

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
690 Walnut Ave. St. 150  
Vallejo, CA 94592-1133  
(707) 649-5453  
(707) 649-5493

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-001099**Date Inspected:** 27-Dec-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**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:** Lu Jian Ping**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 Mock-up**Summary of Items Observed:**

CALTRANS Quality Assurance (QA) Inspector, Alfredo Acuna was present for the fabrication scheduled for this project at the ZPMC facility in Shanghai, China for the San Francisco Oakland Bay Self Anchored Suspension Bridge.

The QA Inspector had a conversation with ZPMC representative Fu Yu Hong. Mr. Fu informed to the QA inspector that ZPMC representative Li Li Ming was going to perform UT verifications to the floor beam splice FB-002-02-023 (At this location, Caltrans representative Joe Lanz found during his 10% ultrasonic examination a rejectable indication which ZPMC could not reject). Mr. Li intended to demonstrate how the variation on the angle from 68 to 71 degrees angle transducer and wedge affected the amplitude response from the indication (Caltrans had questioned the performance of the ZPMC transducer due to the difference on rating). ZPMC representative obtained a rating of 15 dB with the 68 degrees and + 11 dB with the 71 degrees angle transducer and wedge.

Note: The same indication mentioned above, ABF representative transducer angle was reported as 70 degrees with a rating of + 8 dB; Caltrans transducer angle wedge and transducer was reported as 71.5 degrees and a rating of + 9 dB was obtained at the same location.

The QA inspector requested ZPMC's calibration block and their transducers to evaluate the angles. Also the QA inspector asked for ZPMC's Transducer Manufacturer documentation (showing the transducer characteristics). After, Caltrans representatives Joe Lanz, Bruce Berger and Scott Croff evaluated the angles. The QA inspectors found that the angles were approximately 68 and 71 degrees angle transducers and wedges as stated by ZPMC representatives.

The QA inspector received a transducer Manufacturer data from ZPMC. The Data was in Chinese characters. See

# WELDING INSPECTION REPORT

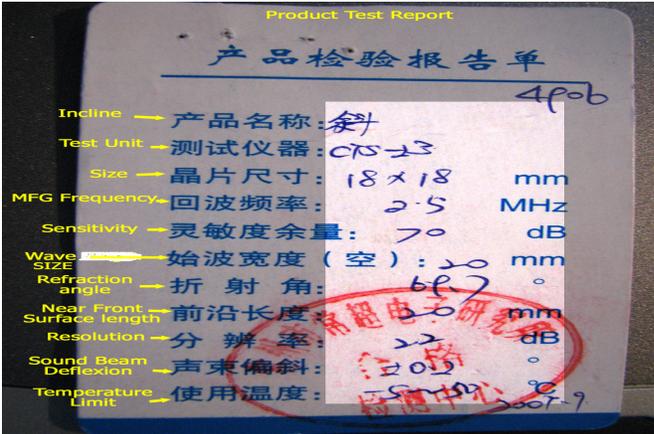
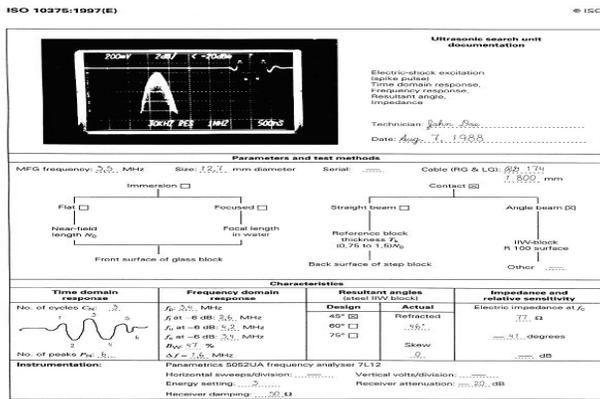
( Continued Page 2 of 3 )

the photograph below with translation (rough draft from the Assistance of Structures representative Chengwen Liu).

The QA inspector observed that the Transducer Manufacturer data appeared to be insufficient to make a comparison to the gamma Krautkramer transducer because the information did not contain the time and frequency response and impedance as shown on the photograph below (Data required by International Standard Organization (ISO) 10375: 1997 Characterization of search units and sound field and American Society of Testing Materials ASTM-E 1065).

The QA inspector had a conversation with Mr. Buehler. The QA inspector asked Mr. Buehler if ABF knew the technical characteristic of ZPMC's transducers. Mr. Buehler said that he did not know, but the Chinese transducer manufacturer was connected with Krautkramer. He added that AWS D1.5 (2002) does not require identify the transducer characteristic and ZPMC's transducers were in compliance AWS D1.5 (2002). Mr. Buehler also said that for the ABF Mock-up, he UT after ZPMC and he concurred with 90% of the indications marked by ZPMC. Mr. Buehler said that it was unacceptable to have a more 2 dB of difference between transducers and ABF position was reject the indication found on the floor beam.

The QA inspector suggested to ABF representative to search for ZPMC's transducer characteristics data (Example: Time and frequency domain responses: Pulse duration, pulse length, peak frequency, center frequency and bandwidth following standards as ISO or ASTM) so the differences in between transducers responses are properly assessed.



Item Description	WBS	Dwg No.	Status
1 Skin A and B Lower section UT Results 114 M Lower ZPMC found UT rejectable indications at the junction of the skin B and A at the lower side of the 114 Tower Mock-up splice which exceeded 10 % of the weld length. ZPMC reported 14 rejectable indications at the weld # 4 at the above location. See a draft of ZPMC UT report below.			

# WELDING INSPECTION REPORT

( Continued Page 3 of 3 )

REPORT OF ULTRASONIC									
DATE		PAGE		UNCONTINUED		CONTINUED		REMARKS	
7-12-06		PAGE		UNCONTINUED		CONTINUED		REMARKS	
7-12-06		PAGE		UNCONTINUED		CONTINUED		REMARKS	
102	A	25	3	71	130	58	20	0	0
103	A	3	4	45	14	40	20	15	
104	A	4	3	15	115	40	20	15	
105	A	4	5	15	76	26	20	670	
106	A	6	1	15	112	39	20	125	
107	A	6	1	80	112	39	20	85	
108	A	6	1	10	112	39	20	150	
109	A	6	1	25	115	40	20	170	
110	A	6	1	15	115	40	20	170	
111	A	5	5	15	56	30	0	285	
112	B	32	4	7	70	30	20	770	
113	B	32	3	4	30	60	20	12	
114	B	32	2	7	175	45	20	125	
115	B	32	2	10	105	48	20	130	
116	B	32	4	7	70	30	20	200	



2 Heat straightening operations at the Interior splice MA-58  
 The QA inspector observed ZPMC performing heat straightening operations to the interior splice for the 114 M Tower splice Mock-up. The QA inspector observed that ZPMC's heat straightening operations appeared to be in accordance with HSR approved by the Engineer.



**Summary of Conversations:**

As noted 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 Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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