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

Bay Area Branch
690 Walnut Ave.St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 70.28

WELDING INSPECTION REPORT

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

Report No: WIR-004829
Date Inspected: 28-Nov-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Japan Steel Works

OSM Arrival Time: 830
OSM Departure Time: 1700
Location: Muroran, Japan

CWI Name: Chung-Fu Kuan

Inspected CWI report:	☑ Yes	☐ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ 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 Muroran Japan. Current work: Casting, machining and nondestructive testing of Saddles.

Fabrication Shop 4

T1-1 Base
No work performed on this date.

T1-1 Casting
No work performed on this date.

T1-2 Base
The QA inspector observed two JSW personnel remove weld run-off plates at weld terminations. The run-off plates were removed by the air-carbon arc method. Grinding was performed at the conclusion of the removal of the run-off plates.

T1-3 Base
No work performed on this date.

W2-E1
The QA inspector observed JSW personnel continue removing temporary bracing from W2-E1 base ribs in

preparation for final machining. The bracing was removed using the oxygen-fuel gas method. The QA inspector noted that the final cut to bring the edges of the plates to required dimension was performed using an automated oxygen-fuel gas system. After cutting was complete, the location was ground smooth and flush with the surrounding base metal. The work was not completed on this date and appears to meet the minimum requirements of the contract documents.

W2-E2 Base
No work performed on this date.

W2-W1 Casting
This assembly was moved from fabrication shop 4 to the foundry.

The QA inspector observed welder qualification tests performed by the following JWS welding personnel. Mr. Kei Nakasato, ID 91-2247, Mr. Kouetsu Shimozawa, ID 02-2889, Mr. Kouzo Kobayashi, ID 08-5023 and Mr. Ryouichi Iizuka, ID 06-2643. The welders performed qualification tests utilizing the gas shielded flux cored arc welding process per the welding procedure specification FCAW/TM-95K2(1.6) in the horizontal (2G) position . The Intertek Testing Services QC inspector Mr. Chung Kuan monitored the in process welding and verified the welding parameters, preheat and interpass temperatures.

Foundry

W2-E2 Casting
One JSW personnel was observed shaping welded repair areas of casting W2E3 utilizing the manual air carbon arc cutting method. The shaping task was performed on built up thickness of the ribs in areas that were found to not meet the minimum thickness as shown in submittal 000712, revision 00. After shaping was complete, one JSW employee was observed grinding to smooth the surface of the casting where the Air-Carbon Arc method was utilized. Work was not completed on this date and appears to meet the minimum requirements of the contract documents.

W2-E3 Casting
The QA inspector periodically observed the Nikko Inspection Services QC/NDT technician Mr. Harumi Kohama perform magnetic particle (MT) testing of West Deviation Saddle casting W2-E3, exterior surface identified as opposite stamp side. The MT was performed in accordance with ASTM standard E709, using the yoke method. The yoke utilized appeared to be model UM 3BF. The yoke dead lift was verified with a 4.65kg test plate. The yoke light output was verified with a Hioki model 3408 light meter. The magnetic field was verified with a field indicating gauge (pie gauge). Dry visible magnetic particle was utilized. All calibrations appear to meet the minimum requirements of ASTM E709. The testing was evaluated in accordance with the contract special provisions. Over seventy relevant indications were marked by Mr. Kohama. The testing was not completed on this date and the work appears to meet the minimum requirements of the contract specifications.

T1-2 Casting
The QA inspector observed the in process casting repair welding on Tower Saddle casting T1-2. The welding was performed where defects found during non-destructive testing were removed. The repair locations and repair details for this casting were submitted as Transmittal number 1652, revision 00. The JSW welding personnel

Yoshio Kabutomori, ID 06-8000 continued the repair welding of repair numbers 4 and 11. The repairs were performed utilizing Shielded Metal Arc Welding (SMAW) per the welding procedure specification (WPS) SJ 3026-4. JSW welding engineer Mr. Imai monitored the welding parameters and heat control at periodic intervals. The work was not completed on this date and appears to meet the minimum requirements of the welding procedure specification and contract documents.

