

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-001179**Date Inspected:** 03-Jan-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 1300**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 2330**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China

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|------------------------------------|------------|----------------------------------|----------------------|----|
| CWI Name: | Cui Yi Ru | 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 Mockup | |

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 second shift. While on site the QA Inspector observed and/or discovered the following.

Bay 1

Deck trial mockup

The QA inspector measured the locations of macroetch samples to be removed from the deck trial mockup partial penetration U-rib welds. The Y location was measured from the end of the U-rib weld. Locations are as follows.

Deck Trial Mockup MU-3

| Sample number | Y location | Sample number | Y location |
|---------------|------------|---------------|------------|
| 1A1 | 25mm | 1B1 | 20mm |
| 1A2 | 5,420mm | 1B2 | 6,300mm |
| 1A3 | 8,610mm | 1B3 | 12,600mm |
| 2A1 | 20mm | 2B1 | 20mm |
| 2A2 | 4,540mm | 2B2 | 5,410mm |
| 2A3 | 9,140mm | 2B3 | 11,980mm |
| 3A1 | 20mm | 3B1 | 50mm |
| 3A2 | 4,220mm | 3B2 | 7,220mm |

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|-----|----------|-----|----------|
| 3A3 | 10,980mm | 3B3 | 8,640mm |
| 4A1 | 25mm | 4B1 | 20mm |
| 4A2 | 4,630mm | 4B2 | 2,950mm |
| 4A3 | 11,950mm | 4B3 | 9,630mm |
| 5A1 | 20mm | 5B1 | 35mm |
| 5A2 | 3,730mm | 5B2 | 5,970mm |
| 5A3 | 11,300mm | 5B3 | 10,080mm |

Bay 3 and 7

OBG Beams

The QA inspector performed ultrasonic verification testing of side plate and Floor beam complete joint penetration welds. The ultrasonic testing (UT) was performed to verify the welds and testing performed meets 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 weld 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. 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) SP021-01-002, 14.5mm thick, Y location = 0mm, Length tested = 164mm.
- b) SP029-01-002, 14.5mm thick, Y location = 0mm, Length tested = 164mm.
- c) FB004-02-042, 20mm thick, Y location = 50mm, Length tested = 100mm.
- d) FB013-04-042, 20mm thick, Y location = 0mm, Length tested = 100mm.

The QA inspector did not concur with the ZPMC NDT level II technician Xue Hai Rang's assessment of welds SP021-01-002, SP-029-01-007 and FB013-04-042. The QA inspector observed class A rejectable indications in the three welds that were found acceptable by Xue Hai Rang. The QA inspector marked the weld locations to have the weld reinforcement on face A and face B to allow verification of the indication and the ZPMC QC inspector Xu Jun was notified of the possible indications. The QA noted the NDT that was performed by ZPMC personnel Xue Hai Rang did not have the welds 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. An Issue Report (TL-15) was issued previously. An Ultrasonic Test Report (TL-6027) for the welds that were tested was generated for this date.

The QA Inspector randomly observed ZPMC welding personnel Yang Xuhe, ID #057795 tack welding floor beam stiffener to web fillet welds. The piece mark appeared to be FB007-04, weld numbers 022 and 023. The welding was performed in the 2F (horizontal) position utilizing the shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal appeared to be E7018, brand name TL-508. The QA Inspector periodically observed the ZPMC QC Certified Welding Inspector Cui Yi Ru monitoring the welding and the ZPMC QC Certified Associate Welding Inspector Li Zhijiang verifying that the welding parameters and the minimum pre-heat of 20° Centigrade were in accordance with the Welding Procedure Specification WPS-B-P-2112-FCM. The QA Inspector observed that the preheat and welding parameters of 170 amps, 26.2 volts, 115 millimeters per minute travel speed measured by the QC Inspector appeared to be within the WPS ranges. The welding

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parameters and work observed by QA Inspector appear to meet the minimum requirements in accordance with the WPS and contract documents.

The QA Inspector randomly observed ZPMC welding personnel Wang Li, ID 044772 tack welding Floor beam complete joint penetration splice. The piece mark appeared to be FB021-01, weld number 079. The welding was performed in the 1F (Flat) position utilizing the shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, the filler metal appeared to be E7018, brand name TL-508. The QA Inspector observed ZPMC QC Certified Welding Inspector Cui Yi Ru monitoring the welding and the ZPMC QC inspector Xiang Feng Fong was verifying that the welding parameters and the minimum pre-heat of 20° Centigrade were in accordance with the Welding Procedure Specification WPS-B-P-2111. The QA Inspector observed that the preheat and welding parameters of 175 amps, 24.0 volts, 110 millimeters per minute travel speed measured by the QC Inspector appeared to be within the WPS ranges. The welding parameters and work observed by QA Inspector appear to meet the minimum requirements in accordance with the WPS and contract documents.

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.

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