

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:** Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-018762**Date Inspected:** 23-Nov-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:** OBG**Summary of Items Observed:**

CWI Inspectors: Mr. Geng Wei, Mr. Wang Jiang Hua

On this date CALTRANS OSM Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai China, for the purpose of monitoring welding and fabrication of the San Francisco / Oakland Bay Bridge (SFOBB) components. This QA Inspector observed the following:

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This QA Inspector observed ZPMC welder Mr. Zhang Xiang Rong, stencil 066763 used flux cored welding procedure WPS-B-T-2232-TC-U4b-F to make weld SEG3020J-047. This weld joins OBG segment 13AE joins FB3111A to bottom plate SA3012A. This QA Inspector observed a welding current of approximately 320 amps and 34.2 volts. This QA Inspector observed that the WPS lists a maximum welding current of 32.5 volts and that Mr. Zhang Xiang Rong had a welding voltage that was approximately 1.7 volts above this maximum limit. This QA Inspector showed ABF CWI Mr. Bao Qian the welding voltage meter and after he confirmed the high voltage with his meter he agreed the parameters were outside the WPS requirements. Mr. Bao Qian then adjusted the welding machine to have a welding voltage approximately 31 volts. Mr. Bao Qian informed this QA Inspector that it appears that someone had adjusted the welding machine after he had originally recorded an acceptable voltage. This QA Inspector observed the base materials were heated with an electric heater to preheat and maintain the base material temperature of this weld joint during welding and once the welding was complete, ZPMC turned off the power to the electric heating element and the base material temperature decreased to below

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160 degrees Celsius. Caltrans QA Inspectors have been instructed to implement the requirements of document titled "Weld Procedure Requirements for New Welds" otherwise known as "NEW WELD PROCEDURE (Rager / McQuaid)". This weld procedure requires a 160 degrees Celsius post weld heat be maintained after the welding is completed and the length of time that the post weld heat is maintained is dependent on the thickness of the plates being welded. ZPMC welding personnel did not maintain post weld heat and this QA Inspector issued an incident report to document that ZPMC violating the requirements of the "NEW WELD PROCEDURE (Rager / McQuaid)" section 5 "Postweld Thermal Treatment." See the photographs below for additional information.

This QA Inspector observed ZPMC welder Mr. Liu Xiaolin, stencil 067079 used flux cored welding procedure specification WPS-B-T-2233-TC-U4B-F to make OBG segment 13AE weld SEG3007G-020. This QA Inspector observed a welding current of approximately 320 amps, 26.0 volts and Mr. Liu Xiaolin appeared to be certified to make these welds. This QA Inspector observed the base materials were heated with an electric heater to preheat and maintain the base material temperature of this weld joint during welding and once the welding was complete, ZPMC turned off the power to the electric heating element and the base material temperature decreased to below 160 degrees Celsius. Following completion of the welding, ZPMC welding personnel did not maintain post weld heat and this QA Inspector issued an incident report to document that ZPMC violating the requirements of the "NEW WELD PROCEDURE (Rager / McQuaid)" procedure section 5 "Postweld Thermal Treatment."

This QA Inspector observed ZPMC welder Mr. Wang Quanlin stencil 066746 used flux cored welding procedure specification WPS-B-T-2232-TC-U4B-F to make OBG segment 13AE weld SEG3007G-048. This QA Inspector observed ZPMC has recorded a welding current of 315 amps, 30.7 volts. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Ye Bing stencil 066733 used flux cored welding procedure specification WPS-B-T-2232-TC-U4B-F to make OBG segment 13AE weld SEG3007L-045. This QA Inspector observed ZPMC QC has recorded a welding current of 315 amps, 30.7 volts and Mr. Ye Bing appeared to be certified to make these welds. This QA Inspector observed the base materials were heated with an electric heater to preheat and maintain the base material temperature of this weld joint during welding and once the welding was complete, ZPMC turned off the power to the electric heating element and the base material temperature decreased to below 160 degrees Celsius. Following completion of the welding, ZPMC welding personnel did not maintain post weld heat and this QA Inspector issued an incident report to document that ZPMC violating the requirements of the "NEW WELD PROCEDURE (Rager / McQuaid)" section 5 "Postweld Thermal Treatment."

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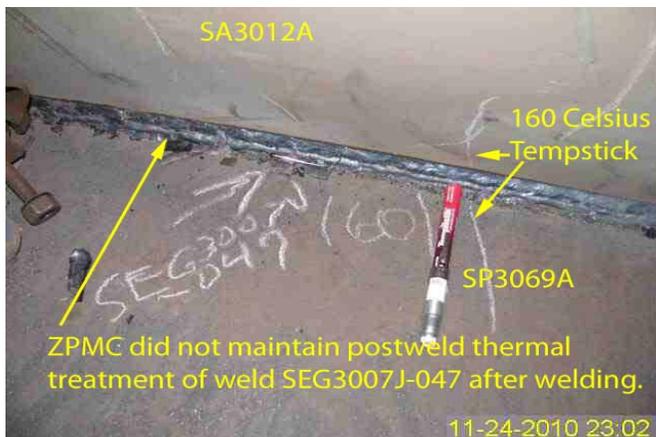
This QA Inspector observed ZPMC welder Mr. Su Hong Biao, stencil 206296 used flux cored welding procedure WPS-B-T-2132 to make traffic barrier welds W5-SB29A-082 through 087. This QA Inspector observed a welding current of 320 amps, 30.0 volts and a torch was used to preheat the base materials prior to welding. This QA Inspector observed a welding current of 320 amps, 30.0 volts and Mr. Su Hong Biao appeared to be certified to make this weld. When the welding was complete, ZPMC did not provide any additional heat to the base material and the base material temperature decreased to an ambient temperature. Due to ZPMC welding personnel not maintaining post weld heat and this QA Inspector issued an incident report to document that ZPMC violating the requirements of the "NEW WELD PROCEDURE (Rager / McQuaid)" section 5 "Postweld Thermal Treatment."

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Trial Assembly

ZPMC issued "Inspection Notification Sheet" number 07469 informing Caltrans QA that ZPMC is requesting ultrasonic inspections (UT) of OBG segment 11EW complete joint penetration welds OBW11A-021 and OBW11A-022 in support of "Tagging in Process". This QA Inspector performed random visual and ultrasonic inspections of approximately 10% length of areas previously tested by ZPMC personnel and items observed by this QA Inspector appear to comply with AWS D1.5 UT requirements. For additional information on these inspections see this QA Inspector's TL6027 Ultrasonic Test Report.



Summary of Conversations:

See 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 James Devy +8615000026784, who represents the Office of Structural Materials for your project.

Inspected By: Dawson,Paul

Quality Assurance Inspector

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Reviewed By: Carreon,Albert

QA Reviewer