

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-001582**Date Inspected:** 27-Feb-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 800**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1745**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Sun Wei & Chen Xi**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 & 89 M Mock-up**Summary of Items Observed:**

This Quality Assurance Inspector (QAI) observed various fabrication and welding practices at Zhenhua Port Machinery Company (ZPMC) on Changxing Island in Shanghai, China today for the Self Anchored Suspension Bridge for San Francisco, California.

Orthotropic Box Girder (OBG)

In Bay 1 this QAI observed the milling of plate edges, beveling of partial joint penetration (PJP) preparations, machining of 2 millimeter radius on edges of plates and drilling of bolt holes using hardened washer guides of un-bent closed u-rib plates. This QA Inspector also witnessed the simultaneous bending of the close u-rib panels in compliance with the special provisions. Welding was also being carried out on the panels inside of the bent closes u-ribs. Gas metal arc welding (GMAW) of the root and submerged arc welding (SAW) final weld passes were also being made to the production mock up test (PMT) and closed u-rib to deck plate welds.

This QAI performed the final visual testing (VT) and ultrasonic testing (UT) of the partial joint penetration welds on the first Production Monitoring Test (PMT) from Tuesday. The VT found and UT results were as follows:

Weld Joint #1 VT no indication noted; UT no indications noted.

Weld Joint #2 VT over size (OS) 310mm @ Y 0mm, OS 135mm @ Y 360mm, lack of fusion (LF) 10mm @ Y 110 and LF 5mm @ Y190; UT 80mm @ Y 60mm between 70% and 80% penetration with 3.3 lack of penetration (LOP) at the greatest point; UT 7mm @ Y 180mm between 70% and 80% penetration with 3.0 LOP at the greatest point.

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Weld Joint #3 VT over lap (OL) 70mm @ Y 55mm; UT 15mm @ Y 40mm between 70% and 80% penetration with 3.4 LOP at the greatest point.

Weld Joint #4 VT under fill (UF) 8mm @ Y 185mm; UT no indications noted.

Weld Joint #5 VT UF 5mm @ Y 130mm; UT 18mm @ Y 55mm between 70% and 80% penetration with 3.2 LOP at the greatest point.

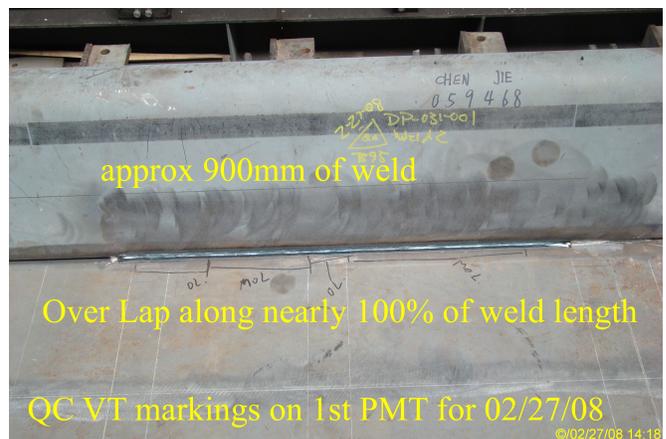
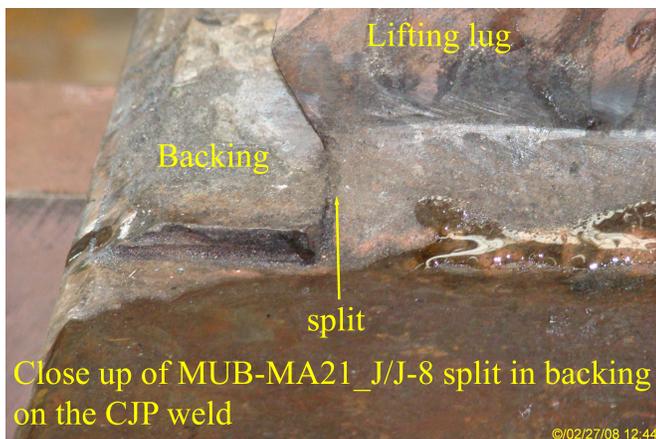
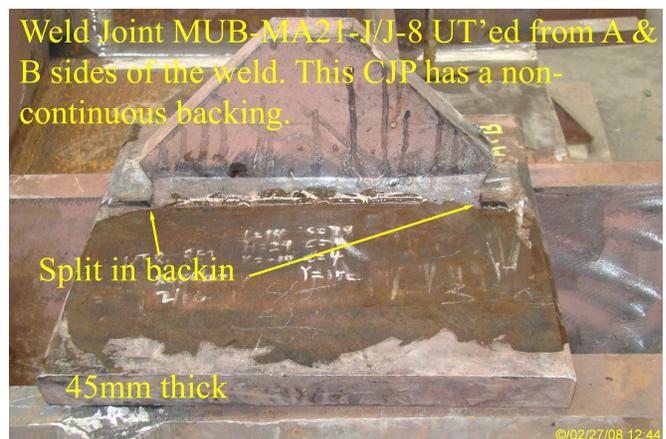
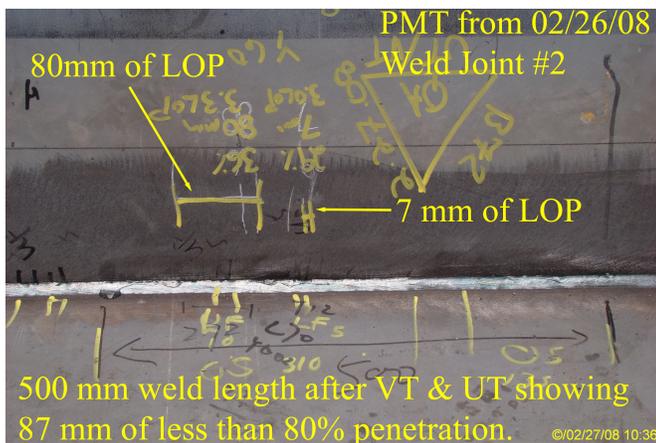
Weld Joint #6 VT OL 80mm @ Y 55mm; UT 20mm @ Y 72mm between 70% and 80% penetration with 3.4 LOP at the greatest point.

Weld joints #3 & #6 failed VT and weld joint #2 failed UT. All testing included 100% of the 500mm long welds.

This QAI witnessed the Quality Control (QC) VT and part of the UT of today's 1st PMT of the PJP weld joints. Several welds showed long lengths of OL.

89 Meter Mock-Up

This QAI also performed 100% UT on the 89 Meter Mock-Up Box Diagonal weld joint MUB-MA21 J/J-8 for Critical Weld Repair CWR048. For UT details see report TL-6027 dated February 27, 2008.



Summary of Conversations:

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A conversation was held with ZPMC Translator Shen Xue Jun about the unacceptable ultrasonic testing of weld number two from yesterdays PMT. Mr. Shen stated that QC felt the QA evaluation of the acceptance/rejection of the weld was flawed in that the 5% measurement should be based not only on the 500 mm length of the weld, but should include the lengths of the other 5- 500mm segments. In other words he feels that there is a total weld length between all 6 of the welds of 3000mm so a total length of LOP between 70% and 80% allowed should be 150mm over all the welds instead of just 25mm in one weld. It was explained to Mr. Shen that this was not the interpretation that this QAI had and that if QC wished to clarify this further they should submit a Request for Information (RFI).

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:	Berger, Bruce	Quality Assurance Inspector
Reviewed By:	Hager, Craig	QA Reviewer
