DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-001856
Date Inspected: 15-Mar-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1730
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: Tower/OBG

Summary of Items Observed:

Caltrans Quality Assurance (QA) Inspector Sherri Brannon 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.

New Tower Shop:
QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening tower #P117(S). ZPMC report #HSR1 (T)-174, cause for heat straightening mill induced distortion. Heat Straightening is performed by flame straightening by oxygen acetylene.

89 Meter Mock-up:
QA Inspector Brannon observed tower mock-up to be idle during this shift.

Bay 2
77 & 144 Meter Mock-up:
QA Inspector Brannon observed tower mock-up to be idle during this shift.

Tower
QA Inspector Brannon randomly observed ZPMC personnel CNC torch cutting with 75% natural gas and 25% oxygen for interior splice plate for the 45 Meter elevation, piece # SA17.

Bay 3 - Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening side panel BP15. ZPMC report #HSR1 (B)-272, grid 4AW, welds #013~024, weld map BP015-01. Heat Straightening is performed by flame straightening by oxygen acetylene.

Bay 3-OBG wide flange beams (splice):
QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Li Zhaoqian ID#048810 splice welding at weld wide beam for SP31-001-005. Mr. Li was observed welding in the 1G (flat) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1 semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Hu Wei Qing to be: preheat temperature of 15°C and welding parameters amps of 301 volts of 29.8, a travel speed of 296 mm/min and a gas flow of 19L/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2231-B-U2-F Revision 0.

Bay 3-OBG side panel:
QA Inspector Brannon randomly observed ZPMC qualified welders, tack welding various T stiffeners plate to SP146-001, weld joints 001~010 and SP332-001 weld joints 009~010 using a shielded metal arc welding (SMAW) process.

Bay 3-OBG side panel:
QA Inspector Brannon randomly observed ZPMC qualified welders, fillet welding various T stiffeners plate to SP469-001, weld joints 009~022 and SP601-001 weld joints 007~018 using a flux cored arc welding (FCAW) process.

Bay 4 – Heat straightening bottom and side panels:
QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening bottom panel BP24. ZPMC report #HSR1(B)-264, grid 3AW, weld #013~024 and 037~048, weld map BP024-001 and side panel SP9 ZPMC report #HSR1(B)-266, grid 3AW, weld #013~043, weld map SP009-001 . Heat Straightening is performed by flame straightening by oxygen acetylene.

Bay 4 – Heat Straightening 43 Meter Diaphragm plates:
QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening, 43 Meter bottom SA335(N), ZPMC report #HSR1(T)-160 and 43 Meter top SA27(N), ZPMC report #HSR1(T)-129 . Heat Straightening is performed by flame straightening by oxygen acetylene.

Bay 4 Tower 43 Meter Elevation:
QA Inspector Brannon randomly observed ZPMC welder Mr. Han Xianfeng ID #054467 tack welding joining PLSA 335(S) to P459 weld joint SSD1-SA335-1A. Mr. Han was observed welding in the 1G (flat) position utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E9018M-H4R, class 9018MMR. QA Inspector Brannon observed the ZPMC QC CWI Inspector Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Zhao Chen Sun to be: preheat temperature of 195°C and welding parameters amps of 177. Welding parameters observed by

QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-B-3311-TC-P4-F-1 Revision 0. Note: Later in the shift QA Inspector Brannon was informed by ZPMC QC Mr. Xu Fu that the two of the tack welds had cracked and that this was the second time that this had happened. Mr. Xu also, stated that ZPMC would remove the two tacks, perform magnetic particle (MT) testing and re-weld.

Bay 7-OBG - Floor Beam I Beam:
QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Chen Chuan Zang ID #044824 fillet welding FB006-003 & 004 weld joints 009~012. Mr. Chen was observed welding in the 2F (horizontal) position utilizing a Flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC CWI Inspector Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Hu Wei Qing to be: preheat temperature of 87°C and welding parameters amps of 297, volts of 30.2, a travel speed of 435 mm/min and a gas flow of 21L/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

Bay 7-OBG - Floor Beam:
QA Inspector Brannon randomly observed ZPMC qualified welders, welding stiffener plates to floor beam FB021-01 using a shield metal arc welding (SMAW) process.

