

**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-001199**Date Inspected:** 12-Jan-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 1500**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 100**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 Fabrication**Summary of Items Observed:**

Caltrans 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. The QA Inspector observed the following:

Orthotropic Box Girder (OBG) and Tower Mock Up:

CWI Inspectors: Li Yifeng, Wang Nan

The QA Inspector observed three ZPMC welders using welding procedure specification WPS-B-T-2132-3 using the flux cored welding process for fillet welds on six OBG side plate SP029 stiffener welds at the same time. ZPMC has multiple flux cored welding manipulators attached to a movable gantry that runs on a track along the length of the stiffener plates. The QA Inspector observed a welding travel speed of approximately 450 mm per minute. As the welding commences, each of the welders is responsible for two of the flux cored welding heads. All welders are using 1.4 mm diameter E71T-1 rolls of electrodes that have been marked as being installed earlier today. The QA Inspector observed all six welding machines have a shielding gas flow between 18 and 21 liters per minute as required by the WPS. Welder Mr. Li Mengqian stencil 54460 completed weld SP029-01-036 with a welding current of approximately 300 amps and 31.0 volts and weld SP029-01-037 with a welding current of approximately 285 amps and 29.9 volts. Welder Mr. Xin Meng stencil 53742 completed weld SP029-01-028 with a welding current of approximately 310 amps and 30.1 volts and weld SP029-01-029 with a welding current of approximately 305 amps and 30.5 volts. Welder Mr. Li Shuliang stencil 48801 completed weld SP029-01-032

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with a welding current of approximately 280 amps and 31.0 volts and weld SP029-01-033 with a welding current of approximately 280 amps and 31.0 volts. Items observed by the QA Inspector appear to comply with project specifications.

The QA Inspector observed ZPMC personnel perform heat straightening of OBG base plate BP003 as directed by HSR1(B)-160. The QA inspector observed the Quality Control Inspector using a 1 meter long straight edge to determine the locations that need to be heat straightened. Following this heat straightening the QA Inspector observed BP003 has other areas of the plate that need to be straightened. ZPMC stopped the heat straightening process at approximately 1700 hours.

The QA Inspector observed ZPMC welder Mr. Wei Da Shuai stencil 51246 is using welding procedure specification WPS-B-T-2233-B-U2-F using the flux cored welding process to make groove weld SP032-01-007 that joins two OBG stiffener plates. The QA Inspector observed a welding current of approximately 220 amps 24.5 volts and the base material where Mr. Wei Da Shuai is welding has a temperature of approximately 250°C. The welding procedure specification lists a maximum interpass temperature of 230°C and this maximum temperature has been exceeded. The QA Inspector informed ZPMC QC/CWI Inspector Mr. Wang Nan that the base material temperature where Mr. Wei Da Shuai is welding has a base material temperature that exceeds the maximum allowed by the WPS. Mr. Wang Nan said Mr. Wei Da Shuai will stop welding until the plate cools down and ZPMC QC Inspectors will be more careful to monitor interpass temperatures in the future. Items observed by the QA Inspector do not appear to fully comply with project specifications and a Quality Assurance Incident Report was issued to document this procedure violation. See the photographs below for additional information.



## Summary of Conversations:

See above for summary of conversations.

## 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 Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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**Inspected By:** Dawson,Paul

Quality Assurance Inspector

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**Reviewed By:** Cochran,Jim

QA Reviewer