

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-000164**Date Inspected:** 30-Apr-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 800**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China

CWI Name:	Zhou Daqing	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:	N/A	

Summary of Items Observed:

The Caltrans Quality Assurance (QA) Inspector, Alfredo Acuna was present for the welder and welding operator qualification tests scheduled for this project. Moody International representative, Zhou Daqing and assistants, were observed by the QA inspector performing verifications of the welding parameters, amperages, voltages, travel speeds, preheat and interpass temperatures for the welder qualification tests as follows:

Flux Cored Arc Welding: ZPMC welders, Wang Bing, Bi Lai Shu, Yu Jian Guo, Jiang Yong Sheng, Du Ji Lian, Lu Zhao Lin, Cao Heng Feng, Xu Chang Xue, Yang Tian Bing Wang Hui, Liu Gui Xuan, Xu Guo Yin, Wang You Xiang, Xu Xiao Bing, Zhang En Gang, Zhao Shan Lun and Fei Chen Xiang were observed by the QA Inspector performing welder qualification test plates 070409116 through 070409132 respectively using the semi-automatic flux cored arc welding gas (FCAW-G) process in the vertical (3G) position with the 1.4 mm diameter Supercore 71-H electrode following the welding procedure specification WPS-B-T-2233-B-U2a-F on the 25 mm thick, fracture critical test plates. The root opening of the joint was approximately 6 mm. The QA Inspector performed random verifications of amperages, voltages, travel speeds, preheat and interpass temperatures after Moody International verifications. The QA inspector recorded that the welding appeared to be in compliance with contract documents.

Submerged Arc Welding: ZPMC, welding operators Xia Yong Liu, Xu Fa Quan, Sun Ping and Chen Jing were observed by the QA Inspector performing welding operator qualification test plates 2007-0409-005 and 008 respectively using the automated submerged arc welding (SAW) process single electrode in the flat (1G) position with the 4.8 mm diameter JW-3 electrode following the welding procedure specification WPS-B-T-2221-1-FB on the 25 mm thick fracture critical test plates. The root opening of the joint was approximately 16 mm. The QA Inspector performed random verifications of amperages, voltages, travel speeds, preheat and interpass temperatures after Moody International verifications. The QA inspectors recorded that the welding parameters

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appeared to be in compliance with contract documents.

Shielded Metal Arc Welding: ZPMC welders, Li Zheng Xu, Xia Yuan Chao, He Jian Jun, Duan Yan Gang, Pu Yong Xing, Liao Chang Fei, Yang Gen Cheng, Li Wen Guo, Li Zai Jun, Fu Yan Jie were observed by the QA Inspector performing welder qualification test plates 070409060 through 070409069 respectively using the shielded metal arc welding (SMAW) process in the vertical (3G) position with the 4.0 mm diameter TL-508 (E7018) electrode following the welding procedure specification WPS-B-T-2213-B-U2a on the 25 mm thick, fracture critical test plates. The root opening of the joint was approximately 6 mm. The QA Inspector performed random verifications of amperages, voltages, travel speeds, preheat and interpass temperatures after Moody International verifications. The QA inspector recorded that the welding parameters appeared to be in compliance with contract documents. However, the QA inspector observed welder Pu Yong Xing welding the filler passes on the test coupon from the test plate # 070409064 interrupting the arc by moving the electrode away from the weld puddle, continuing welding with short arc length and interrupting the arc again. The QA inspector had a conversation with the ABF representative Song Wemin, ZPMC representative Lu Liang Hua and Third party Moody International representative Zhou Daqing. The QA representative relayed that Mr. Pu made frequent stops interrupting the welding arc as reported by the QA inspector Mike Hasler in previous welder qualification tests. Mr. Song, Mr. Lu and Mr. Zhou agreed that AWS D1.5-02 did not restrict ZPMC on the welder qualification test for welding, breaking the arc, pausing and restart welding again.

The QA inspector conveyed to Mr. Song, Mr. Lu and Mr. Zhou Low hydrogen electrodes required a short arc length to ensure proper operation and effective shielding. Mr. Song, Mr. Lu and Mr. Zhou relayed to the QA inspector that this technique would not be used in production.

In later conversation with the Director from ZPMC testing Lab Liu Liu, the QA inspector relayed that on the welder qualification tests some of the welders were welding, breaking the arc, pausing and restart welding again when welding SMAW in the vertical position.

The QA inspector conveyed to Mr. Liu that Low hydrogen electrodes required a short arc length to ensure proper operation and effective shielding. Mr. Liu agreed with the QA inspector and relayed to the QA inspector that he would be present on the next welder qualification test. Mr. Liu added that welders probability were welding with high amperages range.

The QA inspector had a conversation with Mr. Song. Mr. Song relayed to the QA inspector that 60 welders were tested on April, 29 and 30 and the results were as follows: FCAW: 33 welders were tested and 20 welder test coupons were rejected by Moody International, SMAW: 19 welders were tested and 13 coupons were rejected and SAW: 8 welders were tested and 4 coupons were rejected.

Summary of Conversations:

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

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Inspected By: Acuna,Alfredo

Quality Assurance Inspector

Reviewed By: McClary,David

QA Reviewer