

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
690 Walnut Ave. St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

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-002644**Date Inspected:** 11-May-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.

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 and beveling various tower plates using the horizontal milling machine.

Bay 3-OBG side/bottom/edge panels:

QA Inspector Brannon randomly observed ZPMC qualified welders, tack welding various T stiffeners/edge plates utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508 non-FCM and filler metal brand E7018, class THJ506Fe-1 for FCM material. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112 and WPS-B-P-2112-FCM respectively.

Bay 3-OBG side/bottom 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/bottom panel plates for SP334-001 weld joints 032~043, SP363-001 weld joints 025~036 and BP087-001 weld joints 007~018. Mr. Liz,

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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. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

Bay 3 – Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various side/bottom panels. Side and bottom panels cause for heat straightening. Heat straightening is performed by flame straightening using oxygen acetylene using a hand torch.

Bay 3-OBG W shape beams (splice)

QA Inspector Brannon randomly observed ZPMC qualified welders Mr. Li Zhao Qian ID#048810 and Li Shu Qiang ID#053609 splice welding various W shape beams BP086-001-001 and BP169-001-003 respectively. Mr. Li and Mr. Li was observed welding in the 3G (vertical) 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. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Wu Ming Kai 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. Wu Ming Kai to be: a minimum preheat temperature of 27°C and welding parameters amps of 202/202, volts of 25.1/25.3, a travel speed of 113/114 mm/min and a gas flow of 20L respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2233-B-U2-F.

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 flange plates. Side/bottom/edge panels cause for heat straightening welding distortion and tower diaphragm flange plates 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 Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Liv Dai Quan ID #066401 tack welding joining SA78 (W) to P604 (W) weld joint WSD1 SA78-1A/1B. Mr. Liv was observed welding in the 1G (flat) position utilizing a shielded metal arc welding (SMAW) process with a 5.0mm diameter electrode, filler metal brand E7018, class TL-508 manual. QA Inspector Brannon observed the ZPMC QC CWI Inspector Zhao Chen Sun 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 Zhao Chen Sun to be: preheat temperature of 65°C and welding parameters amps of 220. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2211-B-U3b.

Bay 4 – Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Du Heng Hua ID #037779 tack welding (PJP) joining SA291 (S) to P617 (S) weld joint SSD1 SA291-13 & 15. Mr. Du was observed welding in the 1G (flat) position utilizing a shielded metal arc welding (SMAW) process with a 5.0mm diameter electrode, filler metal brand E7018, class TL-508 manual. QA Inspector Brannon observed the ZPMC QC CWI Inspector Zhao

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Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Zhao Chen Sun observed preheat and welding parameters measured by the QC CWI Inspector Zhao Chen Sun to be: preheat temperature of 65°C and welding parameters amps of 225. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2211-B-U3b.

Bay 7-OBG floor beam panels:

QA Inspector Brannon randomly observed ZPMC qualified welders, tack welding various floor beam web splice connections and floor beam top and bottom diaphragm flange to web utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508 or brand E7018, class ThJ506Fe1. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112 or WPS-B-P-2112-FCM.

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Zhang Liang ID#067036 and Mr. Liu Xie ID#066236 fillet welding various floor beam diaphragm stiffeners to web & flange plate for FB005-009-014, 011 & 010 and FB003-029-037, 038, 49 & 50 respectively. Mr. Zhang and Mr. Liu was observed welding in the 2F (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. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Wei Qing 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. Hu Wei Qing to be: a minimum preheat temperature of 60°C and welding parameters amps of 296/307, volts of 29.3/29.7, a travel speed of 440/436 mm/min and a gas flow of 21L. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Huang Xin Lin ID #044780 splice welding fill/cover passes for various floor beam web splice connection plates FB032-001-080. Mr. Huang was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand EM12k, class JW3 machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Hu Wei Qing 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 Hu Wei Qing to be: preheat temperature of 65°C and welding parameters amps of 505, volts of 30.5, and a travel speed of 427 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2221-L2c-S-1.

Bay 8 – Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Xi Pei Pei ID #050323 groove welding fill pass's joining SA110 (W) to P773 (W) weld joint WSD1 SA311-101B. Mrs. Xi was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand EM12K, class JW3 machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Lv Li Qing 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 Lv

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Li Qing to be: preheat temperature of 110°C and welding parameters amps of 603, volts of 29.8, and a travel speed of 475 mm/min. 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 8 – Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Ma Ming ID #045270 groove welding fill pass's joining SA109 (S) to P659 (S) weld joint SSD1 SA109-1A. Mrs. Ma was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand LA-85, class ENi5 machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Lv Li Qing 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 Lv Li Qing to be: preheat temperature of 110°C and welding parameters amps of 620, volts of 31.2, and a travel speed of 477 mm/min. 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 8 – Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Ma Ming ID #045270 groove welding fill pass's joining SA126 (S) to P659 (S) weld joint SSD1 SA126-1A. Mrs. Ma was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand LA-85, class ENi5 machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Lv Li Qing 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 Lv Li Qing to be: preheat temperature of 110°C and welding parameters amps of 626, volts of 31.6, and a travel speed of 478 mm/min. 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 8 – Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various tower diaphragm flange plates and tower stiffener plates. Cause for heat straightening mill induced distortion. Heat Straightening is performed by flame straightening using natural gas with a hand torch.

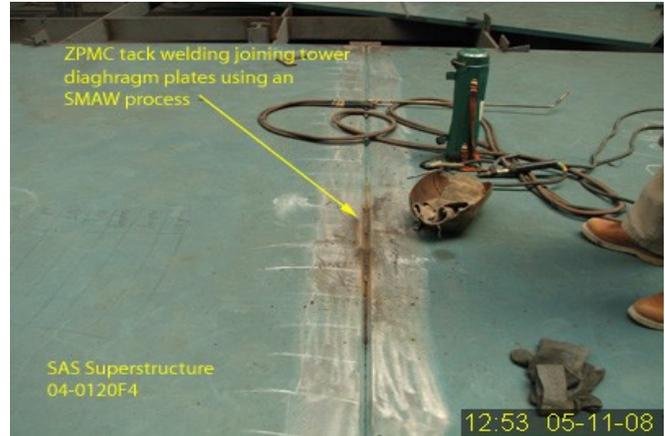
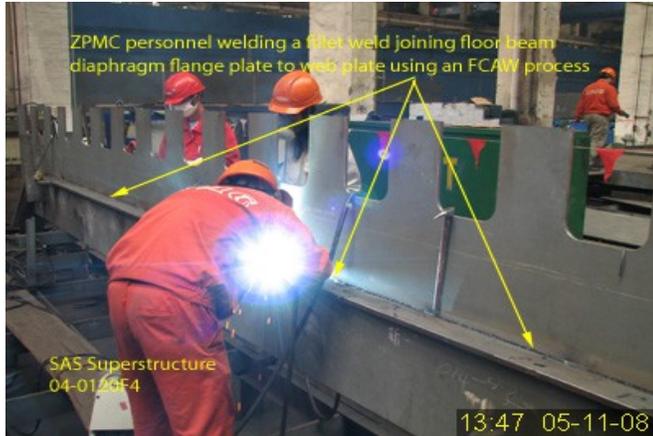
Bay 8 – Tower Diaphragm Flange Sub Assembly

QA Inspector Brannon randomly observed ZPMC personnel assembling tower diaphragm flange for SA 219 and welding run off tabs.

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

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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.

Inspected By: Brannon, Sherri

Quality Assurance Inspector

Reviewed By: Carreon, Albert

QA Reviewer