

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-016446**Date Inspected:** 20-Aug-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 WSD1-SPSA5-17-3A located on PCMK west tower, lift 5, splice plate assembly. Welder was identified as 202100. QC was identified as ZPMC CWI Liu Yang (QC1). Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC CAWI Ma Qian Li (QCA1), who was not a CWI. Welding variables recorded by QCA1 appeared to comply with WPS-B-T-3211-TC-U5b.

SMAW welding of weld joint WSD1-TL5-4B/F-15A located on PCMK west tower, lift 5, external connection plates. Alternating welders were identified as 037780, 037743. 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 (QCA2), who was not a CWI. Welding variables recorded by QCA2 appeared to comply with WPS-B-T-3213-TC-U5b.

SMAW welding of weld joint WSD1-TL5-4B/F-18B located on PCMK west tower, lift 5, external connection plates. Alternating welders were identified as 066398, 066401. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA2, who was not a CWI. Welding variables recorded by QCA2 appeared to comply with WPS-B-T-3213-TC-U5b.

WELDING INSPECTION REPORT

(Continued Page 2 of 5)

SMAW welding of weld joint ESD1-TL5-2E/F-13A located on PCMK east tower, lift 5, internal connection plates.

Alternating welders were identified as 044541, 040724. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA2, who was not a CWI. Welding variables recorded by QCA2 appeared to comply with WPS-B-T-3213-TC-U5b.

SMAW welding of weld joint ESD1-TL5-2B/F-8B located on PCMK east tower, lift 5, external connection plate to skin A. Welder was identified as 040723. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA2, who was not a CWI. Welding variables recorded by QCA2 appeared to comply with WPS-B-T-3213-TC-U5b.

SMAW welding of weld joint ESD1-TL5-2B/F-8A located on PCMK east tower, lift 5, external connection plate to skin A. Welder was identified as 046704. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA2, who was not a CWI. Welding variables recorded by QCA2 appeared to comply with WPS-B-T-3213-TC-U5b.

SMAW welding of weld joint ESD1-TL5-2B/F-2A located on PCMK east tower, lift 5, external connection plate to skin A/B corner. Welder was identified as 040611. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA2, who was not a CWI. Welding variables recorded by QCA2 appeared to comply with WPS-B-T-3213-TC-U5b.

Bay 10

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

SMAW welding of weld joint SSD1-TL5-3B-F-15 located on PCMK south tower, lift 5, internal connection plates.

Alternating welders were identified as 057259, 057266. 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 (QCA3), who was not a CWI. Welding variables recorded by QC2 appeared to comply with WPS-B-T-3213-TC-U4c.

SMAW welding of weld joint NSD1-TL5-3B-F-20 located on PCMK north tower, lift 5, internal connection plates.

Alternating welders were identified as 044504, 040312. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA3, who was not a CWI. Welding variables recorded by QC2 appeared to comply with WPS-B-T-3213-TC-U4c.

SMAW welding of weld joint SSD1-TL5-1B-F-1B located on PCMK south tower, lift 5, external connection plates. Welder was identified as 056200. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA3, who was not a CWI. Welding variables recorded by QCA3 appeared to comply with WPS-B-T-3313-TC-U5b.

SMAW welding of weld joint SSD1-TL5-1B-F-8B located on PCMK south tower, lift 5, external connection plates. Welder was identified as 057258. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA3, who was not a CWI. Welding variables recorded by QCA3 appeared to comply with WPS-B-T-3313-TC-U5b.

SMAW welding of weld joint SSD1-TL5-1B-F-7B located on PCMK south tower, lift 5, external connection

WELDING INSPECTION REPORT

(Continued Page 3 of 5)

plates. Welder was identified as 057220. QC was identified as QC1. Assisting QC1 at this location and appearing to be monitoring the welding and recording data was QCA3, who was not a CWI. Welding variables recorded by QCA3 appeared to comply with WPS-B-T-3313-TC-U5b.

SMAW welding of weld joint NSD1-TL5-3B-F-2 located on PCMK north tower, lift 5, external connection plates at skin E. Alternating welders were identified as 037996, 066155. QC was identified as ABF CWI Yang Yi Heng (QC2). Welding variables recorded by QC2 appeared to comply with WPS-B-T-3213-TC-U4c.

SMAW welding of weld joints NSD1-TL5-3B-F-3, 36 located on PCMK north tower, lift 5, external connection plates at skin E. Alternating welders were identified as 037840, 066361. QC was identified as QC2. Welding variables recorded by QC2 appeared to comply with WPS-B-T-3213-TC-U4c.

