

**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-003523**Date Inspected:** 08-Aug-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>	Wu Ming Cai and Zhao Chen Sun			<b>CWI Present:</b>	<b>Yes</b>	<b>No</b>	
<b>Inspected CWI report:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Rod Oven in Use:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Electrode to specification:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Weld Procedures Followed:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Qualified Welders:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Verified Joint Fit-up:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Approved Drawings:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Approved WPS:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
				<b>Delayed / Cancelled:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<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 P657 and P658 (double bevel of 45 degree two sides of the plate) for tower double diaphragm web plate seen in progress and 2-60mm thick plate marked P564 and P243 also seen in progress. No cutting of plate material and rolling machine so with tower mock-up 114M both idle.

Bay 3: OBG side/bottom/edge panel

The QA Inspector randomly observed ZPMC welder operators Wei Dashuai ID Number 051246, utilizing the FCAW Process in the 2F (Horizontal Fillet) Position with gantry(#1) mounted welding apparatus and ZPMC WPS WPS-B-T-4132, to weld open-Ribs on deck plate DP627A/PL1120A-001 weld joints 005/006 respectively. The QA Inspector randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 298 amps, 30.6 volts; 306 amps, 30.2 volts. Travel speed for all welds was randomly observed at 350 mm per minute. The weld parameters appeared to comply with contract requirements.

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FCAW (1G) CJP welding repair on welded bent rib stiffener SP404-001-047 and SP397-001-055 due to UT reject per welding repair report B-WR684 and B-WR690 respectively and following WPS-345-FCAW-1G-FCM-Repair. ZPMC welder performing the task was Zhao Qian ID #048810.

The QA Inspector randomly observed ZPMC welder operator Liu Zihong ID Number 062447 and Sun Ti Yu ID #054459 utilizing the Flux Cored arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position with gantry mounted welding apparatus and ZPMC Weld Procedure Specification (WPS) WPS-B-T-4132, with 1.4mm diameter, K-71TSR wire electrode to weld open-rib stiffener on Deck Plate DP628A/PL1123A weld joints 1 & 2 and 5 & 6. The QA Inspector randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters.

## Bay 4: Tower Diaphragm

SMAW (2G) tack welding/pre-assembly of 40mm/60mm web/stiffener plates to tower double diaphragm SSD1-SA333 B/B weld joints 3 and 4 and tack welding of 40mm thick web plate to tower double diaphragm ESD1-SA238 B/B weld joint 7 using Excalibur E9018M H4R, 4.8mm diameter electrode. The QA Inspector randomly observed ZPMC CWI Ye Yong Jun monitoring weld parameters.

This QA observed two ZPMC welders, ID #054460, and ID #202842 utilizing the FCAW Process in the 2F (Horizontal) Position with a 1.4mm diameter electrode, filler metal brand K-71TSR, semi automatic with ZPMC WPS WPS-B-T-4132 to weld fillet fill pass on fillet weld connection between tower diaphragm plate to diaphragm flange NSD1-SA27 A/B-8. The QA Inspector randomly observed ZPMC CWI Zhao Chen Sun monitoring weld parameters.

This QA Inspector randomly observed ZPMC welder Han Kun ID #066751, Han Guodong ID #062259 and Li Xuehua ID #058174 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly WSD1-SA287 weld joints 12A and 7A and WSD1-SA318 A/B weld joint 9 respectively. The QA Inspector randomly observed ZPMC CWI Ye Yong Jun monitoring weld parameters.

Heat straightening was also observed on 6 open rib stiffener to bottom panel BP313(A)-001 weld joints 009~020, 033, 035, 037, 039 and BP314(A)-001 weld joints 009~020, 033, 035, 037, 039 due to welding distortion. Oxy-acetylene gas was used with thermal heat input of less than 650 degree C following procedure HSR1(B) – 1904 and HSR1(B)-1771.

## Bay 7: OBG - Floor Beam Sub Assembly

The QA Inspector randomly observed ZPMC welder Hong Shuili ID Number 044815, utilizing the FCAW Process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H in the 3G (Horizontal Groove) Position with ZPMC WPS WPS-B-T-2233-Tc-U4b-F, to weld fill pass on skewed connection plate (of 300mm x 300mm diagonal brace) to floor beam bottom flange Sub-Assembly SSD15B-PP042-131/132. The QA Inspector randomly observed ZPMC CWI Hu Wei Qing monitoring weld parameters.