Bay 7-OBG – Floor Beam ZPMC NDT (MT):
QA Inspector Brannon observed ZPMC magnetic particle (MT) technician Mr. Zhou Dong Yun performing (MT) the fillet weld for FB018-01, FB018-02 and FB025-01.

Bay 7-OBG - Floor Beam Diaphragm:
QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Yuan Wensong ID #055491 fillet welding FB003-011 weld joints 20 and 22. Mr. Yuan was observed welding in the 3F (vertical) position utilizing a Flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC CWI Inspector Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Hu Wei Qing to be: preheat temperature of 80°C and welding parameters amps of 202, volts of 25.3, a travel speed of 116 mm/min and a gas flow of 22L/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2233-TC-U4b-F.

Bay 8 - Tower 47.6 Meter:
QA Inspector randomly observed ZPMC personnel performing heat straightening on tower 38 meter bottom piece # SA370 (W), ZPMC report #HSR1 (T)-0113. ZPMC personnel flame straightening by natural gas.

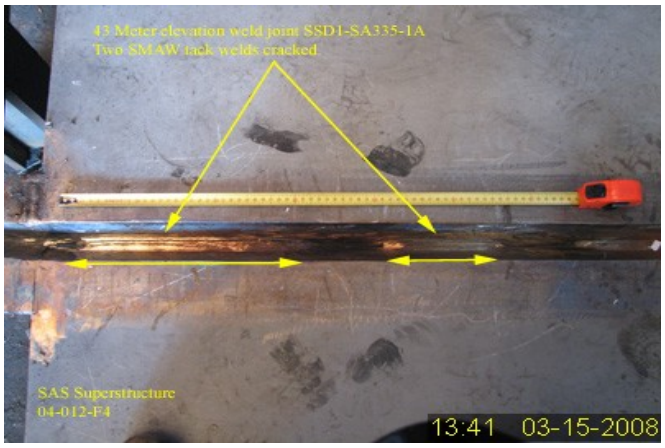
Bay 8-Tower Diaphragm:
QA Inspector Brannon randomly observed ZPMC qualified welder Mrs. Ma Ying ID #045270 groove welding joining SA326(S) to P632(S) weld joint SSD1 SA326-1A. Mrs. Ma was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.0mm diameter electrode, filler metal brand LA-85, class MIL800-HPNI, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Xu Bing

verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Hu Wei Qing to be: preheat temperature of 180°C and welding parameters amps of 560, volts of 30.7, and a travel speed of 417. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

New OBG Assembly Area side panels:
QA Inspector Brannon randomly observed ZPMC welder Mr. Yang Xu He ID #057795 tack welding joining SP75 to SP63 segment 014A-0/2. Mr. Yang was observed welding in the 1G (flat) position utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class THJ506Fe-1. QA Inspector Brannon observed the ZPMC QC CWI Inspector Chen Chih Ming verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Mr. Chen Chih Ming to be: preheat temperature of 56°C and welding parameters amps of 180. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-B-2211-B2u-FCM.

New OBG Assembly Area side panels:
QA Inspector Brannon randomly observed ZPMC welder Mr. Gao Dong Liang ID #048714 welding root pass joining SP062A to SP74A segment 019A-020. Mr. Yang was observed welding in the 1G (flat) position utilizing a Flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC CWI Inspector Chen Chih Ming verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector Mr. Chen Chih Ming to be: preheat temperature of 60°C and welding parameters amps of 557, volts of 29.5, and a gas flow of 25L/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-B-2231-B-U2-F-1.

The following digital photograph below illustrates observation of the activities being performed.



Summary of Conversations:
As stated within the report.

WELDING INSPECTION REPORT

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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:	Brannon,Sherri	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer