

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
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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-001647**Date Inspected:** 09-Mar-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 600**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:** Sun Wei**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:**

Caltrans Quality Assurance (QA) Inspector Tim McClendon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

Caltrans QA Inspector McClendon observed the Production Monitoring Test number 1 for Production Panel DP073-001 and DP042-002 closed rib welds in Bay #1. ZPMC welding personnel performed Gantry Machine Gas Metal Arc Welding (GMAW) for the root pass using gantry machine 1. Dual process WPS-B-T-2342-U1 (U-rib)-3 was posted as the Welding procedure specification for closed rib welding. The following weld joint and welder were recorded for the PMT, weld joint (wj) # 1 Mr. Chen Jie, wj # 2 Mr. Xang Jie, wj # 3 Mr. Gao Xin Dong, wj # 4 Mr. Song Xin Shu, wj # 5 Mr. Zhang Sheo Hai and wj # 6 Mr. Xiang Huan Feng. Welding operator was Mr. Li Xi De. The following welding variables of the PMT were recorded, amperage 356 to 364 voltage 30.4 to 31.5 with a travel speed of 529 mm/min. All three closed ribs were welded simultaneously.

The ambient temperature in bay # 1 was recorded at 11 degrees Celsius with the production panel temperature recorded at 19 degrees Celsius prior to welding.

After completion of the PMT GMAW pass, ZPMC personnel performed the GMAW pass on Production Panel DP073-001. The following welders were observed welding production deck plate u-ribs welds, Mr. Chen Jie wj-1 and 3, Mr. Xang Jie wj- 2 and 4, Mr. Gao Xin Dong wj-5 and 7, Mr. Song Xin Shu wj 6 and 8, Mr. Zhang Sheo Hai wj-9 and Mr. Xiang Huan Feng wj-10. The following welding variables of production panel U-ribs was recorded, amperage 350 to 366, voltage 30.5 to 31.4 with a travel speed of 529 mm/min.

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After completion of the GMAW pass on Production Panel DP073-001, ZPMC personnel performed the GMAW pass the DP 042-002. The following welders were observed welding production deck plate u-ribs welds, Mr. Chen Jie wj-1, Mr. Xang Jie wj- 2, Mr. Gao Xin Dong wj-3 and 5, Mr. Song Xin Shu wj 4 and 6, Mr. Zhang Sheo Hai wj-7 and Mr. Xiang Huan Feng wj-8. The following welding variables of production panel U-ribs was recorded, amperage 354 to 366, voltage 30.1 to 31.5 with a travel speed of 529 mm/min. Incident will be written on this issue.

Caltrans QA Inspector McClendon observed the Production Monitoring Test number 1 for Production Panel DP073-001 and DP042-002 closed rib welds in Bay #1. ZPMC welding personnel performed Gantry Machine Submerged Arc Welding (SAW) for the final pass using gantry machine 1. Dual process WPS-B-T-2342-U1 (U-rib)-3 was posted as the Welding procedure specification for closed rib welding. The following weld joint and welder were recorded for the PMT, weld joint (wj) # 1 Mr. Chen Jie, wj # 2 Mr. Xang Jie, wj # 3 Mr. Gao Xin Dong, wj # 4 Mr. Song Xin Shu, wj # 5 Mr. Zhang Sheo Hai and wj # 6 Mr. Xiang Huan Feng. Welding operator was Mr. Li Xi De. The following welding variables of the PMT were recorded, amperage 675 to 689 voltage 24.3 to 26.1 with a travel speed of 516 mm/min. All three closed ribs were welded simultaneously.

After completion of the PMT SAW pass, ZPMC personnel performed the SAW pass on Production Panel DP073-001. The following welders were observed welding production deck plate u-ribs welds, Mr. Chen Jie wj-1 and 3, Mr. Xang Jie wj- 2 and 4, Mr. Gao Xin Dong wj-5 and 7, Mr. Song Xin Shu wj 6 and 8, Mr. Zhang Sheo Hai wj-9 and Mr. Xiang Huan Feng wj-10. The following welding variables of production panel U-ribs was recorded, amperage 370 to 682, voltage 24.5 to 25.5 with a travel speed of 520 mm/min.

After completion of the SAW pass on Production Panel DP073-001, ZPMC personnel performed the SAW pass the DP 042-002. The following welders were observed welding production deck plate u-ribs welds, Mr. Chen Jie wj-1, Mr. Xang Jie wj- 2, Mr. Gao Xin Dong wj-3 and 5, Mr. Song Xin Shu wj 4 and 6, Mr. Zhang Sheo Hai wj-7 and Mr. Xiang Huan Feng wj-8. The following welding variables of production panel U-ribs was recorded, amperage 354 to 366, voltage 30.1 to 31.5 with a travel speed of 529 mm/min. The SAW welding of the cover pass on DP-042-002 was halted due to the lack of welding flux at weld head number 1 resulting in a 70mm length of porosity in the weld and also in the base metal. See photograph below for additional information. This incident occurred at the end of this QA inspectors shift at approximately 1530 hours. The information of this incident was passed on to the next shift for follow up inspection.

Caltrans QA Inspector McClendon observed the Production Monitoring Test for Production Panel DP080-001 closed rib welds in Bay #1. ZPMC welding personnel performed Gantry Machine Gas Metal Arc Welding (GMAW) for the root pass using gantry machine 2. Dual process WPS-B-T-2342-U1 (U-rib)-3 was posted as the Welding procedure specification for closed rib welding. The following weld joint and welder were recorded for the PMT, weld joint (wj) # 1 Mr. Feng Chuan Hang, wj # 2 Mr. Jiang Ting Guango, wj # 3 Mr. Xu Guo Yin, wj # 4 Mr. Xiang Huan Feng, wj # 5 Mr. Zang Shao Hui and wj # 6 Mr. Yuan Feng Chuan Welding operator was Mr. Li Xi Dei. The following welding variables of the PMT were recorded, amperage 356 to 377 voltage 30.2 to 30. 7 with a travel speed of 525 mm/min.

After completion of the PMT GMAW pass, ZPMC personnel performed the GMAW pass on Production Panel DP080-001. The following welders were observed welding production deck plate u-ribs welds, Mr. Xu Guo Yin

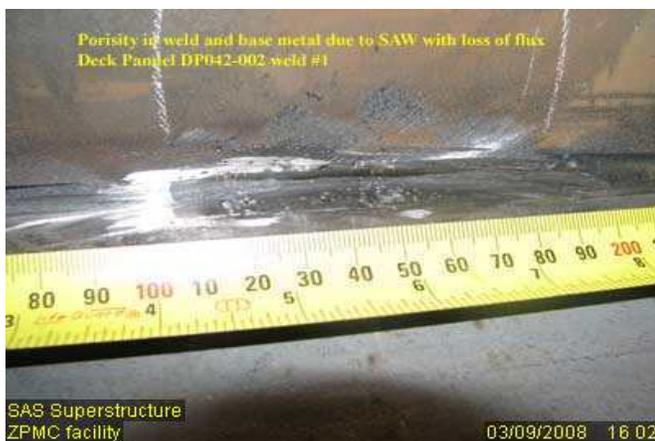
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wj-1, Mr. Jiang Ting Guang wj- 2, Mr. Xu Guo Yin wj-5 and 7, Mr. Xiang Huan Feng wj 6 and 8, Mr. Zang Shao Hui wj-9 and Mr. Yuan Feng Chuan wj-10. The following welding variables of production panel U-ribs was recorded, amperage 346 to 370, voltage 29.4 to 30.8 with a travel speed of 530 mm/min.

During the GMAW welding of DP-005-001 at gantry # 2 the mobile welding gantry for the welding of weld-6 on the panel hit one of the clamps used to hold the panel to the curved table. The welding arc undercut the base material prior to the welding being halted. The GMAW root pass on weld-6 was ground out for approximately 60mm. The grinding removed the root pass creating an opening beyond the allowed tolerance for root gap and greatly reduced the bevel angle. ZPMC used an unapproved welding procedure using Flux Cored Arc Welding FCAW in order to repair this area. See photograph below for additional information. An Incident Report is to be written on these issues.

Caltrans representatives observed rust areas tears and fins on weld joints prior to GMAW welding. Areas were shown to ZPMC personnel prior to welding.



## Summary of Conversations:

No relevant conversations spoken on this date.

## 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

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for your project.

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<b>Inspected By:</b>	McClendon, Timothy	Quality Assurance Inspector
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<b>Reviewed By:</b>	Cuellar, Robert	QA Reviewer
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