FCAW(2F) fillet welding on stiffener to web plate of floor beam FB031-001-026/027 using 1.4mm diameter, filler metal brand E71T-1, class Supercored 71H by ZPMC welder Wang Hong Lei ID #066687 and Zhang Qingquan ID #044774 and FCAW(2F) fillet welding on flange to web plate of longitudinal shear plate LD003-018-011 by

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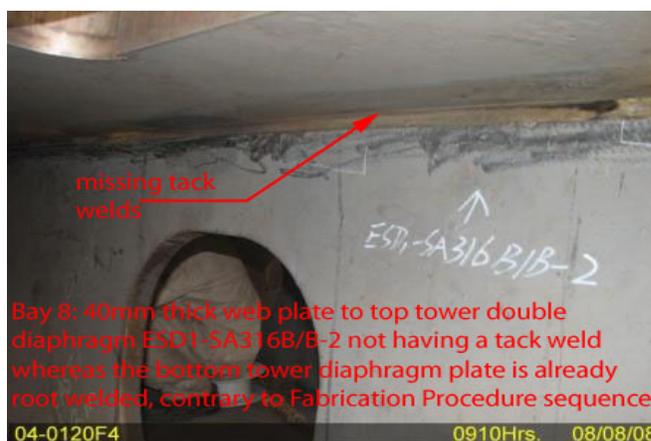
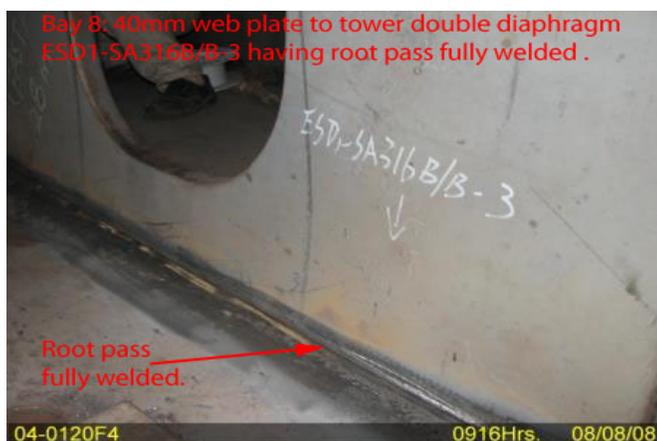
ZPMC welder ID #066695 this QA observed.

## Bay 8: Tower Diaphragm

This QA observed tack welding of 40mm web plate to tower double diaphragm (top) ESD1-SA316 B/B weld joints 1, 2, 7 & 8 but the bottom welds 3, 4, 5 and 6 were already root welded which is contrary to the fabrication procedure steps 2 and 3 of FP-MUA-20 wherein both top and bottom web plates/stiffeners should only be tack welded prior welding one side of the tower double diaphragm. See photo below.

SMAW(2G) PJP welding root pass on 40mm web plate to (bottom) double diaphragm ESD1-SA32 B/B weld joints 5 and 6 by ZPMC welders ID #067561 and ID #045148 utilizing Excalibur E9018M H4R, 4.8mm diameter. The QA Inspector randomly observed ZPMC CWI Zhashi monitoring weld parameters. Tack welding was also observed on 40mm thick web plate to tower double diaphragm SSD1-SA277 B/B using the same process.

This QA Inspector randomly observed ZPMC welder Jiang Yong Sheng ID number 045240 utilizing the FCAW Process in the 3G (Vertical Groove) Position with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld fill pass on groove (bent heavy plate) splice butt joint on Tower Diaphragm Flange Sub-Assembly SSD1-SA248 weld joint 7A. The QA Inspector randomly observed ZPMC CWI Zhashi monitoring weld parameters.



## 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 Joshua Ishibashi, (858) 232-7081, who represents the Office of Structural Materials for your project.

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**Inspected By:** Lizardo, Joselito

Quality Assurance Inspector

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**Reviewed By:** Cuellar, Robert

QA Reviewer