

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
690 Walnut Ave. St. 150  
Vallejo, CA 94592-1133  
(707) 649-5453  
(707) 649-5493

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-014492**Date Inspected:** 25-May-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 10

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

FCAW welding of weld joint WD1-A25B/B-88 located on PCMK west tower, base shear plate assembly, inner connection plate to stiffener. Welder was identified as 040736. QC was identified as ZPMC CWI Li Lin (QC1). Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Yuan Hui Gang, who was not a CWI. Welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2331-TC-P4-F.

FCAW welding of weld joint WD1-A25B/B-86 located on PCMK west tower, base shear plate assembly, outer connection plate to stiffener. Welder was identified as 049220. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Yuan Hui Gang, who was not a CWI. Welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2331-TC-P4-F.

FCAW welding of weld joint WD1-A25B/B-72 located on PCMK west tower, base shear plate assembly, inner connection plate to stiffener. Welder was identified as 040609. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Yuan Hui Gang, who was not a CWI. Welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2331-TC-P4-F.

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FCAW welding of weld joint WD1-A25B/B-70 located on PCMK west tower, base shear plate assembly, outer connection plate to stiffener. Welder was identified as 042218. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Yuan Hui Gang, who was not a CWI. Welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2331-TC-P4-F.

FCAW welding of weld joint SD1-A20B/B-35 located on PCMK south tower, base shear plate assembly, outer connection plate to stiffener. Welder was identified as 205649. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Yuan Hui Gang, who was not a CWI. Welding variables recorded by QC1's assistant appeared to comply with WPS-B-T-2331-TC-P4-F.

### Bay 11

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

SMAW welding of weld joint WD1-A28A/B-71 located on PCMK west tower, base shear plate assembly, outer connection plate to stiffener. Welder was identified as 205649. QC was identified as QC1. Welding variables recorded by QC1 appeared to comply with WPS-345-SMAW-1G(1F)-repair.

FCAW welding of weld joint ED1-A27B/E-84 located on PCMK east tower, base shear plate assembly, outer connection plate to stiffener. Welder was identified as 053116. QC was identified as QC1. Welding variables recorded by QC1 appeared to comply with WPS-B-T-2331-TC-P4-F.

FCAW welding of weld joint ED1-A27B/E-77 located on PCMK east tower, base shear plate assembly, inner connection plate to stiffener. Welder was identified as 054069. QC was identified as QC1. Welding variables recorded by QC1 appeared to comply with WPS-B-T-2331-TC-P4-F.

### Heavy Dock

ABF Representative Zhao Ying Sheng informed this QA Inspector that no work was being performed on the heavy dock. This QA Inspector observed that the lift 1 sections of south and east towers were laying down on supports at the foot of the dock.

### Bay 9 – PMT

This QA Inspector monitored OBG Production Monitoring Test (PMT) #3013 for deck panels DP3073-001 and DP3076-001 at Gantry #1. The #3013 was chosen by the ZPMC welding foreman to be stamped on the macroetch samples because there was no 7 stamp available. However, the number represented the above noted panels. 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 5/25/10. The visual inspection of tack welds and root gaps was performed by ABF Representative Wang Wan Cheng (ABF), ZPMC CWI Guo Yanfei (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 22°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 specimens was

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approximately 0019 hours on 5/26/10 and the finish time was approximately 0055 hours. This QA Inspector randomly verified and documented the welding amperage, voltage, and travel speed during the 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 ABF, PQC and this QA Inspector. PQC 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) technician, identified as Xu Wei, 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 3013, a letter M stamped laying on its side, 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, ABF, 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 5/26/2010 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 Skyler Guest, 150-0042-2360, who represents the Office of Structural Materials for your project.

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| <b>Inspected By:</b> | Goulet,George | Quality Assurance Inspector |
| <b>Reviewed By:</b>  | Dawson,Paul   | QA Reviewer                 |

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