

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-002209**Date Inspected:** 11-Apr-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1630**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Chih Chen**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:** Orthotropic Box Girder (OBG)**Summary of Items Observed:**

On this date, Caltrans Office of Structural Materials (OSM) Quality Assurance (QA) Inspector Edward Leach was present to randomly observe and document the welding and Quality Control (QC) functions performed by ZPMC personnel relative to the fabrication of SAS Superstructure project. While on site, the QA Inspector noted the following work.

New OBG Shop

The QA Inspector made periodic observations in the new OBG shop and observed ZPMC personnel performing splice welding and bevel prep operations for various A709M, grade 345F2 OBG side panels. The QA Inspector observed ZPMC welding personnel Sun Gua Zun welder identification (ID# 058100) performing single arc weld passes while utilizing the sub-merged arc welding (SAW) process for the weld splice on segment 020A-026, side panel 080D to side panel 68B. The plate numbers are designated 111C to 103D. The QA Inspector performed a random verification of welding parameters and noted approximately 485 amperes, 32.3 volts and a travel speed of 375mm per minute. The QA Inspector also noted the electrode type as JW-3, EM12K, 4.8mm diameter welding wire. The QA Inspector verified the interpass temperature to be above 60 degree Celsius with a 93 degree Celsius temperature indicating marker. Electric cooper heat pads were attached to the bottom side of the plate to maintain the pre-heat. The QA Inspector observed ZPMC QC personnel Chih Chen monitoring the work in progress. Mr. Chen informed the QA Inspector that the welding is being performed to the requirements of welding procedure specification (WPS)-B-T-2221-B-L2C-S-1. The QA Inspector referenced a copy of this procedure posted in the shop and observed the recorded welding parameters appeared to comply with this welding procedure. The QA Inspector noted a total of five personnel at this welding station performing various duties to include removing slag, operating amp/volt meter, refilling flux hopper. Two of the five personnel were ZPMC QC personnel. The

WELDING INSPECTION REPORT

(Continued Page 2 of 3)

welding and workmanship randomly observed at this location appeared to comply with the contract specifications.

Also in the same general area the QA Inspector observed ZPMC personnel Shi Guijv performing flame cutting operations for bevel preparation on SP055B and SP067B (see digital photo below). The plate numbers are 97B and 103B. The QA Inspector used a bridge cam gauge to perform a random verification of bevel and determined that the work appeared to comply with the contract specifications. The QA Inspector also observed bevel preparations in progress on SP74B and SP62B, plate 107C and 100D.

During a random observation the QA Inspector observed ZPMC welding personnel Gu Xue Ying (ID D45218) utilizing the Shielded Metal Arc Welding (SMAW) process in the flat position to place tack welds in the single Vee weld joint between bottom plates designated as BP13A and BP14A (see digital photo below). The segment designation at this location is SEG017A-003. The QA Inspector observed that the welder was using TL-508, E7018, 3.2mm diameter electrode to complete the tack welds. The QA Inspector also noted WPS-B-P-2211-B-U2, Revision 1 as the welding procedure in use for this location. As the tack welding progressed, it was discovered by ZPMC QC Inspector Chih Chen that there was an offset between the plates of about 4mm. The QA Inspector observed no tack welds in this area at this time and observed ZPMC installing a hydraulic jacking fixture underneath the work to correct the offset. During a later observation, the QA Inspector used a straight edge ruler and verified the offset was corrected. The work in progress and the fit-up at this location appeared to comply with the contract specifications and the noted WPS.

In the new OBG shop the QA Inspector observed ZPMC personnel setting up electric cooper heat blankets along the top side of the weld splice for segment designation 014A-001. It was noted at this time that ZPMC previously completed the root pass with the Flux Cored Arc Welding (FCAW) process and was preparing to set up a portable SAW machine for the filler and cover passes. The QA Inspector also noted the plates in this segment designated as plate 78A to 37A and side panel designations SP13A to SP21A. During a last observation, the QA Inspector observed in-process SAW welding in the flat position with JW-2 EM12K, 4.8mm diameter electrode. The welding was being performed by ZPMC welding personnel Sun Gua Zun, welder ID# 058100. During a random measurement of welding parameters the QA Inspector recorded approximately 500 amperes, 32.5 volts and a travel speed of 350mm per minute. The QA Inspector referenced a copy of posted in the shop and observed the recorded welding parameters appeared to comply with this welding procedure. The QA Inspector observed ZPMC QC Inspector Chih Chen measure the pre-heat with a thermal heat gun and record 82 degrees Celsius. Additional personnel were present to perform the duties of interpass cleaning and re-filling the flux hopper. Based on these observations, it appeared the work in progress was in general compliance with the contract specifications and the referenced WPS.

WELDING INSPECTION REPORT

(Continued Page 3 of 3)



Summary of Conversations:

As noted above in 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:	Leach,Ed	Quality Assurance Inspector
Reviewed By:	Hager,Craig	QA Reviewer
