

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-001730**Date Inspected:** 14-Mar-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Sun Wei**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 Deck Panels**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Sherri Brannon 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. While on site the QA Inspector observed and/or discovered the following.

Bay 1-OBG Deck Panels (Gantry 1):

QA Inspector Brannon observed the Production Monitoring Test (PMT) U-rib welding and welding for Production Panel DP006-001, closed rib welds in Bay #1, Gantry 1. ZPMC welding operators performed gantry machine, gas metal arc welding (GMAW) for the root and submerged arc welding (SAW) for the cover pass. Qualified welders were observed welding in the 2G (horizontal) position utilizing gas metal arc welding (GMAW) process for the root pass with a 1.4mm diameter electrode, filler metal brand JM-56, class ER70S. ZPMC used a dual process WPS-B-T-2342-U1 (U-rib)-3 that was posted as the welding procedure specification (WPS) for closed U-rib to deck panel welding. The ambient temperature in bay #1 was recorded at 12 degrees Celsius prior to welding. The following weld joint and welders were recorded for the PMT U-rib welding and for production panel DP006-001. Weld joint (wj)-#1 Mr. Chen Jie ID#059468, wj-#2 Mr. Xiang Jie ID#059378, wj-#3 Mr. Jiang Ting Guang ID#062265, wj-#4 Mr. Song Yin Shu ID#059421, wj-#5 Mr. Zhang Shao Hui ID#059403 and wj-#6 Mr. Mr. Xiang Huan Feng ID#059416. Gantry operator was Mr. Shi tia Gang for the GMAW and Mr. Zhang Xian Long for the SAW process. QA Inspector Brannon observed tears and fins on weld joints prior to GMAW welding. Areas were shown to ZPMC personnel prior to welding.

Production Monitoring Test (PMT)

Welding started at 0916 and completed at 0918, the following welding variables were recorded at, amperage 344

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to 367, voltage 30.5 to 31.5 with a travel speed of 525 mm/min for the GMAW. Welding started at 1323 and completed at 1324, the following welding variables of the (PMT) were recorded at, amperage 671 to 689, voltage 24.6 to 25.8 with a travel speed of 520 mm/min for the SAW. All three closed ribs were welded simultaneously weld joints 1~6.

Production panel DP006-001

Welding started at 0933 and completed at 1050, the following welding variables were recorded at, amperage 345 to 376, voltage 30.4 to 31.2 with a travel speed of 530 mm/min for the GMAW. Weld joints #3, 4, 7 & 8 were welded 1st and weld joint #1, 2, 5 & 6 were welded 2nd for the 4 rib panel. Welding started at 1414 and stopped at 1441 due ZPMC running out of wire for weld joints 1, 2, 5 & 6 not completed at the end of this shift, the following welding variables were recorded at, amperage 668 to 682, voltage 23.9 to 25.2 with a travel speed of 520 mm/min for the SAW. Weld joints #1, 2, 5 & 6 were welded 1st but not completed and weld joint #3, 4, 7 & 8 were welded 2nd for the 4 rib panel and not completed at the end of this shift. Note: QA Inspector Brannon noticed temporary bracing tacked at the run off tab. Per ABF Peter Shaw for weld joints 1, 2, 5 & 6 where ZPMC had stopped, ZPMC will grind the stop area's and performed prior to start of welding.

Note: A incident report was generated with the following. The Contractor performed repair welding to the closed rib to box shell plate partial joint penetration groove weld that has a gas metal arc welding root pass. In an effort to provide a uniform submerged arc welding cover pass, ZPMC elected to perform flux cored arc welding (FCAW). The FCAW took place in the run off tab area approximately 65mm in length and extended into the U-rib deck panel. The Contractor performed magnetic particle testing and found a linear indication in the FCAW repair. The Contractor removed the indication and made a 2nd repair using the FCAW process. This occurred on U-rib numbered U16 weld DP006-001-008. This discrepancy violates AWS D1.5 2002 Chapter 1 section 1.9 Welding Procedure Specification (WPSs) and Special Provisions, Section 10-1.59 Steel Structures, Subsection Welding of Closed Ribs to Box Shell Plate (p. 328): "Repair welding methods and procedures shall be approved by the Engineer." Contractor's Welding Quality Control Plan.

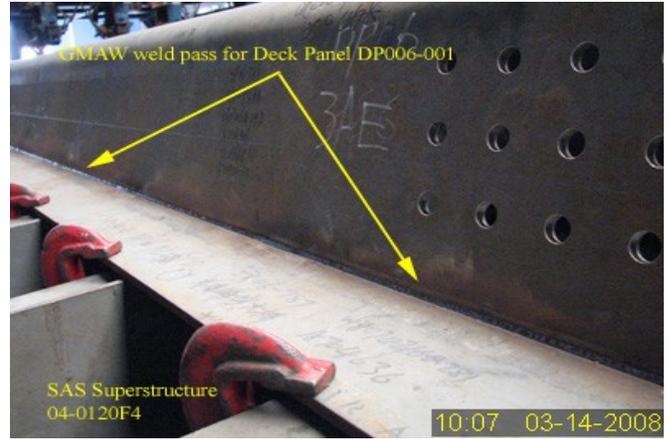
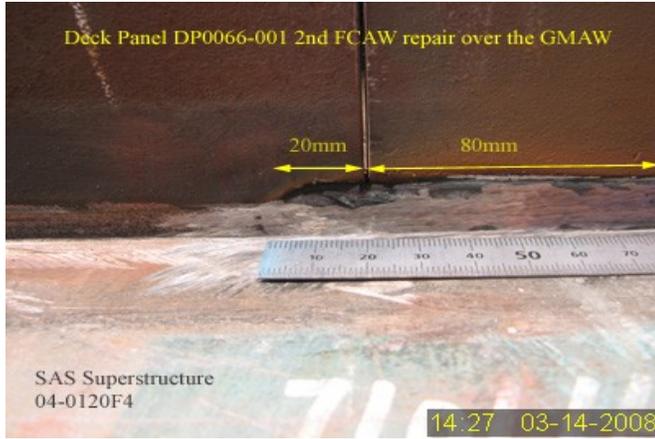
OBG Deck Panel (PMT)

QA Inspector Brannon performed visual inspection (VT) on Production Monitoring Test (PMT) DP043-001 U-rib welding. QA Inspector Brannon (VT) a 500mm section marked by ZPMC personnel. QA Inspector Brannon observed in weld #1 - 235mm of overlap (OL) and 55mm underfill, weld #2 - ok, weld #3 - ok, weld #4 - ok, weld #5 - 85mm underfill and weld #6 - ok.

The following digital photograph below illustrates observation of the activities being performed.

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Summary of Conversations:

As stated within the report.

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: Brannon, Sherri

Quality Assurance Inspector

Reviewed By: Cuellar, Robert

QA Reviewer