SMAW welding of weld joint NSD1-TL5-3B-F-15 located on PCMK north tower, lift 5, internal connection plates. Alternating welders were identified as 067707, 066416. QC was identified as QC2. Welding variables recorded by QC2 appeared to comply with WPS-B-T-3213-TC-U4c.

SMAW welding of weld joint NSD1-TL5-3B-F-20B located on PCMK north tower, lift 5, internal connection plates. Alternating welders were identified as 070432, 067588. QC was identified as QC2. Welding variables recorded by QC2 appeared to comply with WPS-B-T-3213-TC-U5b.

Heavy Dock

This QA Inspector randomly observed the following work being performed on the Heavy Dock:

This QA Inspector observed no apparent work was being performed on the Heavy Dock. All 4 tower lift's 3 were connected and positioned vertically on a base pedestal at end of the heavy dock. The ZPMC 2200 ton floating crane was moored to the end of the Heavy Dock and sitting idle.

Bay 9 – PMT

This QA Inspector monitored OBG Production Monitoring Test (PMT) #3161 for deck panels 14W-DP3161(PL3437A/B)-001 and 14W-DP3159(PL3434A/B)-001 at Gantry #1. Prior to the start of the PMT, this QA Inspector observed the root openings to be within the 0.0mm to 0.5mm tolerance. The magnetic particle test (MT) of the tack welds was noted on the test panel as having been performed by ABF MT Technician Chu Ziqing on 8/20/10. The visual inspection of tack welds and root gaps was performed by ABF CWI Huang Wen Guang (PABF) 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 approximately 30°C. Welders were identified respectively, from position 1 through 6, respectively, as follows: 059443, 201788, 059403, 059416, 059418, 059421. 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 0023 hours on 8/21/10 and the finish time was approximately 0043 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

WELDING INSPECTION REPORT

(Continued Page 4 of 5)

PABF appeared to comply with WPS-B-T-2342-U1-(U-rib)-5. The welds were visually inspected by PABF and this QA Inspector. PABF informed this QA Inspector that the SAW pass of weld #5 was unacceptable because of a 70mm area exhibiting porosity and weld profile not in conformance with contract documents. After random inspection this QA Inspector concurred. See photos of rejected weld below.

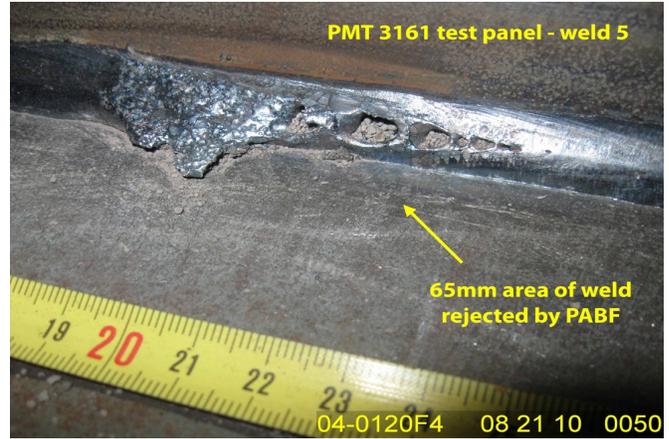
Another test panel was placed on the welding bed for gantry #1. This QA Inspector monitored OBG Production Monitoring Test (PMT) #3161-2 for deck panels 14W-DP3161(PL3437A/B)-001 and 14W-DP3159(PL3434A/B)-001 at Gantry #1. Prior to the start of the PMT, this QA Inspector observed the root openings to be within the 0.0mm to 0.5mm tolerance. MT of the tack welds was randomly observed by PABF and this QA Inspector while being performed by ABF MT Technician Chu Ziqing. The visual inspection of tack welds and root gaps was performed by PABF 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 approximately 30°C. Welders were identified respectively, from position 1 through 6, respectively, as follows: 059443, 201788, 059403, 059416, 059418, 059421. 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 0118 hours on 8/21/10 and the finish time was approximately 0133 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 PABF appeared to comply with WPS-B-T-2342-U1-(U-rib)-5. The welds were visually inspected by PABF and this QA Inspector. 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 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 3161, a number 1, chosen randomly by this QA Inspector as a verification mark, and an individual progressive macroetch identifying number for each macroetch sample. See photos below. After removal from each of the weld test specimens, polishing, and acid etching of the selected end, the macroetch samples were evaluated using a 7X optical magnifier and accepted by PABF and this QA Inspector.

All fifteen sample macroetch samples 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 8/21/2010 for additional information.

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

WELDING INSPECTION REPORT

(Continued Page 5 of 5)



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 Micheal Ng, 159-2184-5703, who represents the Office of Structural Materials for your project.

Inspected By: Goulet, George

Quality Assurance Inspector

Reviewed By: Dawson, Paul

QA Reviewer