

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-002565**Date Inspected:** 22-May-2008**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:** Changxing Island**CWI Name:** See below**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:** Skin plates**Summary of Items Observed:**

The name of ABF Certified Welding Inspector (CWI) are Mr. Wang Cheng Jun, Mr. Yang Yi Heng, Mr. Kong Xian Hui and Mr. Dai Zing Wen.

Heat straightening on skin plate (Tower bay#1) Caltrans Quality Assurance Inspector (QAI) observed few Zhenhua Port Machinery Co (ZPMC) heat straightening operators performed heat straightening with ZPMC Heat Straightening Report (HSR) on plate numbered P210, P287, P150 and P611. The heating temperature is maximum 650 C (1200 F) and cool in still air. All the plates have been monitored and recorded and inspected by ZPMC QC required within from 0.5mm to 1mm off set (Caltrans requirement Max 3mm) after heat straightening to cooled to ambient temperature. Based on Caltrans QAI observation, no discrepancies were noted.

Magnetic particle testing (MT) on splice welds (Tower bay#1): Two ZPMC MT technicians performed QC 25% MT testing on two splice weld of skin plates. The test splice weld numbered # SSDA-SA179D/E-19A and SSD1-SA173A/K-16A. The grease, rust, scale and other moisture have been removed by ZPMC workers on both side 200mm of splice weld areas prior MT testing. The power source of MT testing is used electromagnetic yoke with Alternating Current (AC) made by Magnaflux. The detection media is used dry red ferromagnetic particles. The technique uses dry particles that are applied while the magnetizing force is on. A field indicator used to check the magnetic filed direction and to ensure adequate field strength during MT testing. The 25% MT testing of three splice weld areas appeared to be in compliance with the requirements of AWS D1.5 (2002) and Caltrans contract documents.

Submerged Arc Welding (SAW) process on skin plate (Tower Bay#1 and Bay#2): Caltrans QAI observed six ZPMC welding operators performed semi-automatic SAW on the splice weld of ASTM 709 345 skin plate numbered P805 to P312 with 45mm and 60mm wall thickness, weld# SSD1-SA18E/E-1, SSD1-SA18E/E-20,

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SSD1-SA18E/E-3A, SSD1-SA18D/E-3, SSD1-SA18D/E-5A and SSD1-SA18D/E-2 (Bay#1), skin plate numbered P838 to P853 with 45mm wall thickness, weld# ESD1-SA80A/E—43B (Bay#2), skin plate numbered P1405 to P1401 with 45mm wall thickness, weld# ESD1-SA294A/G-4B (Bay#2), skin plate numbered P602 to P1561 to P598 with 90mm wall thickness, weld# ESD1-SA17A/E-34A and ESD1-SA77A/E-36A (Bay#2). The weld designed is a double -V-groove with welding conducted in the in flat position (1G) with proper 4.8mm diameter wire feed electrode JW3 and flux/J1-B, made by China Company and completed with approximate five pass. The parameters used for SAW welding of splice weld was conducted in accordance with Caltrans approved WPS-B-T-2221-B-U3. The semi-automatic SAW was monitored and recorded by ABF Certified Welding Inspector (CWI) Mr. Wang Cheng Jun, Mr. Yang Yi Heng, Mr. Kong Xian Hui and Mr. Dai Zing Wen. Based on Caltrans QAI observations, no discrepancies were noted.

Ultrasonic Testing (UT) on repair butt joint weld of skin plate (Tower bay#1 & bay#2): Caltrans QA observed Zhenhua Port Machinery Co (ZPMC) two NDT level II technician performed straight beam and angle beam UT on splice welds of skin plate. The weld numbered # SSD1-SA1790B/E-3B (Bay#1) and SSD1-SA179B/E2B (Bay#1). The metrical of skin plate is ASTM 709 345 wall thickness from 45mm and the test surface has been cleaned. First processes, an 250mm range reflection has calibrated on “A scan” digital display instrument Parametric model Epoch XT was used, a straight beam search unit, is a 25mm diameter x 2.5 MHz single transducer applied a source of compression waves, and penetrated into both side head affected zone of splice weld for laminar discontinuities scanning. Second processes, an angle beam search unit, is an angle wedge 70 degrees applied a source of shear waves, and passes through base weld for the detection of discontinuities. The distance and sensitivity of straight beam and angle beam are calibrated with the International Institute of welding (IIW) ultrasonic reference block. The SWUT test operated and recorded by ZPMC technicians appeared to be in general compliance with requirements of AWS Structural Welding Code D1.5 2002.

Summary of Conversations:

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

Inspected By:	Pau,Wai	Quality Assurance Inspector
Reviewed By:	Cochran,Jim	QA Reviewer
