

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-002596**Date Inspected:** 13-Apr-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**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 OBG Assembly Bay 2:

QA Inspector Brannon randomly observed ZPMC welder Mr. Sun Wu Zao ID #058100 welding fill/cover passes joining SP056-01 to SP068-01, segment 020A-027 and SP055-01 to SP067-01, segment 020A-007. 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 JW3, class Supercored EM12K, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Chen Chih Ming 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 Mr. Chen Chih Ming to be: preheat temperature of 60°C and welding parameters amps of 630/650, volts of 33.6/32.0, and a travel speed of 526/480 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-B-223(2)-1T.

(Base metal repair)

QA Inspector Brannon randomly observed ZPMC welder Mr. Wang Li ID #044772 repair welding SP22A to SP30A, segment 016A-005. Mr. Wang was observed welding in the 1G (flat) position utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508, manual. QA Inspector Brannon observed the ZPMC QC CWI Inspector Chen Chih Ming verifying that the welding

WELDING INSPECTION REPORT

(Continued Page 2 of 4)

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 Mr. Chen Chih Ming to be: preheat temperature of 60°C and welding parameters amps of 160. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-345-SMAW-1G-Repair. Also, see ZPMC welding repair report #B-WR163 for more information.

OBG/Tower Sub Assembly

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Yin Guo Qin ID #058081 splice welding various floor beam web plates FB005-012-002 & FB005-013-020. Mr. Yin was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand JW3, class EM12K 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 31.4, and a travel speed of 431 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 welder Mr. Wang Chang Fa ID #058102 tack welding various floor beam web splices at FB009-009-021 & FB009-007-021. Mr. Wang was observed welding in the 1G (flat) position utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508, manual. 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 Mr. Hu Wei Qing to be: preheat temperature of 30°C and welding parameters amps of 178. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2211-B-U2.

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various floor beam plates. Cause for heat straightening welding distortion. Heat Straightening is performed by flame straightening using oxygen acetylene with hand torch.

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Hong Shuili ID#044815 repair welding at the weld joint FB022-02-127. 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 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 110°C and welding parameters amps of 290, volts of 30.0, a travel speed of 530 mm/min and a gas flow of 22L. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-345-FCAW-1G(1F)-FCM-Repair. See also, ZPMC welding repair report

WELDING INSPECTION REPORT

(Continued Page 3 of 4)

#B-WR173 and ZPMC UT report #787-UT-416 for more information.

Bay 8 – 47.6 Meter Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Wang Lan Ying ID #045265 groove welding fill pass's joining SA32 (E) to P1424 (E) weld joint ESD1 SA332-10B. Mr. 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 LA-85, class ENi5 machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Lv Jiangang 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 Lv Jiangang to be: preheat temperature of 180°C and welding parameters amps of 621, volts of 31.5, and a travel speed of 479 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 SA277 (S) to P560 (S) weld joint SSD1-SA277-1A. 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 Lv Jiangang 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 Lv Jiangang to be: preheat temperature of 180°C and welding parameters amps of 604, volts of 30.1, and a travel speed of 470 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 – 28 Meter Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Ma Ying ID #045270 groove welding joining SA316(W) to P778(W) weld joint WSD1 SA316-12A. Mrs. Ma 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 MIL800-HPNI, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Lv Jiangang 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 Lv Jiangang to be: preheat temperature of 180°C and welding parameters amps of 579, volts of 30.3, and a travel speed of 475. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

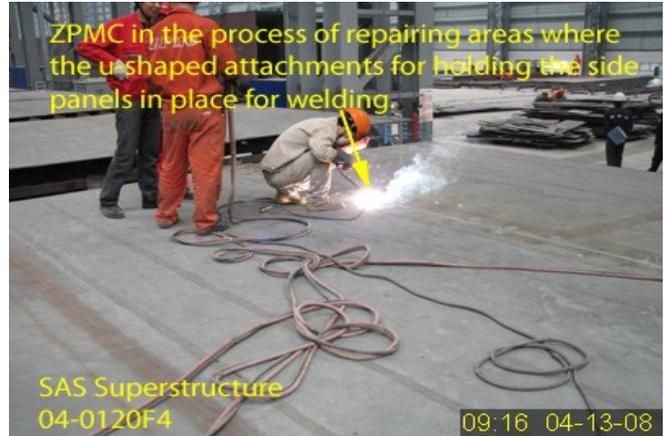
Bay 8 – Heat straightening:

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

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

WELDING INSPECTION REPORT

(Continued Page 4 of 4)



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: Cuellar, Robert

QA Reviewer