

**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-014853**Date Inspected:** 20-May-2010**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. Li Yan Hua, Mr. Geng Wei, Mr. Li Yang

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 13**

The QA Inspector observed ZPMC welder Ms. Huang Xinlan, stencil 044780 is using submerged arc welding procedure specification WPS-B-T-2221-2 to make OBG segment 13AE bottom plate groove butt weld BP3032-001-003. This QA Inspector observed Ms. Huang Xinlan appears to be certified to make this weld and measured a welding current of approximately 640 amps and 34.0 volts. ZPMC is using electric heating elements to maintain the temperature of the steel plates that are being welded. Items observed on this date appeared to generally comply with applicable contract documents.

The QA Inspector observed ZPMC welder Ms. Wang Min, stencil 044771 is using submerged arc welding procedure specification WPS-B-T-2221-2 to make OBG segment 13AE bottom plate groove butt weld BP3032-001-001. This QA Inspector observed Ms. Wang Min appears to be certified to make this weld and measured a welding current of approximately 660 amps and 28.5 volts. ZPMC is using electric heating elements to maintain the temperature of the steel plates that are being welded. Items observed on this date appeared to

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generally comply with applicable contract documents.

### OBG Bay 14

This QA Inspector observed ZPMC welder Mr. Jiang Yafei, stencil 045276 is using flux cored welding procedure WPS-B-T-2233-B-U2-F to make OBG weld SEG3004R-001 through -004 at OBG segment 12AW near panel point PP111.5. This QA Inspector observed a welding current of approximately 215 amps and 24.0 volts. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Ms. Hue Junrong, stencil 201215 has recently used flux cored welding procedure WPS-B-T-2233-TB-U2-F to make segment weld SEG3004B-001 and -002. This QA Inspector observed ZPMC QC Inspector Mr. Zhong Yong Gang has recorded a welding current of 217 amps and 24.8 volts. This QA Inspector observed Ms. Hue Junrong 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. He Hanbi, stencil 202122 is using flux cored welding procedure WPS-B-T-2233-TB-U2-F to make segment weld SEG3006P-001 and -002 near panel point PP112. This QA Inspector observed ZPMC QC Inspector Mr. Zhong Yong Gang has recorded a welding current of 221 amps and 25.1 volts. This QA Inspector observed Mr. He Hanbi 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. Xi Xianyou, stencil 047866 is using flux cored welding procedure WPS-B-T-2233-TC-U2-F to make segment weld SEG3004C-002. This QA Inspector observed ZPMC QC Inspector Mr. Zhong Yong Gang has recorded a welding current of 219 amps and 24.9 volts. This QA Inspector observed Mr. Xi Xianyou appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

### OBG Segment Assembly

This QA Inspector observed ZPMC welder Mr. Zhang Hanming, stencil 220066 is using flux cored welding procedure WPS-B-T-2132 to make OBG segment 9AW cross beam side plate to bottom plate weld SEG050A-011.

This QA Inspector observed the base material is being heated with a torch. This QA Inspector observed that Mr. Zhang Hanming 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. Tian Zhaoquan, stencil 045246 is using shielded metal arc welding procedure WPS-345-SMAW-4G(4F)-FCM-Repair-1 to make 4G (overhead) position shielded metal arc repair weld SEG039C-006 as authorized on weld repair report B-WR-12975. This weld had been ultrasonically rejected and was documented on UT report B787-UT12664. This weld is located at OBG segment 7DW longitudinal diaphragm to floor beam near panel point PP58. This QA Inspector observed Mr. Tian Zhaoquan has a welding current of approximately 140 amps and Mr. Tian Zhaoquan appears to be certified to make this weld. This QA Inspector observed the welding electrodes are being stored in a heated portable electrode storage oven and the base material appears to have been preheated with a torch. Items observed on this date appeared to generally comply with applicable contract documents.

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This QA Inspector observed ZPMC welder Mr. Yun Chuansheng, stencil 045221 is using shielded metal arc welding procedure WPS-345-SMAW-1G(1F)-FCM-Repair-1 to make repair weld OBW7C-008 as authorized on critical weld repair report B-CWR-1542. This weld had been ultrasonically rejected. This weld is located between at OBG segment 7CW and 7DW bottom plates near panel point PP58. This QA Inspector observed Mr. Yun Chuansheng has a welding current of approximately 160 amps and Mr. Tian Zhaoquan appears to be certified to make this weld. This QA Inspector observed the welding electrodes are being stored in a heated portable electrode storage oven and the base material appears to have been preheated with a torch. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Hu Yanming, stencil 062092 is using shielded metal arc process to make temporary alignment plate welds on the crossbeam side plates between OBG segments 9AE and 9BE. This QA Inspector observed the welding electrodes are being stored in a portable rod oven which is warm to the touch and it is connected to an electric power cable. This QA Inspector measured a welding current of approximately 165 amps and Mr. Hu Yanming 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 Baijan is using shielded metal arc process to make temporary alignment plate welds on the deck plates between OBG segments 9AW and 9BW. This QA Inspector observed the base material was preheated with a torch prior to commencement of welding. This QA Inspector asked Mr. Liu Baijan if he had a ZPMC welder identification card and he presented this QA Inspector with a welding card that had been issued by "Moody" and this card indicates Mr. Liu Baijan is certified to weld in the 2F position in accordance with American Welding Society AWS #090602567. This QA Inspector asked ZPMC CWI Mr. Gurong Jian if Mr. Liu Baijan has been certified to weld on this Caltrans project. Mr. Gurong Jian said he was not aware Mr. Liu Baijan was not certified to make this weld and that the weld will be removed. Items observed on this date do not fully appear to comply with applicable contract documents. See the photograph below for additional information.

