

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 #: 70.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-002820**Date Inspected:** 30-May-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**Contractor:** Japan Steel Works**Location:** Muroan, Japan**CWI Name:** Chung-Fu Kuan**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, Jacking and Deviation Saddles**Summary of Items Observed:**

The following report is based on METS observations at Japan Steel Works (JSW) in Muroan Japan. Current work: Casting, machining and nondestructive testing of Saddles.

Fabrication Building number 4

On this date the Caltrans Quality Assurance (QA) inspector, Joe Lanz arrived at JSW fabrication shop number 4 and observed the in process tack welding operation of the structural steel plates for the West Deviation Saddle base W2E1. The tack welding was performed at the stem to rib weld locations on the opposite side of rib plates from existing tack welds. The joint designations were E1Y-6V, E1Y-8V, E1Y-10V, E1Y-12V E1Y-14V and E1Y-16V. The JSW welding personnel Tatsuya Naitoh, identified as number 71-2736 and K. Kabayashi, identified as 08-5023 performed the welding utilizing the Shielded Metal Arc Welding (SMAW) process per the welding procedure specifications (WPS) SJ-3011-3. The welding was performed in the 2G (Horizontal) position. The filler metal utilized was identified as 4.8mm diameter, Class E9018-M-H4R, Brand name Hoballoy 9018-M. The preheating was performed by two JSW fitter personnel utilizing an oxygen fuel gas torch. The welding parameters and heat control were monitored by Intertek Testing Services Quality Control (QC) inspector Mr. Chung-Fu Kuan at periodic intervals. The minimum preheat temperature of 160 degrees Celsius and maximum interpass temperature of 260 degrees Celsius was verified to meet the WPS requirements by Mr. Kuan and the QA inspector utilizing Tempilstik temperature indicators. This data was entered into the QC inspector's daily log, identifying the location on a weld map. The SMAW welding average amperage and voltage by clamp type meter and travel speed were verified to be within the welding procedure specification parameter range of 245 amps to 270 amps, 22 volts to 25 volts and travel speed of 132 to 168 mm per minute for the 4.8mm electrode by the QA

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inspector. After the shift ended, the QA inspector observed that the welder Kabayashi, identified as 08-5023 has been submitted to Caltrans for approval to perform welding on this project in accordance with the contract special provisions but has not been approved at this time

The QA inspector periodically observed The Nikko Inspection Services QC/NDT technician Mr. Rikuo Kumagai perform magnetic particle (MT) testing of West Deviation Saddle base W2E1, at locations where the root weld was completed as noted above. Each section of root weld was tested immediately upon completion to allow welding of the first fill pass over the tack weld to create multilayer tack welds. The MT was performed in accordance with ASTM standard E709, using the yoke method. The yoke utilized appeared to be model UM 3BF, serial numbers 93-01. The yoke dead lift was verified with a 4.65kg test plate. The magnetic field was verified with a field indicating gauge (pie gauge). Dry visible magnetic particle was utilized with high temperature magnetic particles. All calibrations appear to meet the minimum requirements of ASTM E709. The testing was evaluated in accordance with the contract special provisions. No relevant indications were marked by Mr. Kumagai. The testing was not completed on this date and the work appears to meet the minimum requirements of the contract specifications.

On this date the Caltrans Quality Assurance (QA) inspector, Joe Lanz arrived at JSW fabrication shop number 4 and observed the in process tack welding operation of the structural steel plates for the West Deviation Saddle base W2E2. The tack welding was performed at the stem to rib weld locations on the opposite side of rib plates from existing tack welds. The JSW fitter personnel Kiyotaka Koanagi continued assembly of the West Deviation Saddle base W2E2 by aligning the rib plates, piece marks 2-11 and 2-12 on the base plate, joint designations E2Y-11L and E2Y-12L and aligning with the stem plate, joint designations E2Y-11V and E2Y-12V. The JSW welding personnel Yoshihiro Ohta, identified as number 08-2017 performed the in process tack welding utilizing the Shielded Metal Arc Welding (SMAW) process per the welding procedure specifications (WPS) SJ-3011-2 and SJ-3011-3. The welding was performed in the 2G (Horizontal) and 3G (Vertical) positions. The filler metal utilized was identified as 4.0mm and 4.8mm diameter, Class E9018-M-H4R, Brand name Hoballoy 9018-M. The welding parameters and heat control were monitored by Intertek Testing Services Quality Control (QC) inspector Mr. Chung-Fu Kuan at periodic intervals. The minimum preheat temperature of 160 degrees Celsius and maximum interpass temperature of 260 degrees Celsius was verified to meet the WPS requirements by Mr. Kuan and the QA inspector utilizing Tempilstik temperature indicators. This data was entered into the QC inspector's daily log, identifying the location on a weld map. The SMAW welding average amperage and voltage by clamp type meter and travel speed were verified to be within the welding procedure specification parameter range of 245 amps to 270 amps, 22 volts to 25 volts and travel speed of 132 to 168 mm per minute for the 4.8mm electrode and 145 amps to 165 amps, 21 volts to 24 volts and travel speed of 72 to 97 mm per minute for the 4.0mm electrode by the QA inspector. The work was not completed on this date and appears to meet the minimum requirements of the welding procedure specification and contract documents.

The following digital photographs illustrate observations of the activities being performed.

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Item	Weld Identification	Applicable WPS	CWI Name	Amperage	Voltage	TravelSpeed	Preheat Temp	Remarks
1	W2E1 E1Y-12V	SJ-3011-3	C. Kuan	250 AC	24 AC	140 mm/min.	195 C	M. Yamashita
2	W2E1 E1Y-8V	SJ-3011-3	C. Kuan	250 AC	25 AC	135 mm/min	195 C	K. Kobayashi
3	W2E2 E2Y-11L	SJ-3011-2	C. Kuan	225 AC	24.5 AC	150 mm/min.	160 C	Y. Ohta
4	W2E2 E2Y-11V	SJ-3011-3	C. Kuan	145 AC	22AC	70 mm/min.	160 C	Y. Ohta

Summary of Conversations:

There were general conversations with Japan Steel Works, Ltd. representative Mr. Kunio Nagaya and Intertek Testing Services Certified Welding Inspectors Mr. Makhmud Ashadi relative to the location of the welding and inspection personnel in the fabrication shop number 4.

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 Venkatesh Iyer, (858) 967-6363, who represents the Office of Structural Materials for your project.

Inspected By:	Lanz,Joe	Quality Assurance Inspector
Reviewed By:	Brasel,Ron	QA Reviewer
