

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
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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-010043**Date Inspected:** 20-Oct-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**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:** Tower and OBG Components**Summary of Items Observed:**

On this date Caltrans OSM Quality Assurance Inspector George Goulet was present during the times noted above for observations relative to the work being performed.

Bay 10

This QA Inspector randomly observed the following work in progress in Bay 10:

FCAW repair welding of weld joint NSTL3-3B/K-84B located outside PCMK north tower, lift 3, skin A to skin E approximately 4 meters from top of lift 3. The unnumbered ZPMC repair order listed the location of UT indication as Y =27230. Welder was identified as 040533. ZPMC QC was identified as CWI Liu Zhong An (QC1). The welding variables recorded by QC1 appeared to comply with WPS-345-FCAW-2G(2F)-repair listed on the ZPMC unnumbered repair order.

FCAW repair welding of weld joint NSTL3-3B/K-84A located inside PCMK north tower, lift 3, skin A to skin E approximately 2 meters from top of lift 3. Welder was identified as 040303. ZPMC QC was identified as QC1. The welding variables recorded by QC1 appeared to comply with WPS-345-FCAW-2G(2F)-repair listed on the unnumbered ZPMC repair order.

SMAW repair welding of weld joint NSTL3-3B/K-84B located outside PCMK north tower, lift 3, skin A to skin E.

The unnumbered ZPMC repair order listed the location of UT indication as Y location 20220. Welder was identified as 052930. ZPMC QC was identified as QC1. The welding variables recorded by QC1 appeared to comply with WPS-345-SMAW-2G(2F)-repair listed on the ZPMC unnumbered repair order.

WELDING INSPECTION REPORT

(Continued Page 2 of 3)

FCAW welding of weld joint SSTL4-1B/L-33 located inside PCMK south tower, lift 4, skin E, fit lug to single diaphragm 116.33M. Welder was identified as 053869. ZPMC QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC Jiang Xiao Bo, who was not a CWI. The welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2133.

FCAW welding of weld joint SSTL4-1C/L-73 located inside PCMK south tower, lift 4, skin A to the bottom of double diaphragm 119M. Welder was identified as 057266. ZPMC QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC Jiang Xiao Bo, who was not a CWI. The welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-4333-TC-P5-F.

FCAW welding of weld joint SSTL4-1C/L-138 located inside PCMK south tower, lift 4, skin A to the bottom of double diaphragm 119M. Welder was identified as 057244. ZPMC QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC Jiang Xiao Bo, who was not a CWI. The welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-4333-TC-P5-F.

SMAW tack welding of weld joint NSTL4-3B/L-3A located outside PCMK north tower, lift 4, skin A to skin B at approximately 123M, 127M, 131M, 143M. Welders were identified respectively as 054469, 040256, 048777, 061938. ZPMC QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC Yuan Hui Gang, who was not a CWI. The welding variables recorded by QC1's assistant appeared to comply with WPS-B-P-2212-U2 as well as the joint fit-up.

Bay 11

This QA Inspector randomly observed the following work in progress in Bay 11:

ABF representatives performing magnetic particle testing inside west tower, lift 2, skins A and B, at the top of 80.75M single diaphragm.

Bay 9 – PMT

This QA Inspector monitored OBG Production Monitoring Test (PMT) #3044 for deck panels DP3044-001 and DP3059-001 at Gantry #2. Prior to the start of the PMT, this QA Inspector observed the root opening to be within the 0.0 to 0.5mm tolerance. The magnetic particle test (MT) of the tack welds was noted on the test panel as having been performed by ZPMC MT Inspector Ding A Cheng. The visual inspection of tack welds and root gap was performed by ABF Representative Wang Wan Shong (ABF), ZPMC CWI Guo Yanfei (QC), and this QA Inspector. This QA Inspector observed that the deck plate of the test panel was 20mm thick and the production panels DP3044-001 and DP3059-001 were 14mm and 20mm thick respectively. The start time for welding of the 3–12mm x 20mm specimens was approximately 0015 hours on 10/21/09 and the finish time was approximately 0050 hours. This QA Inspector randomly verified and documented the welding amperage, voltage, and travel speed during the gas metal arc welding (GMAW) and submerged arc welding (SAW) processes, welds 1 thru 6 at the completion of both the GMAW root pass and SAW cover pass. The welding variables recorded by QC appeared to comply with WPS-B-T-2342-U1(U-rib)-4. The welds were visually inspected by ABF, QC and this

WELDING INSPECTION REPORT

(Continued Page 3 of 3)

QA Inspector. QC and ABF informed this QA Inspector that all six welds were acceptable and this QA Inspector concurred. This QA Inspector randomly witnessed ZPMC ultrasonic testing (UT) inspector, identified as Tang Xingshan, perform UT on each of the 500 mm test welds for depth of penetration and conformance. This QA Inspector selected fifteen designated locations for macroetch sampling per contract requirements. Each macroetch location was stamped by ZPMC personnel with the number 3044, the number 8 laid sideways, and an individual macroetch identifying number for each macroetch. After removal from each of the weld test specimens, polishing, and acid etching of the selected end, the macroetches were evaluated with a 7X optical magnifier and accepted by QC and ABF.

This QA Inspector began viewing the sample macros and observed in macroetch sample 1-1 what appeared to be a fusion defect extending from the root up into the U-rib area to a weld depth of 9.2mm. Based on the defect not conforming to contract change order 89, dated 8/25/08, this QA inspector failed the PMT attempt. See Caltrans U-ribs PMT Inspection Sheet, ZPMC production monitoring test plate inspection report, and Caltrans Macro Etch Log - all dated 10/21/2009 for additional information.

Unless otherwise noted, all work observed on this date appeared to generally comply with applicable contract documents.

Summary of Conversations:

As noted 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 Serge Sinevod, 134-8257-0045, who represents the Office of Structural Materials for your project.

Inspected By:	Goulet,George	Quality Assurance Inspector
Reviewed By:	Dawson,Paul	QA Reviewer
