

**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-002624**Date Inspected:** 04-Apr-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See below**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 Sherri Brannon 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. While on site the QA Inspector observed and/or discovered the following.

**New Tower Shop****Bay 1:**

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various tower plates.

Cause for heat straightening mill induced distortion. Heat Straightening is performed by flame straightening using oxygen acetylene.

**Bay 1 and Bay 2:**

QA Inspector Brannon randomly observed ZPMC personnel CNC torch cutting 75% natural and 25% oxygen for various pieces for the tower.

**89 Meter Mock-up - Bay 1:**

QA Inspector Brannon randomly observed ZPMC qualified welder's Mr. Huang You Jin ID#066416 and Mr. Tan Xiang Bo ID#0664559 groove welding at the weld joint #MUSB-MA21-G/T7-2 and MUB-MA21 A/J-70 respectively. Mr. Huang and Mr. Tan was observed welding in the 2G (horizontal) position utilizing shielded metal arc welding (SMAW) process with a 5.0mm diameter electrode, filler metal brand E7018, class THJ506Fe-1.

QA Inspector Brannon observed the ZPMC QC Inspector Mr. Zhu Zhong Hai verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector

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Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Zhu Zhong Hai to be: a minimum preheat temperature of 160°C and welding parameters amps of 199/217 respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-4312-Tc-P4-2.

Tower Shaft Skin Plates - Bay 1:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Zha Yong Song ID#056134 tack welding at the weld joint SSD1-SA173 A/K-13B, joining SA173 (S) to P219 (S). Mr. Zha was observed welding in the 1G (flat) position utilizing shielded metal arc welding (SMAW) process with a 5.0mm diameter electrode, filler metal brand E7018, class TL508. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Zhu Zhong Hai verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Zhu Zhong Hai to be: a minimum preheat temperature of 110°C and welding parameters amps of 221. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2211-B-U3b.

Tower Shaft Skin Plates - Bay 1 and Bay2:

QA Inspector Brannon randomly observed ZPMC qualified welder's Mr. Xia Yong Liu ID#048882, Mrs. Liu Juan ID#047481, Mrs. Xu Yan ID#052917 ID#, Mr. Chen Hongxia ID# 040460 groove welding fill/cover passes at the weld joint ESD1-SA107 A/J-16B, joining SA107 (E) to P882 (E), WSD1-SA107 D/J-16A, joining SA107 (W) to P882 (W), SSD1-SA15 A/F-13B, joining SA15 (S) to P117 (S) and SSD1-SA15 A/K-26B, joining SA15 (S) to P14 (S). Mr. Xia, Mr. Liu, Mrs. Xu and Mr. Chen was observed welding in the 1G (flat) position utilizing submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand EM12K, class JW-3 machine. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Zhu Zhong Hai verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Zhu Zhong Hai to be: a minimum preheat temperature of 110°C and welding parameters amps of 696/690/690/674, volts of 32/32/32/35, and a travel speed of 610/600/627/632 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2221-B-U3c-S.

OBG/Tower Sub-Assembly

Bay 2

77 & 144 Meter Mock-up:

QA Inspector Brannon observed tower mock-up to be idle during this shift. QA Inspector Brannon also, randomly observed ZPMC personnel CNC torch cutting with 75% natural gas and 25% oxygen for interior splice plate for various tower elevations.

Bay 3-OBG W shape beams (splice) repair B-CWR061:

During observations of welding on CWR-061 on W shape Complete Joint Penetration (CJP) weld splice for SP359-01-002 this QA Inspector observed ZPMC welding personnel start the shielded metal arc welding (SMAW) process and upon completion of the weld pass fail to stop and clean the weld pass. The welding process was repeated multiple times without stopping. Note: QA Inspector Brannon submitted an Incident Report for the above W shape splice on this date. QA Inspector informed ZPMC CWI Huang Wei Pang and ABF Kevin Carpenter and Task Leader Craig Hager of the above.

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Bay 3-OBG side panel (Gantry 1):

QA Inspector Brannon randomly observed ZPMC qualified welders Mr. Liz Hao Qian ID#048810, Mr. Xin Meng ID#053742 and Mr. Sun Ti Yu ID#054459 fillet welding joining T-stiffeners to side panel plate for SP403-001 weld joints 002~015. Mr. Liz, Mr. Xin and Mr. Sun was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Huang Wei Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Huang Wei Pang to be: preheat temperature of 88°C and welding parameters amps of 307/285/295 volts of 30/30/29, a travel speed of 475/475/475 mm/min and a gas flow of 22L/min respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

Bay 3-OBG side/bottom panel:

QA Inspector Brannon randomly observed ZPMC qualified welders, tack welding various T stiffeners plate to BP383-001, weld joints 007~018, SP424-001, weld joints 001~101 utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112-FCM.

Bay 4 – Heat straightening side panel:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various side/bottom/edge panels and tower diaphragm plates. Side/bottom/edge panels cause for heat straightening welding distortion and tower diaphragm pates cause for heat straightening mill induced. Heat Straightening is performed by flame straightening using oxygen acetylene or natural gas using a hand torch.

Bay 4 Tower 33 Meter Elevation:

QA Inspector Brannon randomly observed ZPMC welder Mrs. Gu Cai Hong ID #054467 welding fill pass's joining SA322 (N) to P283 (N) weld joint # NSD1 SA332 A/B-1A/2A. Mrs. Gu was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.0mm diameter electrode, filler metal brand LA-85, class ENi5, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Zhao Chen Sun to be: preheat temperature of 180°C and welding parameters amps of 630, volts of 30.6, and a travel speed of 500. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

Bay 4 Tower 33 Meter Elevation:

QA Inspector Brannon randomly observed ZPMC welder Mr. Jiang Jing Teng ID #046830 welding fill pass's joining SA317 (E) to P831 (E) weld joint # SSD1 SA317-3B/4B. Mr. Jiang was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.0mm diameter electrode, filler metal brand LA-85, class ENi5, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Zhao Chen Sun to be: preheat temperature of 180°C and welding parameters amps of 640, volts of 31.5, and a travel speed of 495. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the

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# WELDING INSPECTION REPORT

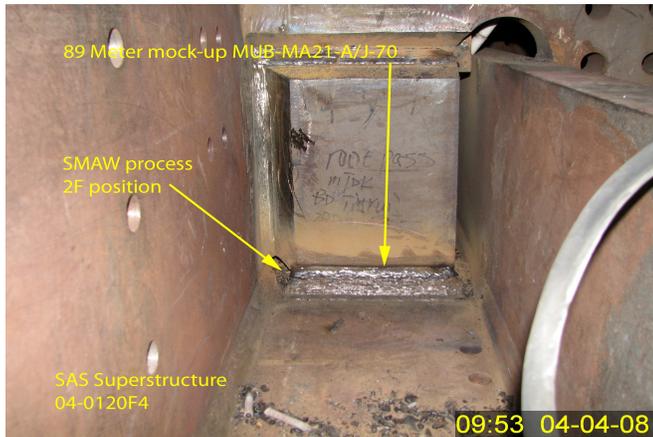
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approved WPS-B-T-3221-B-U3c-S-1.

The following digital photograph below illustrates observation of the activities being performed.



## Summary of Conversations:

No relevant conversations to 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 Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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**Inspected By:** Brannon, Sherri

Quality Assurance Inspector

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**Reviewed By:** Cuellar, Robert

QA Reviewer