

**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-004892**Date Inspected:** 21-Nov-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 2300**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China

<b>CWI Name:</b>	Li Yan Hua, Zhi Neng Zhang	<b>CWI Present:</b>	Yes	No
<b>Inspected CWI report:</b>	Yes No N/A	<b>Rod Oven in Use:</b>	Yes	No N/A
<b>Electrode to specification:</b>	Yes No N/A	<b>Weld Procedures Followed:</b>	Yes	No N/A
<b>Qualified Welders:</b>	Yes No N/A	<b>Verified Joint Fit-up:</b>	Yes	No N/A
<b>Approved Drawings:</b>	Yes No N/A	<b>Approved WPS:</b>	Yes	No N/A
		<b>Delayed / Cancelled:</b>	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:

**OBG Sub-Assembly Shop – Bay 1**

Caltrans Quality Assurance (QA) Inspector, Ken Jobes, 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 DP392-001 and DP473-001 was monitored. After MT of the tack welds was accepted by ZPMC Level II MT Technician, Zhou Dong Yun, the three ribs (six welds) were simultaneously welded to simulated deck plates in the horizontal groove (2G) welding position. 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, the Caltrans QA Inspector recorded the parameters observed on the U-Ribs PMT Inspection Sheet, dated 11-22-08, for both welding processes. The name of the gantry operators and each of the welding operators' identification numbers were also recorded on the U-Ribs PMT Inspection Sheet.

ZPMC Certified Welding Inspector (CWI) Li Yan Hua (07120701), and ABF QA Inspector Wang Zhen Hua were present during welding.

The final weld was visually examined and accepted by ZPMC CWI, Li Yan Hua; and ABF QA Inspector Wang

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Zhen Hua. All welds appeared to meet the specified visual examination acceptance criteria. After ultrasonic examination (UT) and acceptance by ZPMC Level II UT Technician, Ma Ji Long, the Caltrans QA Inspector designated the locations for the 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.

Heavy Machinery (Tower) Shop 2

The Caltrans QA Inspector also randomly observed the heat straightening on longitudinal stiffeners on East Tower, Lift 2, Shin "B". Heat Straightening Record No. HSR1(T) 5564 was being used. This work was being monitored by one ZPMC Quality Control Inspector and one ABF QA Inspector.

The Caltrans QA Inspector also randomly observed the machine Submerged Arc Welding (SAW) of fill passes on Weld No. WSD1-SA279A/F-22B, West Tower, Skin "B", Lift 1, Piece Marks p378(A) and p378(B) on Stiffener B4. The welding operator was Xue Yian (I. D. No. 0406364). The welding was in the flat groove (1G) position using Welding Procedure Specification (WPS) No. WPS-B-T-2221-B-U3c-S-2. Certified Welding Inspector (CWI), Zhi Neng Zhang (CWI No. 08052171 ) was present during this welding as was one additional ZPMC QC inspector and two ABF QA Inspectors. The QA Inspector verified the qualifications of the welding operator and that the electrode as 4.8 mm diameter JW-3 (EM12K). The minimum preheat and maximum interpass temperatures, voltage, amperage and travel speed all appeared to be within the parameters of the WPS.

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 Peter Dautermann (1500219953) China, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Jobs, Kenneth	Quality Assurance Inspector
<b>Reviewed By:</b>	Carreon, Albert	QA Reviewer

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