

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-007134**Date Inspected:** 15-May-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**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:**

CWI Inspectors: Mr. Li Yong, Mr. Huang Wen Pang,

On this date CALTRANS OSM 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:

Prior to Caltrans QA Inspectors' concurring with issuance of OBG deck plate closed rib green tag releases a review of the ultrasonic inspection database is performed to verify all closed rib tack weld repair locations have been ultrasonically accepted. Today this QA Inspector, Mr. Paul Dawson, performed data entry of ultrasonic inspection information from the field generated Ultrasonic inspection data sheets onto the common drive computer database for the following OBG deck panels: DP178-001, DP123-002, DP339-001 and DP475-001.

OBG Bay 5

The QA Inspector observed ZPMC welder Mr. Chen Najun, stencil 205390 is using welding procedure WPS-B-T-2231-TC-U4C-F-1 to make cantilever beam flux cored weld BK1A-BKX2A-3. The QA Inspector measured a welding current of approximately 335 amps and 34 volts. The QA Inspector asked ZPMC CWI Mr. Li Yong what welding procedure specification is being used for this welding and Mr. Li Yong said WPS-B-T-2231-TC-U4C-F-1 is being used and that the welding current and voltage that was measured by the QA Inspector are both above the maximum allowed by the WPS. Note: the WPS lists the amperage shall be between

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245 amps and 300 amps and that the voltage shall be between 27.2 and 31.3 volts. Mr. Li Yong used ZPMC amp probe serial number #0643967, manufactured by Kyuritsu, to measure Mr. Naijun's welding current and he said he measured the welding current to be 295 amps which is acceptable, based on the WPS. The QA Inspector and Mr. Li Yong both measured Mr. Naijun's welding current at the same time and Mr. Li Yong measured 295 amps and the QA Inspector measured 330 amps with a Fluke model 337 serial number 96990807. Mr. Li Yong called ZPMC QC Representative Mr. Testino who came to the area of this welding and the QA Inspector asked Mr. Testino if ZPMC has another amp probe that can be used to measure the welding current and when another amperage probe was obtained it was determined that the amp probe with serial number #0643967 was not accurately measuring the welding current. Mr. Testino said this inaccurate welding probe will be taken out of service and a new welding probe will be used in its place. The QA Inspector observed ZPMC QC adjusted Mr. Li Yong's welding current to 290 amps and 29.5 volts. Items observed by the QA Inspector do not appear to fully comply with project specifications.

The QA Inspector observed ZPMC welder Mr. Liu Ming, stencil 044790 is using flux cored welding process WPS-B-P-2133 to make OBG Floor Beam weld fillet weld FB013-040-011. The QA Inspector observed a welding current of approximately 230 amps and 28 volts and a ZPMC QC Inspector is monitoring the welding and preheating of the base material. Items observed by the QA Inspector appear to comply with project specifications.

OBG Bay 3

The QA Inspector observed ZPMC welder Mr. Jin Zhong Hu, stencil 037907 is using flux cored welding process WPS-B-P-2132 to make OBG Floor Beam weld fillet welds on FB006-198-013. The QA Inspector observed a welding current of approximately 250 amps and 27 volts and a ZPMC QC Inspector is monitoring the welding and preheating of the base material. Items observed by the QA Inspector appear to comply with project specifications.

The QA Inspector observed ZPMC welder Mr. Wu Cun Xiung, stencil 070101 is using flux cored welding process WPS-B-P-2132 to make OBG Floor Beam weld fillet welds on FB006-192-013. The QA Inspector observed a welding current of approximately 265 amps and 27 volts and a ZPMC QC Inspector is monitoring the welding and preheating of the base material. Items observed by the QA Inspector appear to comply with project specifications.

OBG Bay 14

This QA Inspector observed ZPMC welder Ms. Xu Pei Pei, stencil 050323 is using the submerged arc welding process to make a groove weld between side plate SP132A and SP105A. The QA Inspector observed there does not appear to be any ZPMC Quality Control / Certified Welding Inspection personnel monitoring this welding for a period of over 30 minutes. The project Special Provisions, Section 8-3.01 states; "QC inspections shall be provided to ensure continuous inspection when any welding is being performed. Continuous inspection, as a minimum, shall include (1) having QC Inspectors continually present on the shop floor or project site when any welding operation is being performed, and (2) having a QC Inspector within such close proximity of all welders or operators so that inspections by the QC Inspector of each operation, at each welding location, shall not lapse for a period exceeding 30 minutes." This QA Inspector measured a welding current of approximately 630 amps and 30.0 volts. The QA Inspector observed the submerged arc welding machine hopper does not have any screen or magnet as required by AWS D1.5, Paragraph 4.8.4; where states: "SAW flux that has not been melted during the welding operation may be reused after recovery by vacuuming, use of catch pans, sweeping from weldment

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surfaces or other means. Recovered flux shall be passed through an appropriate screen and over a suitable magnet to remove unwanted particles and materials before being returned to the flux supply system.” Items observed by this QA Inspector do not appear to be progressing in compliance with project specifications, and the QA Inspector issued a deviation report to document the lack of QC Inspections and not employing proper flux recovery equipment. See the photographs below for additional information.

The QA Inspector observed ZPMC welder Mr. Wang Fupeng, stencil 205718 is using the shielded metal arc process to make fillet tack welds between OBG Deck Plates DP112A and DP274A. The QA Inspector observed a welding current of approximately 180 amps. The QA Inspector observed there does not appear to be any ZPMC Quality Control / Certified Welding Inspection personnel monitoring this welding for a period of over 30 minutes which is a violation of the Special Provisions, as listed above. The QA Inspector documented this welding on the Incident Report listed above. Items observed by this QA Inspector do not appear to be progressing in compliance with project specifications.



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 Eric Tsang phone: 150-0042-2372 , who represents the Office of Structural Materials for your project.

Inspected By:	Dawson,Paul	Quality Assurance Inspector
Reviewed By:	Clifford,William	QA Reviewer
