

**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-002482**Date Inspected:** 01-May-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 1500**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 100**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai China**CWI Name:** See observations 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 skin plates & OBG plate segments**Summary of Items Observed:**

Caltrans Quality Assurance Inspector Mr. David Kelsey (Caltrans QA Inspector) arrived at Shanghai Zhenhua Port Machinery Co (ZPMC) to observe the ZPMC Quality Control Inspectors noted below perform the duties and responsibilities as outlined in the Welding Quality Control Plan (WQCP), Contract Special Provisions and to randomly inspect the in-process welding fabrication at ZPMC fabrication facility for the Orthotropic Box Girder (OBG) and Tower bridge structural components.

The Caltrans QA Inspector performed in-process visual inspection on the submerged arc welding (SAW) process welding on skin plate weld joint SSD1-SA173 A/K-16B in the tower bay#3 building. QA Inspector randomly observed the ZPMC QC/CWI Mr. Au Jing Xiang and two CAWI monitoring welding voltage, pre-heat & interpass temperatures & cleaning, weld pass width, profile/size and travel speed per WPS 2221-B-U3c-S.

The Caltrans QA Inspector performed in-process visual inspection on the flux cored arc welding (FCAW) process welding on side plate segment SEG020A-004 (BP 24A to BP 22A) weld splice root passes in the OBG assembly building Bay# 2. QA Inspector randomly observed the ZPMC QC/CWI Mr. Zhang Bao Lei and two CAWI monitoring welding voltage, pre-heat & interpass temperatures & cleaning, weld pass width, profile/size and travel speed per WPS-B-T-223 (2) 1T.

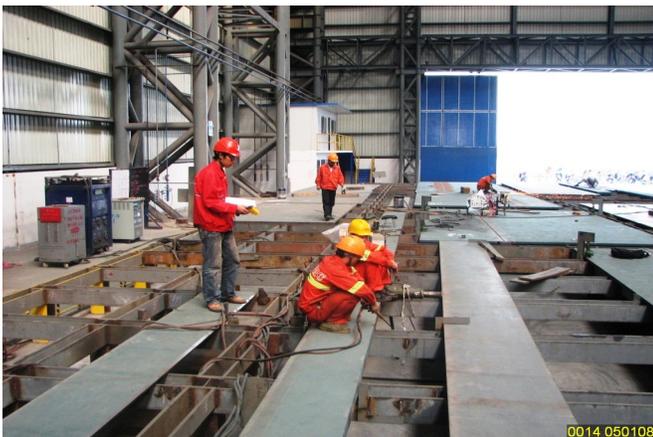
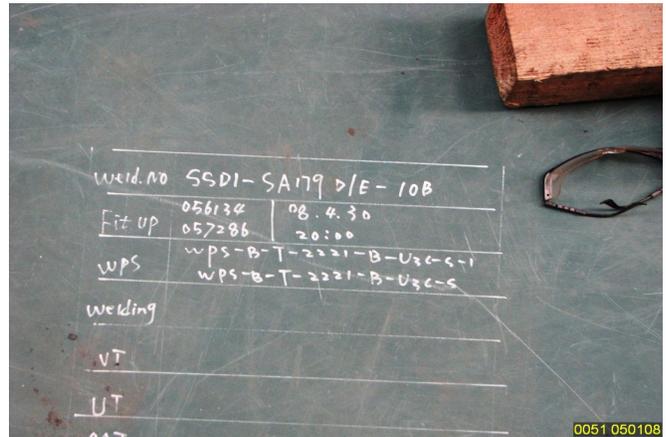
The Caltrans Inspector observed thermal cutting & heat straightening of various 90mm thick skin plates in tower bay# 3 & 2. Heat straightening procedure used HSRT (T) -1101 and being monitored by QC with a calibrated infrared temperature gun.

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The Caltrans Inspector observed weld root back-gouging in progress on side and bottom plate segment weld splices in the OBG assembly bay.

