

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-002622**Date Inspected:** 06-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.

OBG/Tower Sub Assembly**Bay 7-OBG - Floor Beam Sub Assembly:**

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Wu Wan Yong ID #050242, Mr. Hong Shui Li ID# 044815, Mr. Hong Yong Li ID#044801 groove welding fill passes floor beam vertical flange to floor beam web plate for FB026-001-125, 126 & 127, FB025-001-125, 126 & 127 and FB018-02-125, 126 & 127. Mr. Wu, Mr. Hong and Mr. Hong was observed welding in the 1G (flat) 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 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 292/287/295, volts of 30.4/30.6/30.8, a travel speed of 290/286/296 mm/min and a gas flow of 20L/min respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2231-Tc-U4b-F.

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Wang Min ID #048296 splice welding

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various floor beam bottom diaphragm plates FB010-006-026. Mrs. Wang 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 500, volts of 29.0, and a travel speed of 423 mm/min respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2221-L2C-S-1.

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Sun Gu Zuo ID#058100 splice welding various floor beam web plates FB013-008-002. Mr. Sun 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 517, volts of 30.8, and a travel speed of 460 mm/min respectively. 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 – 28 Meter Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Han Yang Jie ID #048686 groove welding fill pass's joining SA309 (E) to P775 (E) weld joint ESD1 SA309-11A/12A. Mr. Han 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 Sha Zhi 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 Sha Zhi to be: preheat temperature of 180°C and welding parameters amps of 616, volts of 30.4, and a travel speed of 482 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 – 38 Meter Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Xi Pei Pei ID #048431 groove welding fill pass's joining SA370 (W) to P63 (W) weld joint WSD1-SA370-10A. Mrs. Xi was observed welding in the 1f (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 Sha Zhi 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 Sha Zhi to be: preheat temperature of 180°C and welding parameters amps of 610, volts of 30.3, and a travel speed of 481 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3211-B-U3b-1.

Bay 8 – 38 Meter Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder's Mr. Zhang Houquan ID#048431 and Mr. Tan

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Xiang Bo ID#045138 tack welding at joining SA277 (S) to P560 (S) weld joint SSD1-SA277 A/B-1A/2A respectively. Mr. Zhang and Mr. Tan was observed welding in the 1G (flat) position utilizing shielded metal arc welding (SMAW) process with a 5.0mm diameter electrode, filler metal brand E9018 H4R, class Excalibur 9018M MR manual. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Sha Zhi 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. Sha Zhi to be: a minimum preheat temperature of 180°C and welding parameters amps of 208/210 respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3211—U3b-1.

Bay 8 – 47.6 Meter Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Xi Pei Pei ID #048431 groove welding fill pass's joining SA326 (N) to P652 (N) weld joint NSD1-SA326-1A/2A. Mrs. Xi was observed welding in the 1f (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 Sha Zhi 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 Sha Zhi to be: preheat temperature of 180°C and welding parameters amps of 608, volts of 30.1, and a travel speed of 498 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3211-B-U3b-S-1.

Bay 8 – Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various tower diaphragm plates. Tower diaphragm plates cause for heat straightening mill induced. Heat Straightening is performed by flame straightening using oxygen acetylene or natural gas using a hand torch.

ZPMC NDT (UT):

QA Inspector Brannon randomly observed ZPMC Ultrasonic Testing Technician's Mr. Li Li Ming, Xue Hai Yong, Mrs. Maji Long and Mr. Shui Qin, performing lamination Scan with 2.5mhz transducer and shear wave using a 45° and 70° transducer on the following tower diaphragms join welds: NSD1-SA224 A/B-2A & 2B, NSD1-SA270- 1A & 1B, NSD1-SA226-10A and SSD1-SA326-1A.

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

