

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-015112**Date Inspected:** 04-Jun-2010**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 (QA Inspector) George Goulet was present during the times noted above for observations relative to the work being performed.

Bay 11

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

SMAW welding of weld joint ED1-STSA4-10-119M-1-52 located on PCMK east tower, strut assembly. Welder was identified as 046769. QC was identified as ZPMC CWI Gao Zhi Cheng (QC1). Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Xu Jie, who was not a CWI. The welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2113. Also present at this location and appearing to be monitoring the welding operations was ABF Representative Li Shi You.

SMAW welding of weld joints ED1-STSA4-10-119M-2-49, 50 located on PCMK east tower, strut assembly. Welder was identified as 046709. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Xu Jie, who was not a CWI. The welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2112. Also present at this location and appearing to be monitoring the welding operations was ABF Representative Li Shi You.

SMAW welding of weld joints ED1-STSA4-10-119M-2-11, 12 located on PCMK east tower, strut assembly. Welder was identified as 251194. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Xu Jie, who was not a CWI. The welding variables

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recorded by QC1's assistant appeared to comply with WPS-B-T-2112. Also present at this location and appearing to be monitoring the welding operations was ABF Representative Li Shi You.

SMAW welding of weld joints ND1-STSA4-6-127M-1-93, 94 located on PCMK north tower, strut assembly. Welder was identified as 041271. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Xu Jie, who was not a CWI. The welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2112. Also present at this location and appearing to be monitoring the welding operations was ABF Representative Li Shi You.

Bay 10

This QA Inspector randomly observed no welding related work in progress in Bay 10.

Heavy Dock

This QA Inspector randomly observed the following on the heavy Dock:

South tower, lift 3 appeared to be atop south tower, lift 2 and separated from the floating crane moored to the foot of the Heavy Dock. North tower, lift 1 and east tower, lift 3 were laying horizontally at the foot of the Heavy Dock. The elevator was dark and appeared to not be operating. ABF Representative Zhai Ying Sheng informed this QA Inspector that no work was being performed on the Heavy Dock.

Bay 9 – PMT

This QA Inspector monitored OBG Production Monitoring Test (PMT) #3130 for deck panels DP3130(PL3326A/B)-001 and DP3137(PL3333A/B)-001 at Gantry #2. Prior to the start of the PMT, this QA Inspector observed the root openings 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 Technician Wang Wei on 6/4/10. The visual inspection of tack welds and root gaps was performed by ABF Representative Wang Wan Cheng (PABF), ZPMC CWI Chen Shigang (PQC), and this QA Inspector. The tack welds and root gaps appeared to be within prescribed tolerances. This QA Inspector observed that the deck plate of the test panel was 20mm thick and the deck plate of the production panels were 20mm thick. The ambient temperature was approximately 19°C. Flame preheat was applied to the specimens to above 60°C immediately prior to start of the gas metal arc welding (GMAW) pass. The interpass temperature was checked between processes and observed to be above 60°C. The start time for welding of the 3–12mm x 20mm U-rib specimens was approximately 0029 hours on 6/5/10 and the finish time was approximately 0057 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, and performed a visual inspection welds 1 thru 6 at the completion of both the GMAW root pass and SAW cover pass. The welding variables recorded by PQC appeared to comply with WPS-B-T-2342-U1-(U-rib)-5. The welds were visually inspected by PABF, PQC and this QA Inspector. PABF informed this QA Inspector that weld #1 appeared to have 310mm of overlap weld #3 appeared to have 180mm of undersize fillet weld, not in conformance with contract documents and were not acceptable. PABF rejected the test and this QA Inspector concurred.

This QA Inspector monitored the second attempt of OBG Production Monitoring Test (PMT) #3130 for deck panels DP3130(PL3326A/B)-001 and DP3137(PL3333A/B)-001 at Gantry #2. Prior to the start of the PMT, this QA Inspector observed the root openings to be within the 0.0 to 0.5mm tolerance. The magnetic particle test (MT)

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of the tack welds was noted on the test panel as having been performed by ZPMC MT Inspector Wang Wei on 6/2/10. The visual inspection of tack welds and root gaps was performed by ABF Representative Wang Wan Cheng (PABF), ZPMC CWI Chen Shigang (PQC), and this QA Inspector. The tack welds and root gaps appeared to be within prescribed tolerances. This QA Inspector observed that the deck plate of the test panel was 20mm thick and the deck plate of the production panels were 20mm thick. This QA Inspector observed that the test panel was generally representative of the production panels. The ambient temperature was above 19°C. ZPMC personnel used an oxy-fuel torch to preheat the specimens to above 60°C and the interpass temperature was still above 60°C without additional heating in conformance with WPS-B-T-2342-U1-(U-rib)-5. The start time for welding of the 3–12mm x 20mm specimens was approximately 0121 hours on 6/5/10 and the finish time was approximately 0149 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 PQC appeared to comply with WPS-B-T-2342-U1-(U-rib)-5. The welds were visually inspected by PABF, PQC and this QA Inspector. PQC and PABF informed this QA Inspector that all six welds were acceptable and after random inspection 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 sample location was stamped by ZPMC personnel with the number 3130, a letter G placed upside down, chosen randomly by this QA Inspector as a verification mark, and an individual progressive 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 PQC, PABF, and this QA Inspector.

All fifteen sample macros appeared to meet requirements and were noted to appear acceptable. See Caltrans U-ribs PMT Inspection Sheet, ZPMC production monitoring test plate inspection report, and Caltrans Macro Etch Log - all dated 6/5/2010 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 Eric Tsang, 150-0042-2372, who represents the Office of Structural Materials for your project.

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