsheet titled "SAS OBG PMT Macroetch Log" and a copy of this file is posted on the Caltrans "Team China" internal common drive which is accessible to all Quality Assurance personnel including Task Leaders and Structural Materials Representatives.

OBG-PMT, Deck Panel DP543-002 & DP415-001

All tack welds are 5mm to 10mm on either side of the 75mm tack weld.

OBG-Deck Panel DP543-002

ZPMC MT Technician Bo Tin Yue found 2 cracked tack out of 132 tack welds in DP543-002. Deck Panel DP415-001 to be MT on the next shift.

Bay 2, 3, 4, 7 & 8 Sub Assembly Shop QA Observations:

Caltrans QA Inspector observed Bay's to be idle during this shift.

Tower Shop-Bay 1

Milling- Caltrans QA Inspector observed ZPMC using the horizontal milling machine to mill beveled edges of various tower web plates.

In-Process Welding - QA Inspector observed ZPMC in the process of performing PJP weld for the South Tower Skin Assembly, Skin B SSD1-SA18 A/E - 9, 10, 13 & 14 and South Tower Skin Assembly, Skin C SSD1-SA17 A/G - 1, 12, 6, 7, 27 & 28 using a FCAW process on this date. 20 ZPMC Personnel, 3 ZPMC QC, 2 ABF Personnel

Tower Shop-Bay 2

Milling- Caltrans QA Inspector observed ZPMC using the horizontal milling machine to mill beveled edges of various tower web plates. 4 ZPMC Personnel

Tower Skin Plates- Caltrans QA Inspector observed the tower stiffener welding to be idle during this shift.

## **Summary of Conversations:**

No relevant conversations to report.

## **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 Ady Velasco 13816942685, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Brannon, Sherri	Quality Assurance Inspector
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<b>Reviewed By:</b>	Lanz, Joe	QA Reviewer
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