

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-003633**Date Inspected:** 04-Aug-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 2230**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:** 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 Fabrication**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. The QA Inspector observed the following:

Orthotropic Box Girder (OBG) and Tower Fabrication:

QC Inspectors Mr. Wang Zhen Hua, Mr. Yi Yan Hua, Mr. An Qin Xiang and Mr. Maj Long

Bay 1

The QA Inspector monitored welding of closed rib Production Monitoring Test (PMT) representing deck plates DP588-001 and DP563-001 which were welded today starting at approximately 0100 hours using gantry #2. One baseplate was used for welding of all three ribs. The QA Inspector observed six ZPMC welders using welding procedure specification WPS-B-T-2342-U1(Urib)-4 using the gas metal arc welding process for the root pass and submerged arc welding process for the cover pass of partial penetration groove welds on six PMT closed rib welds at the same time. ZPMC has multiple flux cored welding manipulators attached to a movable gantry that runs on a track along the length of the stiffener plates. The QA Inspector observed a welding travel speed of approximately 520 mm per hour for the root passes and 510 mm for the cover passes. As the welding commences, each of the welders is responsible for one of the welding heads. Welder Ms. Zhang Li Ping, stencil 218040 completed the root pass of weld #1 with a welding current of approximately 365 amps and 31.4 volts and the cover pass welding

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current of approximately 680 amps and 24.2 volts. Welder Mr. Zhao Cheng Shuang, stencil 59400 completed the root pass of weld #2 with a welding current of approximately 360 amps and 31.7 volts and the cover pass welding current of approximately 680 amps and 25.3 volts. Welder Mr. Jiang Shuang Chen, stencil 201788 completed the root pass of weld #3 with a welding current of approximately 345 amps and 31.3 volts and the cover pass welding current of approximately 685 amps and 25.2 volts. Welder Mr. Song Yun Shu, stencil 59421 completed the root pass of weld #4 with a welding current of approximately 380 amps and 31.2 volts and the cover pass welding current of approximately 680 amps and 25.3 volts. Welder Ms. Wang Xiao Yong, stencil 059445 completed the root pass of weld #5 with a welding current of approximately 350 amps and 31.9 volts and the cover pass welding current of approximately 650 amps and 25.2 volts. Welder Mr. Xu Guo Yin, stencil 59443 completed the root pass of weld #6 with a welding current of approximately 360 amps and 31.0 volts and the cover pass welding current of approximately 675 amps and 25.0 volts.

The QA Inspector performed random visual inspection of the root pass and cover passes and items observed appear to comply with project specifications. Following completion of the welding ZPMC QC CWI Inspector Mr. Wang Zhen Hua marked a 500 mm length of the welds as being the areas that are to be representative of this PMT test. The QA Inspector observed ZPMC NDE inspector Mr. Mu Ji Long performing ultrasonic partial penetration evaluation of each of the six welds in the areas where Mr. Hua had marked for PMT testing. Following Mr. Long's UT acceptance the QA Inspector marked a total of 15 locations where macroetch samples are to be obtained. ZPMC then cut and prepared the macroetch samples. ZPMC QC CWI Inspector Mr. Hua and ABF representative Mr. Chang Bao Qian both visually inspected these macroetch samples and documented their acceptance on the ZPMC "Production Monitoring Test Plate Inspection Report sheet dated 8-01-08. ZPMC stenciled one macroetch sample as 6-6 instead of 6-4, the specimen was re stamped. ZPMC etched the wrong side of six specimens. QC was informed and the specimens were re-etched. Following resolution of these problems, items were found to be satisfactory.

The QA Inspector visually inspected and dimensionally measured the penetration each of these macroetch samples and items observed by the QA Inspector appear to comply with project specifications.

The QA Inspector recorded information for all fifteen PMT specimens on an Excel spreadsheet titled "SAS OBG PMT Macroetch Log" and a copy of this file is posted on the Caltrans "Team China" internal common drive which is accessible to all Quality Assurance personnel including Task Leaders and Structural Materials Representatives.

Heavy Shop Bay 1:

The QA Inspector observed ZPMC welder stencil 40489 is using welding procedure specification WPS-B-T-2231-B-U3L-S2 to make flux cored groove weld SSDI-SA17A/G-22A/B. The QA Inspector observed a welding current of approximately 660 amps, 32.1 volts and the base material appears to be between 110°C and 230°C. Items observed by the QA Inspector appear to comply with project specifications.

Heavy Shop Bay 2:

The QA Inspector observed ZPMC welder Mr. Xie Xhong Cheng stencil 041271 and one other person tack welding groove weld ESD1-SA22A/H 75. The QA Inspector asked ZPMC QC CWI Inspector Mr. An Qin Xiang to show the QA Inspector the QC welding record for this welding. Mr. Xiang was not able to produce a QC record showing any information for this welding. The QA Inspector asked ZPMC translator Mr. Tao Lei if ZPMC QC had recorded any information on this tack welding and Mr. Lei said ZPMC QC had not recorded any of the

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welding parameters. Mr. Lei said Mr. Cheng had been welding less than 30 minutes and he has now completed all of the tack welding and QC can no longer measure the welding current being used by Mr. Cheng.



Summary of Conversations:

See above.

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 Ady Velasco 13816942685, who represents the Office of Structural Materials for your project.

Inspected By: Dawson,Paul

Quality Assurance Inspector

Reviewed By: Carreon,Albert

QA Reviewer
