

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-001420**Date Inspected:** 11-Feb-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**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:** Zhu Zhong Hai**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:** SAS superstructure**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Joe Lanz arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions during first shift. While on site the QA Inspector observed and/or discovered the following.

New Tower Shop

89 Meter Mockup diaphragms, MU58-MA-27:

The QA Inspector randomly observed ZPMC welding personnel Pan Ming, ID 066673 welding corner stiffener diaphragm continuity plate of assembly MUB-AA21 as shown on drawing MUSB-AA22-P939 fillet weld. The welding was performed in the 3F (vertical) position utilizing the gas shielded flux cored arc welding (FCAW-G) process with a 1.4mm diameter electrode, filler metal appeared to be E71T-1, brand name; Supercored 71H. The QA Inspector observed the ZPMC QC Certified Welding Inspector Zhu Zhong Hai monitoring the welding and the ZPMC QC inspector Zhu Feng was verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification WPS-B-T-2133. The QA Inspector observed that the preheat and welding parameters of 200 amps, 25.3 volts and travel speed of 117mm per minute as measured by the QC Inspector appear to be within the WPS ranges. The work observed by QA Inspector appears to meet the minimum requirements in accordance with the WPS and contract documents.

The QA inspector observed that two corner stiffener plates, MUSB-SA194 were installed over skin plate corner complete joint penetration welds at skin plate B to C, assembly MA23 and MA24 and at skin plate C to D,

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assembly MA22 and MA23. Mr. Xu Jun of ZPMC reported that the Ultrasonic testing was complete on the skin corner welds. The QA inspector asked to review the NDT reports for the welds as Mr. Shen Xue Jun reported on February 4, 2008 that the ultrasonic testing was complete on the 89 meter Mockup skin plate complete joint welds Skin plate A to B and B to C, and relevant indications were marked for repair on each weld. The ZPMC NDT technician, Xue Hai Rang supplied the QA inspector with only one ultrasonic test report for the two welds and stated the second report had not been completed at this time. The ultrasonic test report stated the weld was found acceptable on January 30, 2008. The QA inspector asked Mr. Xue Hai Rang why the report stated the weld was acceptable on January 30 and Mr. Shen Xue Jun reported rejectable indications were marked for repair on February 4, 2008. Mr. Xue Hai Rang reported that the date on the report was the day initial testing was performed and the indications found and the ultrasonic testing of the repairs was not recorded on the report.

The QA inspector noted that AWS D1.5-2002 paragraph 6.20.1 states "A report form which clearly identifies the work and the area of inspection shall be completed by the ultrasonic technician at the time of inspection." Paragraph 6.20.2 states "Before a weld subject to ultrasonic testing by the contractor for the Engineer is accepted, all report forms pertaining to the weld, including any that show unacceptable quality prior to repair, shall be submitted to the QA Inspector."

The QA inspector noted that the QC NDT personnel did not mark the piece marks and the Y and X locations on the pieces tested as required by AWS D1.5-2002 paragraph 6.19.2 and the rejectable indications were not marked as required by AWS D1.5-2002 paragraph 6.19.9.

The METS QA Lead Inspector Mr. Alfredo Acuna and QA Task Leader Mr. Cochran were notified of the above issues and an Incident Report (TL-15) was issued.

The QA inspector observed magnetic particle testing (MT) of corner stiffener partial penetration weld root passes. The piece marks appeared to be subassemblies MUB-MA21 to skin plates B, C and D, weld numbers 39, 40, 47 and 49. The welds were examined by ZPMC QC/NDT personnel Zhou Dong Yun using magnetic particle AC yoke for 100 % of the weld length. The QA inspector noted that no relevant indications were discovered during magnetic particle testing. The QA inspector did concur with the QC/NDT inspector's assessment. Work was completed on this date and appears to be in general compliance with contract documents and AWS D1.5-02.

The QA inspector performed ultrasonic verification testing of complete joint penetration corner welds on Skin B, subassembly MUSB MA24 to Skin C, subassembly MUSB MA23, weld numbers 3A and 3B, weld detail MWT94 and Skin C, subassembly MUSB MA23 to Skin D, subassembly MUSB MA22, weld numbers 4A and 4B, weld detail MWT93. The ultrasonic testing (UT) was performed to verify the weld and testing meet the requirements of the contract documents and AWS D1.5-2002. The weld and base metal were scanned utilizing a Krautkramer Branson USN 60 for the following scans. The base metal lamination check was performed with a 1.0" dia. round 2.25 MHz transducer. The bottom quarter and middle half shear wave scan was performed with a 0.75" x 0.625" 2.25 MHz transducer on a 70 degree angle wedge from face A and B. The top quarter shear wave scan was performed with a 0.75" x 0.625" 2.25 MHz transducer on a 45 degree angle wedge from face A and B. Scanning patterns A, B, C, and E were utilized. Following is a list of welds examined and acceptance in accordance with AWS D1.5- 2002 table 6.3 and the contract documents.

a) Welds 3A and 3B, 90mm thick, Y location = 0, Length tested = 150mm.

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b) Welds 4A and 4B, 90mm thick, Y location = 0, Length tested = 150mm. Note; weld was tested from face B only at this time. There was no access to face A.

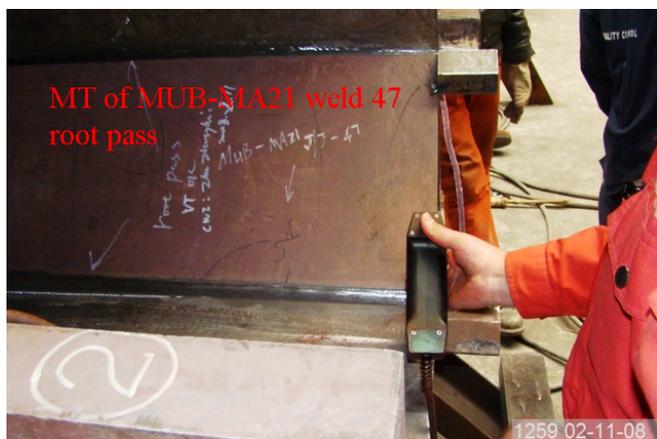
The QA noted the NDT that was performed by ZPMC personnel Xue Hai Vang and the welds were not marked in accordance with AWS D1.5-2002 section 6.19 which states an X line, a Y location and the piece mark will be marked on face A. A nonconformance report was issued previously.

The QA inspector concurred with the NDT level II technician's assessment. An Ultrasonic Test Report (TL-6027) for the welds that were tested was generated for this date.

Cutting Facility

The QA inspector observed there was no work performed in the cutting facility on this date. The previously cut plate was stored on wood dunnage and appeared to be properly marked in accordance with contract requirements.

The QA inspector observed that completed floor plates for the orthotropic box girders were stored immediately outside the cutting facility. The floor beams were stored off the ground on wood and were covered with tarps.



Summary of Conversations:

No relevant conversations on this date.

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:	Lanz, Joe	Quality Assurance Inspector
Reviewed By:	Cochran, Jim	QA Reviewer
