

**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-003420**Date Inspected:** 14-Jul-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 2230**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Li Yan Hui**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, Ken Jobes, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, to randomly monitor welding and Quality Control (QC) functions. While on site, the QA Inspector observed and/or discovered the following:

**Tower (Heavy Machinery Shop – Bay 1**

The Caltrans QA Inspector randomly observed the machining of bevels on Piece Marks, p357b, p393b, p18b, p160b, and p394b and the arc gouging of a complete joint penetration (CJP) groove weld on tower skin plate. No flame cutting was being done in this shop.

**Tower (Heavy Machinery Shop – Bay 2**

The Caltrans QA Inspector randomly observed that no flame cutting or welding was being done in this shop. Piece Marks p20b, p15, p285b, p1306, and p2859 were being beveled by machining. Stiffeners were also being tacked to a skin plate using shielded metal arc welding (SMAW). Preheat was being administered and portable electrode ovens were in use. ZPMC personnel were also observed verifying dimensions on a tower diaphragm plate

**OBG Sub-Assembly Shop – Bay 1**

Caltrans Quality Assurance (QA) Inspector, Ken Jobes, was present to monitor activities associated with the

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Production Monitoring Test (PMT) of Orthotropic Box Girder (OBG) Deck Panel U-rib welds. The PMT representing Deck Panels DP495-001 and DP306-001 was monitored. After MT of the tack welds was accepted by ZPMC Level II MT Technician, Xu Hai, two ribs (four welds) were simultaneously welded to the simulated deck plate in the horizontal groove (2G) welding position. The Welding Procedure Specification (WPS) used was WPS-B-T-2342-U1(Urib)-3. 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 EM12K (JW-3) for SAW. In addition, the specified flux, JF-B was also verified for SAW. During the test, the Caltrans QA Inspector recorded the parameters of amperage, voltage, and travel speed on the U-Ribs PMT Inspection Sheet, dated 07-15-08, for both welding processes. Each of the four welding operators' identification numbers were also recorded on the U-Ribs PMT Inspection Sheet. ZPMC Certified Welding Inspector (CWI), Li Yan Hui and ABF QA Inspector Lv Yun were present during welding.

The final weld was visually examined and accepted by ZPMC CWI, Li Yan Hui; and ABF QA Inspector Lv Yun. All welds appeared to meet the specified visual examination acceptance criteria.. After ultrasonic examination (UT) and acceptance by ZPMC Level II UT Technician, Xue Hai Rong, the Caltrans QA Inspector designated the locations for the ten required macro-etch specimens. All macro-etch specimens were prepared and found acceptable by ZPMC CWI, and ABF QA Inspector. The macro-etch specimens were then examined by the Caltrans QA Inspector and the depth of penetration on each measured and the results recorded on Caltrans Project 04-0120F4 SAS OBG Fabrication Macro Etch Log.

All above observations appeared to meet the requirements of the job specifications.



## Summary of Conversations:

As identified within the contents of this 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) China, who represents the Office of Structural Materials for your project.

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**Inspected By:** Jobes, Kenneth

Quality Assurance Inspector

**Reviewed By:** Carreon, Albert

QA Reviewer