This QA Inspector observed ZPMC welder Mr. Zang Yanbo, stencil 045196 is using shielded metal arc welding procedure WPS-345-SMAW-4G(4F)-FCM-Repair-1 to make repair weld OBW7C-009 as authorized on critical weld repair report B-CWR-1542. This weld had previously been ultrasonically rejected. This weld is located between OBG segments 7CW and 7DW side plates on the counterweight side near panel point PP58. This QA Inspector observed Mr. Yun Chuansheng has a welding current of approximately 140 amps and Mr. Zang Yanbo appears to be certified to make this weld. This QA Inspector observed the welding electrodes are being stored in a heated portable electrode storage oven and the base material appears to have been preheated with a torch. The critical weld repair document Items observed on this date appeared to generally comply with applicable contract documents.

ABF issued "Inspection Notification Sheet" number 05202010-1 item #3 informing QA that on 05-20-2010 at 23:00 hours ABF Inspectors will be performing ultrasonic (UT) inspections of repaired welds OBW7C-003 which joins OBG bottom plates between OBG segment 7CW and 7DW. This weld is located in the trial assembly area. ABF/Sense UT Inspectors informed QA Inspector Mr. Mike Hasler that weld repair area Y=5040 mm has a rejectable UT transverse indication. This QA Inspector performed random visual and ultrasonic inspections utilizing scanning patterns A, B, C and D (AWS D1.5 Fig 6.7) and no additional UT rejections were observed.

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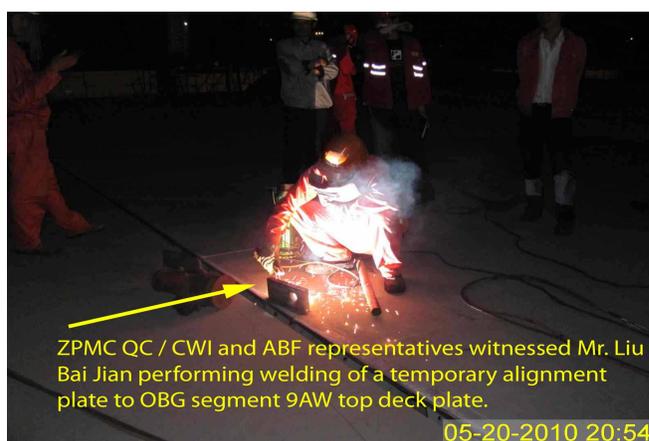
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Items observed on this date appeared to generally comply with applicable contract documents. Note: These inspections are being documented and tracked on "Verification Witness Request" documents. See the TL-6027 UT report for additional information concerning this inspection.

ABF issued "Inspection Notification Sheet" number 05202010-1 item #4 informing QA that on 05-20-2010 at 23:00 hours ABF Inspectors will be performing ultrasonic (UT) inspections of repaired welds OBW7C-002 which joins OBG side plates between OBG segment 7CW and 7DW. This weld is located in the trial assembly area. ABF/Sense UT Inspectors informed QA Inspector Mr. Mike Hasler that this weld repair area is accepted. This QA Inspector performed random visual and ultrasonic inspections utilizing scanning patterns A, B, C and D (AWS D1.5 Fig 6.7) and the weld repairs appear to comply with project specifications. Items observed on this date appeared to generally comply with applicable contract documents. Note: These inspections are being documented and tracked on "Verification Witness Request" documents. See the TL-6027 UT report for additional information concerning this inspection.

## Blast Shop #1

This QA Inspector along with Caltrans QA Inspectors Mr. Mike Hasler and Mr. Daniel Barrentine were informed by ZPMC Inspectors that the interior surfaces of North tower lift 1 elevations 38 meters through 47.6 meters have been grit blasting, prior to application of paint, and the steel surfaces are ready for QA Inspections. ABF and ZPMC Inspectors performed visual inspections of the areas indicated above and this QA Inspector visually observed several areas that have light areas of rust which indicates the grit blasting was not adequate to prepare the metal surfaces prior to application of paint and approximately 100 locations that required grinding to resolve visual weld spatter, arc strikes, shallow nicks, scrapes, and other minor surface rejections. The areas that require rework were marked with colored chalk and ZPMC workers were using electric grinders to remove the visually unacceptable areas and some areas have been identified by Caltrans Inspectors as needing magnetic particle inspections of the arc strike removal areas after they are removed.



## Summary of Conversations:

See Above.

## Comments

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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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