

**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-001174**Date Inspected:** 04-Jan-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 1300**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 2330**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Li Li Ming**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 and Tower Mockup**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Joe Lanz 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 during second shift. While on site the QA Inspector observed and/or discovered the following.

Bay 1

Deck trial Mockup

The QA inspector performed ultrasonic verification testing of the partial joint penetration welds on the deck trial Mockup, piece mark MU3. The ultrasonic testing (UT) was performed to verify the weld depth of penetration and testing performed by ZPMC personnel meet the requirements of the contract documents in the area of the macro sections to be cut from the deck trial welds. The base metal lamination check was performed with a 1.0" dia. round 2.25 MHz transducer. The shear wave scan was performed with a 0.375" 3.25 MHz transducer on a 70 degree angle wedge from face A. Scanning patterns A, B and C were utilized. Following is a list of sample locations and the area examined and the relevant indications of inadequate penetration observed in accordance with the contract documents.

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## Deck Trial Mockup MU3

Rib and Weld ID	Sample ID and location	Area examined	Sample depth of lack of penetration
U-01, W-2	1B2 at 6,300mm	6,000mm to 7,000mm	2.3mm
U-01, W-2	1B3 at 12,600mm	12,500mm to 13,500mm	2.0mm
U-02, W-1	2A2 at 4,540mm	4,000mm to 5,000mm	2.0mm
U-02, W-1	2A3 at 9,140mm	8,500mm to 9,500mm	0mm
U-02, W-2	2B3 at 11,980mm	11,500mm to 12,500mm	1.4mm
U-03, W-1	3A2 at 4,220mm	3,500mm to 4,500mm	0.9mm
U-03, W-1	3A3 at 10,980mm	10,500mm to 11,500mm	1.0mm
U-03, W-2	3B2 at 7,220mm	6,500mm to 7,500mm	2.1mm
U-04, W-2	4B2 at 2,950mm	2,500mm to 3,500mm	2.4mm

## Deck Trial Mockup MU3

Rib and Weld ID	Area examined	Indication Y location	Length	Lack of penetration depth	Discovered by
U-01, W-2	6m to 7m	6, 500mm	10mm	2.71	QA
U-03, W-2	6.5m to 7.5m	4,030mm	10mm	2.77	QA
U-03, W-2	6.5m to 7.5m	4,090mm	20mm	2.71	QA

### Bay 3

#### OBG Beams

The QA inspector performed ultrasonic verification testing of side plate complete joint penetration welds that were found unacceptable on 01-03-2007 by the QA inspector. The ultrasonic testing (UT) was performed to verify the welds and testing performed meets the requirements of the contract documents and AWS D1.5-2002 after the weld reinforcement was ground smooth but not flush. The weld and base metal were scanned utilizing a Krautkramer Branson USN 60 for the following scans. The base metal lamination check was performed with a 1.0" dia. round 2.25 MHz transducer. The weld shear wave scan was performed with a 0.75" x 0.625" 2.25 MHz transducer on a 70 degree angle wedge from face A. Scanning patterns A, B, C, and E were utilized. Following is a list of welds examined and acceptance in accordance with AWS D1.5- 2002 table 6.3 and the contract documents.

- a) SP021-01-002, 14.5mm thick, Y location = 0mm, Length tested = 164mm. After grinding the weld appears to be acceptable.
- b) SP029-01-002, 14.5mm thick, Y location = 0mm, Length tested = 164mm. After grinding the weld appears to be unacceptable.

The testing was witnessed ZPMC NDT technician Li Li Ming who agreed with the QA inspector's assessment. Li Li Ming reported that the weld would be repaired and visual inspection and ultrasonic testing of the repair would be performed. An Ultrasonic Test Report (TL-6027) for the welds that were tested was generated for this date.

#### Summary of Conversations:

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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 Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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

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