

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-003270**Date Inspected:** 13-Jul-2008**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:** 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:** OBG/Tower**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.

OBG Sub Assembly Bay 1**Bay 1-Deck Panel**

QA Inspector Brannon observed ZPMC welding utilizing the dual process WPS-B-T-2342-U1 (U-rib)-3 welding procedure specification for closed rib welding for Production Panel DP198-001 and DP332-001 on closed U-rib Partial Joint Penetration (PJP) welds in Bay #1. ZPMC welding personnel performed Gantry Machine, Gas Metal Arc Welding (GMAW) for the root pass and immediately performed Gantry Machine, Submerged Arc Welding (SAW) for the cover/final, using gantry machine #1. QA Inspector Brannon observed the ZPMC QC CWI Inspector Chen Xi verifying that the welding parameters were in accordance with the above Welding Procedure Specification (WPS)

OBG/Tower Sub Assembly Bay 2

QA Inspector Brannon observed that the 114 Meter Mock-Up to be idle on this date. QA Inspector Brannon observed no CNC torch cutting for interior splice plate for various tower elevations. QA Inspector Brannon observed ZPMC beveling various tower plates using the horizontal milling machine.

OBG Sub Assembly Bay 3

QA Inspector Brannon observed ZPMC continuing with the fabrication of various Side, Bottom and Edge Panels

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designated for the SAS OBG. The general fabrication of said items consist of removing of coating from weld joint areas, cutting stiffener plates, beveling various, splicing of plates, fitting, tack welding and welding.

Bay 3-OBG side/bottom/edge panels:

QA Inspector Brannon randomly observed ZPMC qualified welder's, tack welding various T stiffeners plates utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508 non-FCM and filler metal brand E7018, class THJ506Fe-1 for FCM material . Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112 and WPS-B-P-2112-FCM respectively.

Bay 3-OBG Bottom Panel stiffener (splice)

QA Inspector Brannon randomly observed ZPMC qualified welder splice welding joining BP198-001-010, 013, 015 & 017 and BP301-001-010, 013, 015 & 017. Qualified welder was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2231-B-U2-F-1.

Bay 3 – Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various side/bottom/edge panels. Side/bottom/edge panels cause for heat straightening welding distortion. Heat Straightening is performed by flame straightening using oxygen acetylene or natural gas using a hand torch.

Bay 3-OBG side/bottom panel (Gantry 1):

QA Inspector Brannon randomly observed ZPMC qualified welders fillet welding joining T-stiffeners to side panel plate for SP385-001 weld joints 001~014. Qualified welder was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

OBG/Tower Sub Assembly Bay 4

Bay 4 – Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various side/bottom/edge panels. Side/bottom panels cause for heat straightening welding distortion. Heat Straightening is performed by flame straightening using oxygen acetylene or natural gas using a hand torch.

Bay 4 Tower Diaphragm Flange Sub-assemblies:

QA Inspector Brannon randomly observed ZPMC welder's welding fill pass's at weld joint # WSD1 SA268 6A, SSD1 SA261 8B and SSD1 SA333 11A. Qualified welder's was observed welding in the 3G (vertical) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying

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that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2233-B-U3-F.

Bay 4 Tower Diaphragm Flange Sub-assemblies to Tower Diaphragm:

QA Inspector Brannon randomly observed ZPMC welder tack welding joining ESD1 SA317 to SA338 weld joint #8. Welder was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-12JH4, class K-71TSR. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-4132.

OBG/Tower Sub-Assembly

Bay 7-OBG floor beam panels:

QA Inspector Brannon randomly observed ZPMC qualified welder's, tack welding various floor beam web splice connections and floor beam top and bottom diaphragm flange to web utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508 or brand E7018, class ThJ506Fe1. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112 or WPS-B-P-2112-FCM.

Bay 7-OBG - Floor Beam Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder's fillet welding various floor beam stiffeners plates to floor beam web plates. Qualified welders 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 Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-3.

Bay 7-OBG - Diaphragm Diagonal Brace-Sub Assembly:

QA Inspector Brannon randomly observed ZPMC qualified welder groove welding various floor beam stiffeners plates to Diaphragm Diagonal Brace-Sub Assembly FL2-1-131 7 132. Qualified welder 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 Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2233-Tc-U4b-F.

Bay 7- OBG Diaphragm Diagonal Brace-Sub Assembly

QA Inspector Brannon randomly observed ZPMC qualified welder's fillet welding closure plates to various floor beam diaphragm diagonal brace FB006-041 weld joint #3 & 4 and FB006-041 weld joint #005 & 006. Qualified welder's was observed welding in the 2F (horizontal) and 3F (vertical) positions utilizing a shielded metal arc welding (SMAW) process with a 3.2mm diameter electrode, filler metal brand E7018, class TL-508. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat

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were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112, 2F (horizontal) and WPS B-P-2113, 3F (vertical).

OBG/Tower Sub-Assembly

Bay 8 – Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various tower diaphragm flange plates. Cause for heat straightening welding distortion. Heat Straightening is performed by flame straightening using natural gas with a hand torch.

Bay 8 OBG Floor Beam Sub Assemblies

QA Inspector Brannon randomly observed ZPMC qualified welder groove welding fill/cover passes for various floor beam web splice. Qualified welder was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand EM12K, class JW3, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2221-B-L2c-S-1.

Bay 8 OBG-Longitudinal Diaphragms

QA Inspector Brannon randomly observed ZPMC qualified welder groove welding fill/cover passes for various longitudinal diaphragm assemblies. Qualified welder 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 Mr. Hu Wei Qing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2231-Tc-U4b-F.

Bay 8 Tower Diaphragm Flange Sub Assemblies:

QA Inspector Brannon randomly observed ZPMC welder welding fill pass's at weld joint # ESD1 SA2316 8B. Welder was observed welding in the 3G (vertical) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Sha Zhi verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2233-B-U3-F.

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

