

**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-002971**Date Inspected:** 16-Jun-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China

<b>CWI Name:</b>	Lvliqing and Hu Wei Qing	<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
<b>Bridge No:</b>	34-0006	<b>Component:</b>	OBG and SAS Tower Fabrication	

**Summary of Items Observed:**

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on sub-assembly Bays mentioned below;

**Bay 2: 114M Tower Mock-ups, Plate Cutting, Rolling**

This QA Inspector observed machining/beveling of 2 -40mm thick plates marked P643 and P66p and 5-30mm thick plates marked 168B, 125B and 126B were seen in progress; drilling of 18-24mm diameter bolt holes on 24mm thick X 340mm wide X 1105mm long for various connection plates and 300mm X 300mm hollow steel diagonal brace for floor beam sub-assembly on going, and so with 16-24mm diameter bolt holes on each side of welded spacer beam flange for floor beam sub-assembly; rolling of 70mm thick X 410mm wide marked P1328 seen complete which appears to be longitudinal skin plate stiffener. Tower mock up for elevation 114Meters has 5 ZPMC personnel putting back bolts/nuts on plate connector to tower splice.

**Bay 3: OBG side/bottom/edge panel:**

This QA Inspector randomly observed ZPMC welder Li Zhao Qian ID number 048810, using FCAW process in the 3G position to weld CJP on flange splice butt joint of W21 X 57 for various bottom panels BP194-001-003/004, BP196-001-001/002 and BP194-001-001/002. The QA Inspector randomly observed ZPMC QC monitoring the welding parameters using WPS-B-T-2233-B-U2-F as reference. Also noted was ZPMC NDE personnel performing UT on completely welded W21 X 57 flange splice butt joints for various side panels.

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The QA Inspector randomly observed ZPMC welder operators ID Number 048801 and, Liu Zihong ID Number 062447, utilizing the Flux Cored Arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position, with a 1.4mm diameter electrode, filler metal brand K71TSR, semi automatic with a gantry mounted welding apparatus and ZPMC Weld Procedure Specification (WPS) WPS-B-T-4132, to weld 3-open-rib stiffeners to deck panel DP034-001 weld joints 001/002 and 005/006. The QA Inspector randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters.

This QA observed tack welding/fit-up of 3-open rib stiffener on deck panel DP023-006-001~006 and DP047-001-001~006 using THJ506Fe-1 SMAW electrode. Cutting of completely welded splice butt joints W21 x 57 web plate to make WT's rib stiffener for various side panel was also noted.

### Bay 4: Tower Diaphragm

This QA observed ZPMC MT personnel Cai Xin Xin and Zhou Dongyun perform 10% Magnetic Particle Testing on fillet weld between rib stiffener to side panel SP196-001-001~012, SP303-001-001~012 and SP301-001-001~012 and rib stiffener to edge panel EP024-001-001~004 and EP049-001-001~004. It was noted that rust and scale have been removed by ZPMC workers on weld areas prior MT testing. Electromagnetic Yoke was used with alternating current (AC) as power source. The detection media used were dry red and yellow ferromagnetic particles and applied with powder blower while the magnetizing force is on. While the ZPMC NDT Mr. Cai and Zhou were MT testing the welds, this QA randomly perform VT and 10%MT on fillet welds mentioned and appears conforming to the project requirements. This QA also observed ZPMC's conduct of MT on these welds deemed acceptable.

### Bay 7: OBG - Floor Beam Sub Assembly:

QA Inspector J. Lizardo randomly observed ZPMC qualified welder Zhang Qingquan ID #044774 groove welding fill pass on (flange to web plate) tee joint. Mr. Zhang was observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic at floor beam FB016-011-045. QA Inspector Lizardo observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS).

FCAW fillet welding (2F) was observed on stiffener to web plate on floor beam sub-assembly FB001-005-weld joints 024, 025, 019 and 020. ZPMC welder working on this was identified as Wang Hong Lei ID# 066687. ZPMC CWI Hu Wei Qing was noted monitoring the parameters. Tack welding/fit-up was continuing on flange to web plate of floor beam FB015-005-001 and FB012-005-001 using electrode TL-508. During tack welding/fit-up of these sub-assemblies, paint coating was removed, close and tight gap noted and preheating was used.

This QA also observed SMAW (2F) fillet welding on 8mm thick end cap to 300mm X 300mm hollow steel diagonal brace for various floor beam sub-assemblies FB006-023-001, FB006-023-114, FB006-022-004, FB006-021-004 and FB006-021-001. ZPMC qualified welder was identified by ID #066261 and was using 4.0mm TL-508 electrode. ZPMC CWI Hu Wei Qing was noted monitoring the parameters.

### Bay 8: Tower Diaphragms

The QA Inspector randomly observed ZPMC welder Xu Pei Pei ID Number 050323, utilizing the SAW Process in

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the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-3221-B-U3c-S-1, to weld the fill pass on plate splice butt joint of Tower Diaphragm ESD1-SA301A/B-11B/12B. The QA Inspector randomly observed ZPMC CWI Lvliqing, monitoring weld parameters.

This QA randomly observed heat straightening of 40mm thick plate marked P480(E) due to mill induce distortion. Natural gas was used and less than 650 degree C thermal heat input was implemented following procedure HSR1(B)-2400.

Tack welding/fit-up was noted on stiffener to web plate of longitudinal shear plate LD004-009-003/004 and LD002-004-003/004 using electrode 4.0mm diameter TL-508 electrode while ZPMC welder Fu Yanjie ID #066268 was identified performing the task. During tack welding/fit-up of these sub-assemblies, paint coating was removed, close and tight gap noted and preheating was used.

### Summary of Conversations:

No significant conversation occurred today.

### 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>	Lizardo,Josecito	Quality Assurance Inspector
<b>Reviewed By:</b>	Cuellar,Robert	QA Reviewer

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