T1-3 Casting
No work performed on this date.

W2-W1 Casting
This casting was moved to the foundry in preparation for rough shapping.

Two JSW employees were observed removing excess riser material from the exterior surface of the casting T1-3. The material was removed utilizing the Air-Carbon Arc method. Work was not completed on this date and appears to meet the minimum requirements of the contract documents.

The Caltrans QA inspector performed a radiographic film review relative to the welding procedure qualification tests performed at Japan Steel Works (JSW) for the Saddle casting fabrication. The QA inspector arrived at JSW's NDT facility escorted by Mr. Kon who requested the review of radiographic film of the test plates for PQR SJ-2942 WP-16 (test plate SW-11-1) Caltrans Index Lot number B85-040-08. Radiography was performed prior to and after post weld heat treating. The QA inspector reviewed the film quality and weld quality for compliance with AWS D1.5-2002 Section 6 paragraph 6.26 and Figure 6.8 (weld quality requirements for discontinuities occurring in tension welds). The Quality Assurance Inspector concurred with Nikko Inspection Service Company's NDT Level II Inspectors inspection results. A Welding Witness Report (TL-6032) was issued and Caltrans Witness lot number B31-051-08 was assigned for tracking purposes.

On this date the QA representative Joe Lanz arrived at Japan Steel Works (JSW) of Muroran Japan Test Facility to witness mechanical tests of PQR SJ-2942 WP-16 (test plate SW-11-1) Caltrans Index Lot number B85-040-08 in accordance with the contract documents. The testing was supervised by JSW QC personnel, Mr. Hideo Domon.

The QA inspector observed Charpy V-notch tests in accordance with AWS D1.5-2002 paragraph 5.18.5 and the contract special provisions section - Fabrication of Welded Cast Components. The JSW QC personnel Mr. Naoya Takahashi verified the specimen dimensions with a Nikon Profile projector. The JSW QC personnel Mr. Taiki Ube performed the tests using the test machine, Impact tester JTT-1173. The weld metal test specimens were taken at 27.5mm from the surface and at 10mm from the root surface. Specimens were tested at -20 degrees Centigrade in accordance with AWS D1.5-2002 Table 4.1. The tests were performed and results were recorded. The heat affected zone test specimens were taken at 27.5mm from the surface and at 10mm from the root surface. Specimens were tested at -23 degrees Centigrade. The tests were performed and results were recorded. The samples were found acceptable.

The QA inspector observed the All Weld Metal Tensile tests for test plate SW11-1 performed in accordance with AWS D1.5-2002 paragraph 5.18.4. The test machine was Shimazu, 300kn model, serial number I22104400055. The JSW QC personnel Mr. Toshihiro Takayama verified the specimen dimensions and the testing was performed and results were recorded. The samples were found acceptable in accordance with paragraph 5.19.4.

The QA inspector observed Reduced Section Tensile tests for test plat SW11-1 in accordance with AWS D1. 5-2002 Section 5.18.1. The test machine Shimazu 1000kn model, serial number I22104400055. JSW QC personnel Mr. Naoya Takahashi verified the specimen dimensions and the testing was performed and results were recorded. The samples were found acceptable in accordance with paragraph 5.19.1.

The QA inspector observed Side Bend tests for test plate SW11-1 in accordance with AWS D1.5-2002 paragraph 5.18.3. JSW QC personnel Mr. Naoya Takahashi performed tests and recorded results as acceptable in accordance with paragraph 5.19.2.

The QA inspector observed three each Macroetch samples for test plate SW11-1 which had been etched in accordance with AWS D1.5-2002 paragraph 5.18.2. The samples were found to be acceptable in accordance with paragraph 5.19.3.

Caltrans witness lot number B31-051-08 was assigned to test plate SW11-1 for tracking purposes.

Summary of Conversations:

There were general conversations with Intertek Testing Services Certified Welding Inspector Mr. Chung-Fu Kuan relative to the location of the welding and inspection personnel in the fabrication shop number 4 and as noted above.

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