

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-001091**Date Inspected:** 27-Dec-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 230**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Chen Xi, Xu Lefeng**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:** Caltrans Mock-Up**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector, Ken Jobes, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, to randomly monitor welding and Quality Control (QC) functions. While on site, the QA Inspector observed and/or discovered the following:

The Caltrans QA Inspector randomly observed machine Submerged Arc Welding (SAW) of fill passes on the Upper Shaft Assembly of the 114M Tower Mock-Up, Weld No. MUC-MA106 B/C-3A. This outside weld of Skin B to Skin C is a complete joint penetration (CJP) groove weld and was being welded in the flat groove (1G) welding position. The welding operator was Yun Chaunjing (I.D. No. 0503060), whose qualifications for this welding are listed in ZPMC's Master List of Welders/Welding Operators/Tack Welders, Revision 7. Welding Procedure Specification (WPS) No. WPS-B-T-2221-C-U2b-S was being used for this weld. ZPMC CWI, Chen Xi (CWI No. 070072021) was present during this welding. The QA Inspector also noted that documentation of minimum/maximum preheat/interpass temperatures, voltage, amperage and travel speed by the CWI were within the specified ranges of the WPS up until the time of random observation. The QA Inspector also randomly measured the amperage and voltage by use of a calibrated Fluke amp/volt meter, measured and calculated the travel speed using a tape measure and stop watch, and used temperature indicating crayons to measure minimum preheat and minimum/maximum interpass temperature.

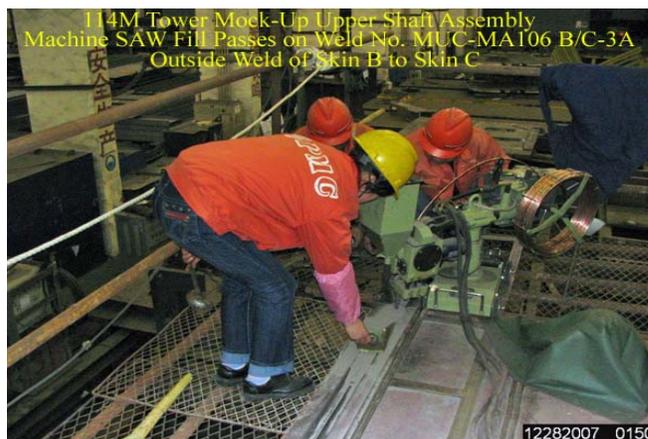
The Caltrans QA Inspector also randomly observed the manual Shielded Metal Arc Welding (SMAW) on the 77M Tower Mock-Up Diaphragm Assembly, Weld Nos. MUA-MA1 E/F-1, 4 and 15. ZPMC designated the four welders as "A", "B", "C" and "D" by adding the applicable letter, as applicable, to the Weld No. Weld No. MUA-MA1 E/F-4C was designated for welder Cao Tao (I. D. 066163), Weld No. MUA-MA1 E/F-1C was

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designated for welder Yang Shuwei (I. D. 066280), Weld No. MUA-MA1 E/F-15A was designated for welder Tan Xiangbo (I. D. 066459) and Weld No. MUA-MA1 E/F-4A was designated for welder Liang Yanhai (I. D. 066457). All four welders' qualifications for this welding are listed in ZPMC's Master List of Welders/Welding Operators/Tack Welders, Revision 7. ZPMC CWI, Xu Lenfeng (CWI No. 07031411) was present during this welding, as was Bureau Veritas Inspector, Zhang Xu Wang. Two Welding Procedure Specifications (WPS's) were used for this welding. WPS-B-T 4313-TC-P5-1 was used for Weld Nos. 1 and 4, being welded in the vertical groove (3G) welding position. WPS-B-T 4312-TC-P5-1 was used for Weld No. 15, being welded in the horizontal groove (2G) welding position. The specified minimum preheat is not the same for both procedures - 160° C is specified for the 2G position, but 180° C is specified for the 3G position. The QA Inspector observed that the CWI had documented the minimum preheat/interpass temperature as 176° C and 170° C for two passes of 3G. The QA Inspector noted that documentation of voltage, amperage and travel speed by the CWI were within the specified ranges of the WPS up until the time of random observation. The QA Inspector also randomly measured the amperage and voltage by use of a calibrated Fluke amp/volt meter, and used temperature indicating crayons to measure minimum preheat and minimum/maximum interpass temperature. These are partial joint penetration (PJP) groove welds. The specified electrode, THJ506-Fe-1 (E7018-1) was being used and portable electrode ovens were in use.

All observations except minimum preheat of 180° C on two passes on the 77M Tower Mock-Up appeared to meet the requirements of the job specifications.



Summary of Conversations:

As identified within the contents of this 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: Jobses, Kenneth

Quality Assurance Inspector

Reviewed By: Cochran, Jim

QA Reviewer