

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-013925**Date Inspected:** 09-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:** OBG**Summary of Items Observed:**

CWI Inspector: Mr. Gei Wei

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:

OBG Bay 14

This QA Inspector observed ZPMC welder Mr. Sun Gusong, stencil 058592 is using the shielded metal arc welding process to make tack welds between longitudinal diaphragms and floor beams near OBG segment 12CE panel point PP116. This QA Inspector observed Mr. Sun Gusong appears to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Ms. Wang Lanying, stencil 045265 is using submerged arc welding procedure WPS-B-T-2232(1)T-2 to make OBG segment weld SEG3006*-006. This QA Inspector measured a welding current of 640 amps and 31.2 volts and Ms. Wang Lanying appears to be certified to make this weld. Items observed by this QA Inspector appear to be progressing in compliance with project specifications.

This QA Inspector observed ZPMC workers were performing heat straightening of OBG floor beam FB3069. This QA Inspector borrowed QC Inspector Mr. Li Jie's infrared measurement instrument and observed the

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temperature where ZPMC was performing heat straightening appears to be at a temperature of approximately 650 degrees Celsius. This QA Inspector asked ZPMC QC Inspector Mr. Li Jie what is the maximum base material temperature allowed and if ZPMC has obtained engineering approval to perform this heat straightening. Mr. Li Jie appears to have a limited understanding of the English Language but he was able to convey that he does not have a copy of the heat straightening document because dayshift workers took heat straightening document when they left work. This QA Inspector requested that ZPMC CWI Mr. Gei Wei come to where this heat straightening is taking place. Approximately twenty minutes later Mr. Gei Wei arrived. This QA Inspector informed him that ZPMC workers had heated floor beam FB3069 to approximately 650 degrees Celsius, the workers did not appear to have any equipment available to measure the base material temperature and ZPMC QC Inspector Mr. Li Jie does not appear to be monitoring the temperature of the areas that were being heat straightened. This QA Inspector asked ZPMC CWI Mr. Gei Wei what was the maximum temperature allowed and he informed this QA Inspector that he also does not know the number of the heat straightening document and he does not have a copy of the heat straightening document. Mr. Gei Wei said that no more heat straightening will take place until the heat straightening document is available for review. See the photographs below for additional information. Items observed on this date do not fully appear to comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Zhou Zhenyuan, stencil 202805 using the shielded metal arc welding process to tack weld a deck plate diaphragm to floor beam FB3058-001. This QA Inspector observed the base material where these tack welds were made do not appear to have been preheated prior to welding. A few minutes later this QA Inspector informed ZPMC CWI Mr. Gei Wei that floor beam FB3058-001 appears to have been tack welded without adequate base material preheating prior to welding. ZPMC CWI Mr. Gei Wei said he is aware that base material preheat is important and that he will have the tack welds ground out and these areas will be MT'd to confirm the base material has not been damaged.

OBG Bay 6

ZPMC issued "Inspection Notification Sheet" number 5697 items 10, 11, 12 and 13 that states that ZPMC will perform ultrasonic inspections (UT) of the complete joint penetration welds on various OBG traveler rails brackets that are located in OBG bay 6 at 1600 hours today and they will then be ready for Caltrans QA personnel to perform green tag / ultrasonic inspections of these welds. This QA Inspector observed ZPMC appears to have UT accepted approximately 25% of the traveler rail bracket welds and this QA Inspector performed random visual and ultrasonic inspections of the following welds: TR5C-PP49-006 and TR5C-PP55-006 and items observed by this QA Inspector appear to comply with AWS D1.5 UT requirements. For additional information on these inspections see the TL6027 Ultrasonic Test Report

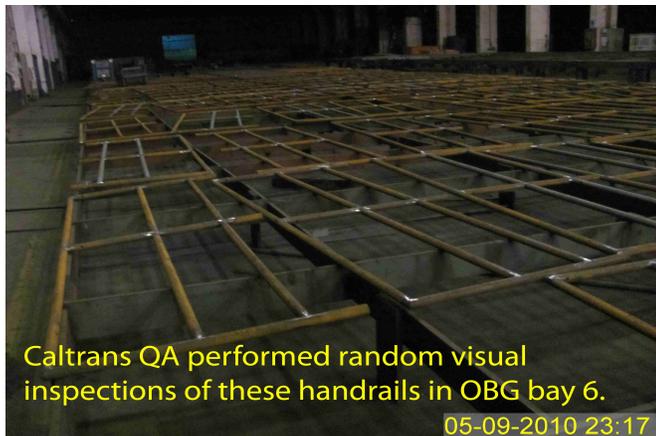
ZPMC "NDE Inspection Notification Sheet" document 5697 requests Caltrans Inspectors to perform visual inspections of OBG crossbeam Handrails in OBG Bay 6. The following items are listed: RLZCA, Qty. 50; RLZEA, Qty. 2; RLZEC, Qty. 2; RLZCB, Qty. 40 and RLZEB, Qty. 6. Total quantity: 100 handrails.

ZPMC QC provided Mr. Mike Hasler, B293 and Paul Dawson, B254 with a "Certificate of Conformance for Miscellaneous Member after Welding" form "C of C" which lists these welds. ZPMC also provided drawings that show that the hand rail structural members (pipes) are required be joined with 6mm fillet welds. All the handrail structural members (pipes) appear to be of the same diameter and it is not possible to make a fillet weld on the exterior of these weld joints where the surfaces that are being joined are flush, but the weld joints on the interior

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corners of these handrails should all have minimum of a 6mm fillet. Mr. Hasler and this QA Inspector performed random visual inspection of approximately 15% of the hand rails and determined approximately 10% to 15% of the weld joints appear to have various amounts of insufficient fillet weld sizes. Some of the weld fillet joints have short leg lengths and some have insufficient throat size. The hand rails do appear to have metal tags that indicate the type (size) of each hand rail ie: RLZCA, RLZEA, RLZEB etc., but none of the hand rails have any other specific number to allow identification of any specific hand rail. Yellow markers were used to identify some of the areas where the fillet welds are undersize. See the photographs below for additional information. Items observed on this date do not fully appear to comply with applicable contract documents.



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 Eric Tsang phone: 150-0042-2372 , who represents the Office of Structural Materials for your project.

Inspected By: Dawson,Paul

Quality Assurance Inspector

Reviewed By: Carreon,Albert

QA Reviewer
