

**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-000476**Date Inspected:** 22-Aug-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 545**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Xu Lefeng**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:** Mock-Up Assembly 77M**Summary of Items Observed:**

The CALTRANS Quality Assurance (QA) Inspector, Alfredo Acuna was present for the fabrication of the Mock-up 77 meters elevation scheduled for this project at the ZPMC facility in Shanghai, China for the San Francisco Oakland Bay Self Anchored Suspension Bridge. At the start of the shift ABF QA inspector Kevin Dye relayed to the QA inspector that ZPMC found two tack welds which were cracked at the junction of the plate MA-1 and mp-15 skin panel E. Mr. Dye added that ZPMC decided to remove the cracked tack welds by grinding. After ZPMC removed the cracks on the tack welds they then performed magnetic particle testing (MT) of the areas where the cracked tack welds had been applied. The QA inspector suggested to Mr. Dye that magnetic particle testing should also be performed on the tack welds that were remaining on the splice for the skin panel E. Mr. Dye and ZPMC QA inspector Xu Jun agreed. The QA inspector observed ZPMC MT level II Cai Xin performing MT verifications at the tack welds at the junction of the skin panel E splice. Mr. Cai found another linear indication reported as crack. ZPMC removed the tack weld by grinding. The digital photo below shows ABF representative Kevin Carpenter giving a demonstration to ZPMC on how to perform MT verifications on the root area after grinding the root tack weld cracks.

ZPMC welder operator Shen Mei and welder Chen Ruyang were observed by the QA Inspector performing welding operations on the skin panel E.

Ms. Shen was observed by the QA inspector welding the root pass at the junction of the MA-5 to mp14 skin panel D following the approved welding procedure specification WPS-B-T-2321-B-P3-S-1. Base metal was designated as A-709 Grade 50. ZPMC was using the submerged arc welding (SAW) process in the flat (1G) position with the 4.8 mm diameter electrode designated as EM12K/AWS A5.17, brand name JW-3. The QA Inspector verified amperage, voltages, travel speed, preheat and heat interpass temperatures. The QA inspector found that the welding parameters recorded after ZPMC approved Certified Welder Inspector Xu Lefeng appeared to be in

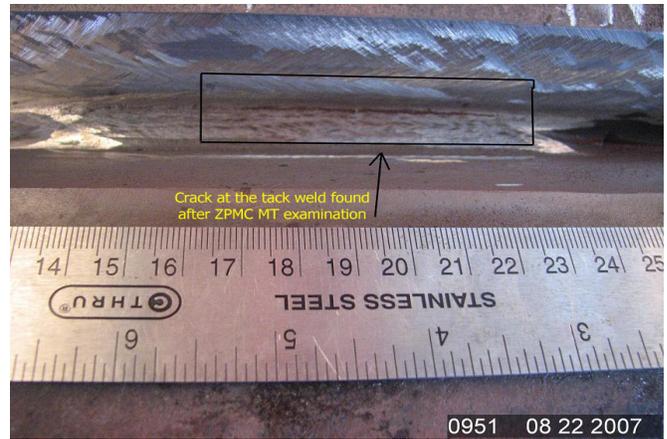
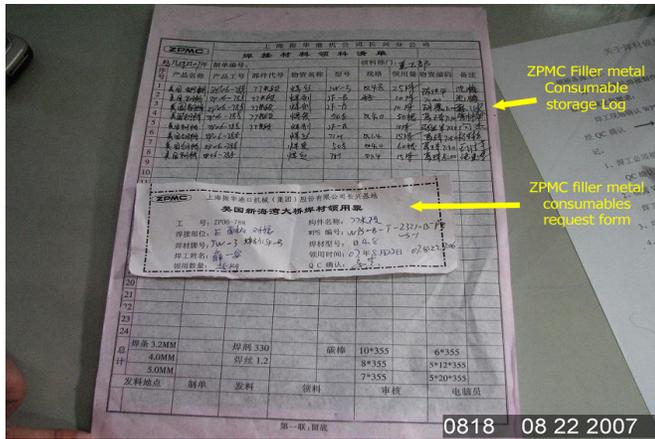
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accordance with the contract documents. ABF QA inspectors Kevin Dye and Dustin Brungardt were present during the testing.

ZPMC found weld porosity at the root pass. After grinding, ZPMC decided to use a repair procedure WPS-345-SMAW-1G(1F) Repair with the 3.2 mm and 4.0 mm diameter electrode to repair the excavated areas. Mr. Chen performed welding operations following the approved welding procedure specification WPS-345-SMAW-1G (1F) Repair using the Shielded Metal arc welding (SMAW) process in the flat (1G) position with the 3.2 and 4.0 mm diameter electrodes designated as E7018/AWS A5.1, brand name TL-508. The QA Inspector verified amperages, preheat and heat interpass temperatures. The QA inspector found that the welding parameters reported by Mr. Xu appeared to be in accordance with the contract documents.

The QA inspector Mike Hasler, ZPMC QA inspector Xu Jun and the QA inspector visited the ZPMC electrode storage areas located at the back of the Tower Mock up fabrication shop. Mr. Xu relayed to the QA inspectors that the ZPMC QC inspector at the welding area fills a welding consumable request form and a ZPMC worker takes the request form to the electrode storage personnel where the welding consumables are provided to the worker. The welding consumables storage personnel log the time, amount, type and purpose of the welding consumables. The digital photograph below shows the ZPMC electrode control forms used on the San Francisco Bay Bridge Project.



## Summary of Conversations:

As noted above.

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## 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.

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<b>Inspected By:</b>	Acuna,Alfredo	Quality Assurance Inspector
<b>Reviewed By:</b>	Cuellar,Robert	QA Reviewer

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