

**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-002147**Date Inspected:** 18-Apr-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 735**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1410**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**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector, Mahlon Lindenmuth, 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:

Caltrans QA Inspector,Lindenmuth, monitored the Production Monitoring Tests (PMT) and production welding for the OBG Deck Panels U-rib welding.

The weld joint is a single bevel Partial Joint Penetration (PJP) weld that joins the U-rib to the deck plate. The Production Monitoring Test (PMT) is performed prior to the production of the Deck Panels (DP).

PMT #1 consists of (2) ribs totaling (4) weld joints(wj), numbered wj1 thru wj4. Welding was performed on Gantry 1 and represents production for Deck Panels (DP) DP-302-001 and DP-300-001.

The following is information that pertains to the welding of the PMT #1. Listed below are the WPS,welding essential variables,welders and weld joint number. Followed by a short summary:

\*WPS: WPS-B-T-2342 (Dual Process GMAW root pass SAW fill and cover pass)

Welding variables minimum maximum range recorded is as follows:

GMAW-Volts:30-31.4 Amperage:354-370 Travel Speed:532mmpm

SAW-Volts:24.9-25.4 Amperage:672-684 Travel Speed:520-523mmpm

Base Metal/Ambient Temperature: 16/15 degrees C

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\*Weld joint#(wj#)/welder(ID):

wj1-Gaoxing dong(054361) wj2-Jiang ting guang(062265)

wj3-Zhang hui(059403) wj4-Liung huang feng(059416)

ZPMC Quality Control (QC) performed visual inspection of the GMAW weld pass and the subsequent SAW weld pass. ZPMC QC noted both welds as visually compliant. ZPMC QC also performed Ultrasonic Testing of all of the weld joints and noted them as compliant. Caltrans QA Inspector,Lindenmuth, visually reviewed the GMAW weld pass and the SAW weld pass and noted them as compliant with contract documents. Upon completion of the visual review Caltran QA Inspector,Lindenmuth, marked areas of the PMT that will have macro-etch samples removed.

Production Welding of DP302-001

The following is information that pertains to the welding of Deck Panel DP302-001 (3 ribs). Listed below are the WPS,welding essential variables,welders and weld joint number. Followed by a short summary:

\*WPS: WPS-B-T-2342 (Dual Process GMAW root pass SAW fill and cover pass)

Welding variables minimum maximum range recorded is as follows:

GMAW-Volts:30.2-30.8 Amperage:365-375 Travel Speed:530-535mmpm

SAW-No SAW welding performed

Base Metal/Ambient Temperature: 19 degrees C

\*Weld joint#(wj#)/welder(ID)/U-rib#:

wj1-Gao xin dong(059361) wj2-Jiang ting guang(062265) U-rib 191

wj3-Zhang hui(059403) wj4-Liung huang feng(059416) U-rib 192

wj5-Zhang hui(059403) wj6-Liung huang feng(059416) U-rib 193

The GMAW weld passes have been completed on all six weld joints. SAW welding had not begun on the U-ribs during the AM shift.

Production Welding of DP300-001

The following is information that pertains to the welding of Deck Panel DP300-001 (3 ribs). Listed below are the WPS,welding essential variables,welders and weld joint number. Followed by a short summary:

\*WPS: WPS-B-T-2342 (Dual Process GMAW root pass SAW fill and cover pass)

Welding variables minimum and maximum range recorded is as follows:

GMAW-Volts:30.1-30.4 Amperage:363-380 Travel Speed:530-535mmpm

SAW-No SAW welding performed

\*Weld joint#(wj#)/welder(ID)/U-rib#:

wj1-Gao xin dong(059361) wj2-Jiang ting guang(062265) U-rib 152

wj3-Zhang hui(059403) wj4-Liung huang feng(059416) U-rib 143

wj5-Zhang hui(059403) wj6-Liung huang feng(059416) U-rib 138

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Approximately 8750mm of GMAW weld pass had been completed on Weld Joints # 1,2,5 and 6 before ZPMC personnel inadvertently unplugged power to Gantry 1. This caused a complete stoppage of the welding at 1315. The abrupt stop caused the weld puddle to extend beyond the joint onto the adjacent base metal. ZPMC moved the weld heads to U-rib 143 and began grinding on the affected areas on Weld Joints 1,2,5 and 6. Grinding began at 1327. The welding of Weld Joints 3 and 4 began at 1327 and had completed approximately 190mm of the joint before the power to Gantry 1 was interrupted again by ZPMC personnel inadvertently removing the plug. The abrupt stop caused the weld puddle to extend beyond the joint onto the adjacent base metal. ZPMC personnel began grinding the affected areas. Caltrans QA Inspector, Lindenmuth measured the depth of each excavation for each weld and did not note any depths that exceeded 2mm. No SAW was performed during the AM shift.

Gantry 2 was idle during the AM shift.

### **Summary of Conversations:**

### **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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<b>Inspected By:</b>	Lindenmuth,Mahlon	Quality Assurance Inspector
<b>Reviewed By:</b>	Cuellar,Robert	QA Reviewer

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