The in-process welding, fit-up & joint preparation, and thermal cutting observed by the Caltrans Inspector appears to comply with previously mentioned WPS, the approved drawings, the WQCP, Contract Special Provisions and AWS welding code D1.5. See attached pictures below.



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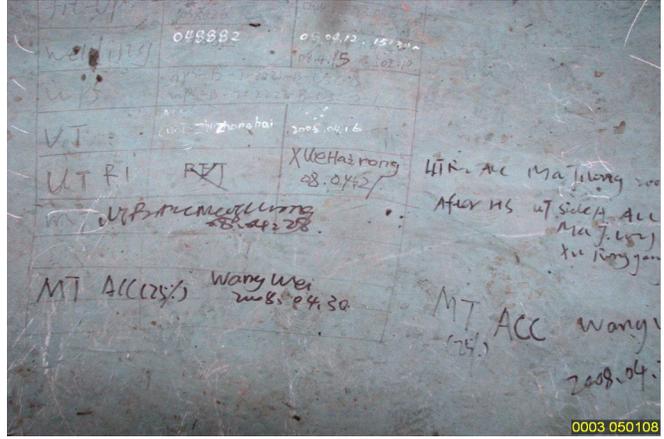
Item	Description	WBS	Dwg No.	Status
1	SSDI SA173 A/K -16A CWI Au Jing Xiang & a ABF representative inspecting weld after a completed weld pass bead for acceptable cleaning and free of any visual indications.	WPS 2221-B-U3c-S		In-Work
2	SA179 D/E-10B Good legible component identification identifying workers I.D.# doing fit-up and welding.			In-work
3	Tower Skin Plate ZPMC monitoring thermal heat straightening of plate	Heat straightening Procedure HSRT (T) -1101		In-Work
4	Bottom Plate Splice Segment BP4A to BP5A Standard back-gouging of OBG bottom segment plate with the thermal carbon air arc process.			In-Work
5	SSDI Sa173 A/K-16A ZPMC personnel cleaning weld bead after a completed SAW weld pass	2221-B-U3c-S		In-Work
6	SA179 D/E-10B Fit-up and SMAW tack welding of weld joint. Tight and closed root gap, tack weld bead clean & ground to a smooth contour.			Fit-up

### Summary of Conversations:

The Caltrans Inspector observed numerous plates with CJP weld splices both in the Tower Bay# 2 (Skin Plates) and the OBG assembly area (side & bottom segment splices) with numerous UT rejections and repairs and questioned an ABF representative about these concerns. ABF QC Representative Mr. Kevin Dye stated that it appears to be from inaccurate marking from the UT technicians and or interpretation of the markings (Y & X indication locations marked) by the worker excavating the marked indication from the ZPMC UT technicians. ABF has noted there is apparent communication lacking between the ZPMC UT technicians and the repair/welding crew when locating and excavating marked and reported indications. ABF suspects and is still investigating that many of the repeat repairs are not from new defects being added during the weld repair but original defects not being completely removed in the first place. It is questionable of the indication type description being located by the ZPMC UT Technicians because they just mark the location based on their indication rating without taking the time to evaluate a possible indication type for possible future corrective action by the welding crews. ABF representative also stated that the repair crew excavating the defects are not being careful that when they are in the suspected area of the indication to note the type and location of any indications thereby confirming the UT technicians findings for possible corrective action in the future. ABF stated that these concerns are to be brought to the attention of ZPMC QC personnel during their next scheduled tool box meetings. See the two pictures below.

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Item	Description	WBS	Dwg No.	Status
1	Segment SP 015A-001 Example of one of several excavations on this component revealed by UT. This appears to be an R-1 for this particular segment. MT to be performed by ZPMC technicians after cleaning is completed on all excavations.			Repairing.
2	Tower skin plate Example of difficulty to determine inspection sequence/record by field writing directly on the component. R-1, R-2 completed or accepted? Difficult to determine by the information recorded here.			??

### 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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<b>Inspected By:</b>	Kelsey, David	Quality Assurance Inspector
<b>Reviewed By:</b>	Cuellar, Robert	QA Reviewer

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