

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-001249**Date Inspected:** 17-Jan-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 800**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1800**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:** Tower and 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 Mock Up:

CWI Inspectors: Wu Ming Kai, Xu Bing

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QA Inspector observed ZPMC welder Ms. He Yu Mei stencil 48625 is using welding procedure specification WPS-B-T-2132-2 using the flux cored welding process for fillet tack welds on OBG PL72A side plate SP012 stiffener welds SP012-01-019 and SP012-01-020. The QA Inspector observed a welding current of approximately 255 amps, 28.0 volts and the base material has a minimum preheat temperature of 100° C. Items observed by the QA Inspector appear to comply with project specifications.

The QA Inspector observed ZPMC welder Mr. Sun Tiyu stencil 54459 is using welding procedure specification WPS-B-T-2132-2 using the flux cored welding process for fillet tack welds on OBG PL72A side plate SP012 stiffener welds SP012-01-017 and SP012-01-018. The QA Inspector observed a welding current of approximately 270 amps, 28.7 volts and the base material has a minimum preheat temperature of 100° C. Items observed by the

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QA Inspector appear to comply with project specifications.

The QA Inspector asked ZPMC QC ISI CWI Inspector Mr. Wu Ming Kai which welding specification was being utilized for the tack welding being performed by Ms. He Yu Mei and Mr. Sun Tiyu. Mr. Kai showed the QA Inspector a copy of welding procedure specification WPS-B-T-2132-2 that is attached to a display board near the work area. The QA Inspector observed the top right corner of this WPS document has been torn off and the WPS number is not shown on this document. Mr. Kai observed the WPS number is missing and Mr. Kai said ZPMC will obtain and post a new copy of the WPS on the display board.

The QA Inspector observed ZPMC welder Mr. Liu Zihong stencil 62447 is using welding procedure specification WPS-B-T-2132-2 using the flux cored welding process for fillet tack welds on OBG side plate SP043 stiffener weld SP043-01-018 and SP043-01-019. The QA Inspector observed a welding current of approximately 270 amps 27.3 volts and the base material had been preheated to a minimum of 100°C. Items observed by the QA Inspector appear to comply with project specifications.

The QA Inspector observed ZPMC welder Mr. Wang Zang Hua stencil 53753 is using welding procedure specification WPS-B-P-2112-FCM using the shielded metal welding process for fillet tack welds on OBG side plate SP043 stiffener weld SP043-01-011 and weld SP043-01-012. The QA Inspector observed THJ506-Fe-1 4.0 mm diameter electrodes, a welding current of approximately 190 amps and the base material had been preheated to a minimum of 40°C. Items observed by the QA Inspector appear to comply with project specifications.

The QA Inspector observed three ZPMC welders using welding procedure specification WPS-B-T-2132-3 using the flux cored welding process for PL63 fillet welds on six OBG side plate SP001 stiffener welds at the same time. ZPMC has multiple flux cored welding process 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 450 mm per minute. As the welding commences, each of the welders is responsible for two of the flux cored welding heads. All welders are using 1.4 mm diameter E71T-1 rolls of electrodes that have been marked as being installed earlier today. The QA Inspector observed all six welding machines have a shielding gas flow between 18 and 21 liters per minute as required by the WPS. Welder Mr. Li Xuehua stencil 58174 completed weld SP001-01-009 with a welding current of approximately 290 amps and 30.6 volts and weld SP001-01-010 with a welding current of approximately 275 amps and 30.5 volts. Welder Mr. Xin Meng stencil 53742 completed weld SP001-01-013 with a welding current of approximately 320 amps and 30.3 volts and weld SP001-01-014 with a welding current of approximately 320 amps and 29.0 volts. Welder Mr. Li Shuliang stencil 48801 completed weld SP001-01-017 with a welding current of approximately 290 amps and 31.1 volts and weld SP001-01-018 with a welding current of approximately 285 amps and 29.5 volts. Items observed by the QA Inspector appear to comply with project specifications.

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The QA Inspector observed ZPMC personnel performing carbon air arc gouging of weld material at both ends of the 77' tower mockup MUA-MA1-D/F weld 16A. Following the completion of the gouging ZPMC personnel used an electric grinder to obtain a bright metal surface. The QA Inspector measured the gouge on the west end of the weld to be approximately 32 mm deep x 70 mm long and 33 mm wide. The gouge on the east end of the weld

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is approximately 25 mm deep x 65 mm long and 33 mm wide. ZPMC then installed weld extension plates at the ends of the welds and the base material was then heated with electric heating elements that were attached to the base material. The QA Inspector did not observe ZPMC personnel performing welding repairs of weld 16A. See the photograph below that shows the east gouge and a run off plate that has been tack welded adjacent to the gouge.



Summary of Conversations:

See above for summary of conversations.

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:	Dawson,Paul	Quality Assurance Inspector
Reviewed By:	Cochran,Jim	QA Reviewer
