

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-005034**Date Inspected:** 13-Dec-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 1330**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:	NA	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 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:

Outside the OBG Assembly Bay

This QA Inspector performed random final visual inspections of the closed rib stiffener welds of deck panels DP593-001, DP547-002 and DP592-001. The QA Inspector observed ZPMC and ABF representatives had completed initial and visual inspections of these welds and it appears that Caltrans QA Inspectors had not performed any initial visual inspections of these deck panels. The QA Inspector randomly observed one weld on DP593-001 had a one meter long portion of the weld that had an overlap condition. The QA Inspector informed ZPMC CWI Mr. Lijia of the overlap and he had these areas ground. Following the completion of this grinding the QA Inspector determined that the welds on all three of these deck panels appear to comply with project specifications. The QA Inspector documented the final visual inspections on the yellow inspection status tags that are attached to each of the deck panels.

OBG Bay #7

The QA Inspector performed random final ultrasonic inspections of floor beam welds SSD16A-PP050-006, FB003-098-008 and FB003-098-020. The QA Inspector observed the weld areas that were UT inspected appear to

WELDING INSPECTION REPORT

(Continued Page 2 of 4)

comply with project specifications. The QA Inspector performed random visual inspection of the welds on SSD16A-PP050, FB003-098-020, FB114-020-062 and FB006-062 and the QA Inspector concurred with green tag #2429 for these four components. For additional information on these inspections see the TL6027 Ultrasonic Test Report.

The QA Inspector performed random final ultrasonic inspections of floor beam welds SSD16A-PP051-006, FB003-093-032 and FB003-093-034. The QA Inspector observed the weld areas that were UT inspected appear to comply with project specifications. The QA Inspector performed random visual inspection of the welds on SSD16A-PP051, FB014-026, FB006-071 and FB003-093 and the QA Inspector concurred with green tag #2697 for these four components. For additional information on these inspections see the TL6027 Ultrasonic Test Report.

The QA Inspector performed random final ultrasonic inspections of welds on floor beam FB027-003-125, FB027-003-126, FB027-003-127 and FB027-003-148. The QA Inspector observed the weld areas that were UT inspected appear to comply with project specifications and the QA Inspector indicated the UT inspections by marking a triangle on the base material adjacent to the welds. For additional information on these inspections see the TL6027 Ultrasonic Test Report.

The QA Inspector performed random final ultrasonic inspections of welds on floor beam FB027-006-125, FB027-006-126, FB027-006-127 and FB027-006-148. The QA Inspector observed the weld areas that were UT inspected appear to comply with project specifications and the QA Inspector indicated the UT inspections by marking a triangle on the base material adjacent to the welds. For additional information on these inspections see the TL6027 Ultrasonic Test Report.

The QA Inspector performed random final ultrasonic inspections of welds on floor beam FB023-004-148. The QA Inspector observed the weld areas that were UT inspected appear to comply with project specifications and the QA Inspector indicated the UT inspections by marking a triangle on the base material adjacent to the weld and documented the inspection on yellow tag 1885B. For additional information on these inspections see the TL6027 Ultrasonic Test Report.

OBG Bay #8

The QA Inspector performed random final ultrasonic inspections of floor beam welds FB023-009-080, FB027-009-108 and FB027-010-108. The QA Inspector observed the welds had previously been accepted by ZPMC ultrasonic Inspectors. The areas that were UT Inspected appear to comply with project specifications.

OBG Bay #1

Due to heavy wind ZPMC cancelled the night boat and this QA Inspector monitored the PMT testing in OBG Bay #1 which started around midnight.

The QA Inspector monitored welding of closed rib Production Monitoring Test (PMT) representing deck plates DP580-001 and DP600-001 which were welded using three individual base plates at approximately 0100 hours on December 14, 2008 using gantry #2. The QA Inspector observed six ZPMC welders using welding procedure

WELDING INSPECTION REPORT

(Continued Page 3 of 4)

specification WPS-B-T-2342-U1(Urib)-4 using the gas metal arc welding process for the root pass and submerged arc welding process for the cover pass of partial penetration groove welds on six PMT closed rib 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 529 mm per minute for the root passes and 512 mm per minute for the cover passes. As the welding commences, each of the welders is responsible for one of the welding heads. Welder Mr. Xu Guo Yin, stencil 59443 completed the root pass of weld #1 with a welding current of approximately 370 amps and 30.4 volts and the cover pass welding current of approximately 670 amps and 25.7 volts. Welder Mr. Chen Jie, stencil 59468 completed the root pass of weld #2 with a welding current of approximately 375 amps and 30.7 volts and the cover pass welding current of approximately 660 amps and 24.5 volts. Welder Mr. Xang Wangfeng, stencil 59416 completed the root pass of weld #3 with a welding current of approximately 380 amps and 30.4 volts and the cover pass welding current of approximately 690 amps and 25.5 volts. Welder Mr. Xiang Jie, stencil 59376 completed the root pass of weld #4 with a welding current of approximately 380 amps and 30.8 volts and the cover pass welding current of approximately 680 amps and 25.1 volts. Welder Mr. Gao Xin Dong, stencil 59361 completed the root pass of weld #5 with a welding current of approximately 370 amps and 30.5 volts and the cover pass welding current of approximately 690 amps and 25.1 volts. Welder Mr. Teng Chuen Hung, stencil 59371 completed the root pass of weld #6 with a welding current of approximately 390 amps and 30.6 volts and the cover pass welding current of approximately 680 amps and 24.8 volts.

The QA Inspector performed random visual inspection of the base material preheated surfaces and observed weld #1 and #2 were both below 20°C. Prior to commencement of welding the QA Inspector asked ZPMC CWI Mr. Li Yan Hua what is the minimum base material temperature as listed in the WPS and Mr. Hua said it was 20°C. The QA Inspector showed Mr. Hua that welds #1 and #2 were below this minimum temperature and Mr. Hua had the base material heated to approximately 34°C prior to welding. The QA Inspector performed random visual inspection of the root pass and cover passes and items observed appear to comply with project specifications. Following completion of the welding ZPMC QC CWI Inspector Mr. Li Yan Hua marked a 500 mm length of the welds as being the areas that are to be representative of this PMT test. The QA Inspector performed random visual inspection of the tack welds, root pass and cover passes and the QA Inspector observed weld #6 had overlap along the bottom toe of the weld that had not been identified by Mr. Hua. The QA Inspector showed Mr. Hua the weld overlap and Mr. Hua marked the length of the overlap as being 70 mm long. The QA Inspector observed ZPMC NDE inspector Mr. Xue Wei performing ultrasonic of each of the six welds in the areas where Mr. Hua had marked for PMT testing. Following ZPMC's UT acceptance the QA Inspector marked a total of 15 locations where macroetch samples are to be obtained. ZPMC then cut and prepared macroetch samples. ZPMC QC CWI Inspector Mr. Li Yan Hua and ABF representative Mr. Huang Wei Guang visually inspected these macroetch samples and documented their acceptance on the ZPMC "Production Monitoring Test Plate Inspection Report sheet dated 12-14-2008. The QA Inspector visually inspected each of these macroetch samples and items observed by the QA Inspector appear to comply with project specifications.

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 Ady Velasco 13816942685, who represents the Office of Structural Materials for your project.

WELDING INSPECTION REPORT

(Continued Page 4 of 4)

Inspected By:	Dawson,Paul	Quality Assurance Inspector
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Reviewed By:	Carreon,Albert	QA Reviewer
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