

**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-011328**Date Inspected:** 20-Dec-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**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 and Tower**Summary of Items Observed:**

CWI Inspectors: Mr. Liu Fa Wen, Mr. Zhu Tian Shu, Mr. Liu Ziao Zhong

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. This QA Inspector observed the following:

**OBG BAY 1**

ZPMC issued "Inspection Notification Sheet" number 4902 informing QA that ZPMC has completed ultrasonic inspections and magnetic particle inspections of twelve traveler rail brackets welds. This QA Inspector observed ZPMC QC personnel had previously marked these welds as being ultrasonic and magnetic particle accepted and this QA Inspector performed ultrasonic and magnetic particle inspections of the following welds. UT: 18TB1-001-002, 18TB2-001-002, 18TB-5-003-002 and MT: 18TB3-001-002, 18TB4-001-002 and 18TB4-002-002. Items observed by this QA Inspector appear to comply with AWS D1.5 UT and MT requirements. For additional information on these inspections see the TL6027 Ultrasonic Test Report and the TL6028 Magnetic Particle Test Report dated today.

**OBG BAY 2**

This QA Inspector observed ZPMC welder Mr. Xu Fubao, stencil 200569 is using shielded metal arc process

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WPS-B-P-2112 to tack weld OBG longitudinal diaphragm fillet weld LD3023-001-007. This QA Inspector observed a welding current of approximately 190 amps, the base material is being preheated with a torch and Mr. Xu Fubao appears to be certified to make this weld. This QA Inspector observed the shielded metal arc welding electrodes are being stored in an electrically heated electrode storage container which is warm to the touch. Items observed on this date appeared to generally comply with applicable contract documents.

### OBG BAY 5

This QA Inspector observed ZPMC welder Mr. Wang Guilin, stencil 067275, is using flux cored welding procedure WPS-B-T-2232-TC-U5-F to make traveler rail weld 11TR8-002-010. This QA Inspector observed a welding current of approximately 300 amps 31.0 volts and Mr. Wang Guilin appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Li Yuanzheng, stencil 217185, is using flux cored welding procedure WPS-B-T-2232-TC-U5-F to make traveler rail weld 11TR10-001-014. This QA Inspector observed a welding current of approximately 315 amps and 31.1 volts and Mr. Li Yuanzheng appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents

This QA Inspector observed ZPMC welder Mr. Liu Qing Tian, stencil 066359, is using flux cored welding procedure WPS-B-T-2232-TC-U5-F to make traveler rail weld 11TR10-001-014. This QA Inspector observed a welding current of approximately 300 amps and 31.0 volts and Mr. Liu Qing Tian appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents

This QA Inspector observed ZPMC welder Mr. Si Gao Feng, stencil 204342, is using flux cored welding procedure WPS-B-T-2232-TC-U5-F to make traveler rail weld 11TR2-016-014. This QA Inspector observed a welding current of approximately 305 amps 31.0 volts and Mr. Si Gao Feng appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Pan Ben Yung, stencil 067601, is using flux cored welding procedure WPS-B-T-2232-TC-U5-F to make traveler rail weld 11TR2-016-014. This QA Inspector observed a welding current of approximately 310 amps and 32.0 volts and Mr. Pan Ben Yung appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Chen Jai Jun, stencil 205390, has recently used Flux Cored welding procedure WPS-345-FCAW-2G(2F)-Repair-1 to make a weld repair to traveler rail weld 11TR1-018-014 in accordance with weld repair report B-WR9174. This QA Inspector observed ZPMC QC has recorded a welding current of 296 amps and 30.9 volts. This QA Inspector observed Mr. Chen Jai Jun appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Wang Yuan, stencil 215250, has recently used Flux Cored welding procedure WPS-345-FCAW-2G(2F)-Repair-1 to make a weld repair to traveler rail weld 11TR1-030-014 in accordance with weld repair report B-WR9192. This QA Inspector observed ZPMC QC has recorded a welding current of 292 amps and 30.8 volts. This QA Inspector observed Mr. Wang Yuan appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

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This QA Inspector observed ZPMC welder Mr. Jiang Min Quan, stencil 215185, has recently used Flux Cored welding procedure WPS-345-FCAW-2G(2F)-Repair-1 to make a weld repair to traveler rail weld 11TR1-024-014 in accordance with weld repair report B-WR9197. This QA Inspector observed ZPMC QC has recorded a welding current of 292 amps and 30.8 volts. This QA Inspector observed Mr. Wang Yuan appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

### Heavy Dock East Tower

This QA Inspector observed ZPMC welder Mr. Wang Daping, stencil 040736, is using flux cored welding procedure WPS-B-T-2333-TC-P4-F to make east tower lift 1 weld ESD1-SA227-F/H-10. This QA Inspector observed a welding current of 200 amps and 25.0 volts and Mr. Wang Daping appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Wu Jinguo, stencil 049541, is using flux cored welding procedure WPS-B-T-2333-TC-P4-F to make east tower lift 1 weld ESD1-SA227-F/G-18. This QA Inspector observed a welding current of 220 amps and 24.0 volts and Mr. Wu Jinguo appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Li Xing Quan, stencil 062126, is using flux cored welding procedure WPS-B-T-2333-TC-P4-F to make east tower lift 1 weld ESD1-SA227-F/G-16. This QA Inspector observed a welding current of 210 amps and 25.0 volts and Mr. Li Xing Quan appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Jin Yinghuang, stencil 040704, is using flux cored welding procedure WPS-B-T-2333-TC-P4-F to make east tower lift 1 weld ESD1-SA227-F/G-8. This QA Inspector observed a welding current of 230 amps and 23.0 volts and Mr. Jin Yinghuang appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

### Tower Bay 11

An Incident report was issued to document the following:

This QA Inspector observed ZPMC personnel performing shielded metal arc tack welding of a temporary skin frame plate to the inside surface of North Tower, lift 5 at the lower end of skin plate A which is 90 mm thick without obtaining adequate base material preheat of the tower skin plate. This QA Inspector observed that multiple 110°C “Tempilstik” temperature indicator marks applied to the adjacent base material within approximately 25mm from the point of welding did not melt. Certified Welding Inspector (CWI) Liu Xiao Zhong informed this QA Inspector the minimum required preheat for this material thickness is 180°C. This QA Inspector observed the base material temperature near the weld was below 110°C. ZPMC CWI Liu Xiao Zhong informed this QA Inspector that welding procedure specification (WPS) WPS-B-T-4112-2 was being used and Mr. Liu Ziao Zhong was not able to locate a copy of this WPS in Tower Bay 11. This QA Inspector informed ZPMC CWI Mr. Liu Ziao Zhong that an incident report is being issued to document this lack of preheating. See the photographs below for additional information.

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## 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.

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<b>Inspected By:</b>	Dawson,Paul	Quality Assurance Inspector
<b>Reviewed By:</b>	Carreon,Albert	QA Reviewer

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