

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-000640**Date Inspected:** 15-Oct-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Yeng Yongjun**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:** Mock Up**Summary of Items Observed:**

Elevation 89

The Caltrans Quality Assurance (QA) Inspector Charlie Franco was present at the time requested to randomly observe welding and associated operations being performed for the fabrication of the Mock Up. The QA Inspector randomly observed ZPMC Non Destructive Testing (NDT) Technician Cai Xin Xin utilizing the Magnetic Particle Testing Method (MT) to examine 100% of the SAW Partial Joint Penetration (PJP) welds on Skin Plate C, Sub-Assembly (SA) MUSB-MA23, Weld Joint (WJ) number 38 and WJ number 40, attaching piece mark MA23 to piece marks mp507 and mp508 respectively. The QA Inspector also observed Mr. Cai performing 100% MT inspection on the areas where lifting lugs had been removed. The QA Inspector observed that the powder that Mr. Cai was using for the MT, appeared to be of finer grain and of a different color than what had been previously used by ZPMC MT personnel. The QA Inspector asked ZPMC QC Representative Li Xiu Yang if the powder had been changed. Mr. Li informed the QA Inspector, after two separate conversations with Mr. Cai, that the powder had indeed been changed. Mr. Li also informed the QA Inspector that ABF had suggested that ZPMC go to a more sensitive powder than ZPMC had been previously using. The QA Inspector observed some MT powder adhering to the outside edge of WJ 40. The area of adherence was approximately 10 millimeters long. The QA Inspector discussed the indication with Mr. Cai and Mr. Li, and the MT inspection was put on hold until the reinforcement could be ground flush with the base metal, and WJ 40 would again be inspected with MT. The attached photograph provides additional detail on the new MT powder.

The QA Inspector randomly observed a ZPMC arc gouger, utilizing the carbon air arc gouging process to back gouge WJ 9A on 89M Strut SA MUSB-MA26-1 and WJ 10A on 89M Strut SA MUSB-MA26-2. The QA

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Inspector observed WJ 10B of 89M Strut SA MUSB-MA26-1 flipped to 10A side in preparation for back gouging, and WJ 9A of 89M Strut SA MUSB-MA26-2, tack welded only.

The QA Inspector randomly observed welding being performed for the fabrication of the Mock Up at elevation 89M. The QA Inspector randomly observed ZPMC qualified welder Han Xiaofeng utilizing the Shielded Metal Arc Welding (SMAW) process with E7018 electrodes, to place tack welds in WJ's 5A and 6B on 89M Strut SA MUSB-MA25. Mr. Han was utilizing ZPMC approved Weld Procedure Specification (WPS) WPS-B-T-4211-B-U3b-2. The QA Inspector asked ZPMC CWI Yeng Yongjun if this was an overmatching or undermatching condition, because the material being welded was ASTM A709M GR 485 to ASTM A709M GR 345, and might require a higher strength electrode than E7018? Mr. Han informed the QA Inspector that the WPS was approved by Caltrans and that the E7018 electrode was correct. The QA Inspector then asked ZPMC QC Representative Li Xiu Yang, if ZPMC was using the correct WPS and the correct electrode. The QA Inspector received the same response from Mr. Li that he had received from Mr. Yeng. The QA Inspector then asked Mr. Li to look at the Weld Joint Detail (WJT) for those 2 welds and assure that the WPS and the E7018 electrode were correct for this application. Mr. Li produced the WJT MWT102 for WJ's 5A and 6B which refers to Note 2 on Sheet MUSB-MA25, and states: "Filler metal matching the higher strength of the base metals is required." The QA Inspector then informed ABF Production Representative John Hamer of the situation, and he and Mr. Li concurred that the weld joints in question were an overmatching condition and required the higher strength electrode. Work was stopped by ZPMC on the two parts, and the 4 other parts of 89M Strut-Assembly MUSB-MA26 which were also welded with the E7018 electrode. The attached photographs provide additional detail.

The QA Inspector randomly observed a ZPMC beveler, utilizing a tracked semi-automatic torch beveling apparatus, to cut the bevel on the outside edge of piece mark mp505 of 89M Skin Plate B, SA MUSB-MA24.

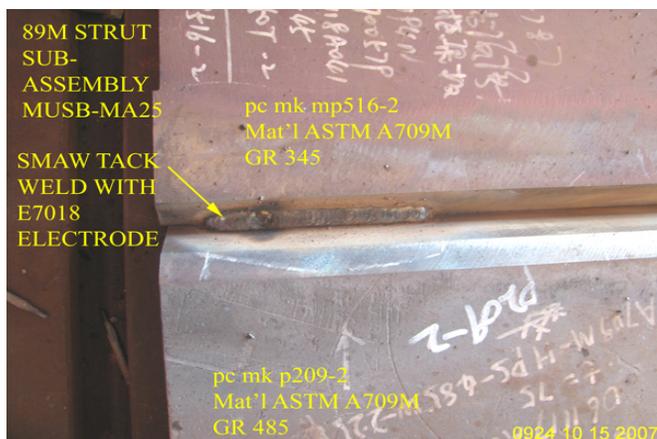
Elevation 114:

The QA Inspector observed a ZPMC helper utilizing a grinder on the ends of the longitudinal stiffeners on Skin Plate D, SA MUSB-MA22, to remove slag and leftover weld metal after the burning off of the lifting lugs with carbon air arc .

The QA Inspector randomly observed ZPMC welding personnel performing the layout prior to heat straightening operations on WJ 1 on Interior Corner Splice Assembly MUC-A119. The QA Inspector also randomly observed the heat straightening operation being performed. The attached photograph provides additional detail.

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Summary of Conversations:

As noted in the above body of this report.

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.

Inspected By: Franco,Charlie

Quality Assurance Inspector

Reviewed By: Cochran,Jim

QA Reviewer