

**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-003495**Date Inspected:** 12-Aug-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 1200**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 2030**Contractor:** Japan Steel Works**Location:** Muroran, 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, Deviation and Jacking Saddles**Summary of Items Observed:**

On this date OSM Quality Assurance (QA) Representative Daniel L. Reyes was present during the welding of the structural steel components for the West Deviation and Tower Saddles relative to this project. The following was observed:

At the start of the shift the QA inspector traveled to the Testing Shop to observe and witness the mechanical testing of the Procedure Specification Record (PQR) Test specimens identified as SW-3-1. The testing included Side Bends, Reduced-Section Tension, All-Weld Metal Tension and Charpy-V-Notch. The QA inspector verified the Verification Dates of the Pendulum Impact Machine utilized by the Nikki Inspection Services (NIS) personnel and appeared to comply with the contract documents. The testing was completed during this shift on this date. The QA inspector is waiting for the final testing reports to perform review. The QA inspector also observed the macro-etch test specimens which appeared to comply with the contract documents.

At the conclusion of the mechanical testing the QA inspector observed the side bend testing of the Welder Performance Test for the following Japan Steel Works (JSW) welding personnel, Kazuya Iwamoto ID 07-4366, Katsuaki Izumi ID 07-4536, Ryota Kato ID 07-4510 and Daisuke Hirakawa ID 08-3566. The side bend tests appeared to comply with the contract documents.

Also, the QA inspector observed the macro-etch specimens for the non-standard joint welder performance test for the following JSW welding personnel, Satoru-Watanabe ID-08-5159, Makoto-Kato ID-08-5018, Naoki-Murai ID 97-2118, Masao-Yamashita ID 73-4195, Masafumi-Nakagawa ID 92-2439, Kei-Nakasato ID 91-2247, Mamoru-Kubota Id 74-3666 and Kenichiro-Sadakawa ID 06-2929. The macro-etch specimens appeared to comply with the contract documents.

The QA inspector also observed the macro-etch test specimens for the PQR tests identified as SW-12-1, SW-12-2

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and SW-12-3. The macro-etch specimens appeared to comply with the contract documents.

### Fabrication Shop # 4

Later in the shift the QA inspector traveled to the Fabrication Shop # 4 to observe the continued Partial Joint Penetration (PJP) groove welding of the structural steel plate components for the West Deviation Saddle identified as W2E2. The Welding Procedure Specification (WPS) SJ-3011-2, SJ-3011-3 and the Distortion Control Plan, identified as Document SJ-3109 Revision 3 was utilized by the Japan Steel Works, Ltd. (JSW) personnel during the performance of the production welding of the rib plate to base plate connection identified as EY2-7V, EY2-5L, EY2-8V and EY2-6L. The WPS and the Distortion Control Plan were also used as a reference during QC verification of the welding parameters and the monitoring of the weld sequence. The production welding sequence was performed as per Attachment 5, Case 2 Step 2 and Attachment 6, Step 3 of the Distortion Control Plan. The welding was performed in the Flat (1G) Position with the work in the horizontal plane and the weld metal deposited from above.

The gas shielded Flux Cored Arc Welding (FCAW-G) was performed by JSW welding personnel Mutuo Kashiwada ID 08-2008, Kouzou Kabayashi ID 08-5023 and Hidetaka Nishikawa ID 08-5162. The consumable utilized by the welding personnel appeared to be a Hobart Brothers Product and the trade name was identified as TM 95K2 which appeared to comply with the AWS Specification A5.29 and the AWS Classification E90T5-K2C H4. The size of the electrode was 1.6 mm in diameter.

The QA inspector observed the Japan Steel Works, Ltd. personnel performing the assembly fit-up, alignment and tack welding of the stem and rib plates on the Tower Saddle identified as T1-1. The minimum preheat temperatures of 160 degrees Celsius was verified by QC inspector prior to the tack welding which was performed by JSW welding personnel Ohta-Yoshihiro, ID 08-2017 utilizing the Shielded Metal Arc Welding (SMAW) process as per the Welding Procedure Specification (WPS) SJ-3012-2 during the tack welding of the stem plate to rib plate connection identified as 7Y-9V (1-2) and 7Y-9V (1-3). The WPS was also used by the QC inspector as a reference during the QC verification of the welding parameters. The tack welding was performed in the vertical (3G) position utilizing the 4.0 mm electrode.

The QA inspector also observed the Magnetic Particle Testing (MPT) and grinding of the Partial Joint Penetration groove welds on the West Deviation Saddle identified as W2E1. Upon the QA observation it appears after the Post Weld Heat Treatment (PWHT) and abrasive surface cleaning, utilizing a grit blasting process, that additional grinding is required after MPT. The grinding appears not to be extensive or of any major rejectable indications. The MPT was performed by Nikki Inspection Service personnel Rikuo Kumagai and Kazuya Kobayashi. The MPT appeared to be performed utilizing the JSW's MPT procedure identified as Standard Examination Specification, Document No. SF-MT-01. The testing was performed utilizing an AC Yoke, Type A-6 testing unit which appeared to be manufactured by Eishin Kagaku Co., Ltd. The dry, continuous, visible testing method was utilized during the MPT.

The QC inspector Chung Fu-Kuan informed the QA inspector that the MPT performed during this shift on this date is a preliminary test.

The Quality Control (QC) inspection was performed by Intertek Testing Services (ITS) personnel Chung Fu-Kuan and verified the preheat temperatures, welding parameters and performed the in process weld inspection during this shift. The welding parameters were verified utilizing a Hioki 3109 Clamp Meter, Model RMS and the

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surfaces temperatures were verified utilizing an Anritsu HA 100E digital surface thermometer during the QC verification. The calibration dates of the measuring instruments utilized by the QC inspector were previously verified by this QA inspector.

Later in the shift this QA inspector observed, at random intervals, the QC inspector performing QC verification of the welding parameters, the minimum preheat and maximum interpass temperatures.

The QA inspector's observations were performed at random intervals during the shift. The QA inspector noted that it appeared the approved and latest revised WPS's were posted at the welding station and that each approved welder was entered in the latest revised Welding Personnel Log issued by Japan Steel Works, Ltd. The welding parameters, preheat and interpass temperatures were verified by the QA inspector utilizing a Fluke 337 clamp meter for the electrical welding parameters and Tempilstik temperature indicators for the surface temperatures. The filler metal utilized by the JSW welding personnel was also verified. The QC inspector ITS personnel, Chung Fu-Kuan appeared to perform the visual weld examinations, monitoring of the welding and the verification of the welding parameters in accordance with the contract documents.

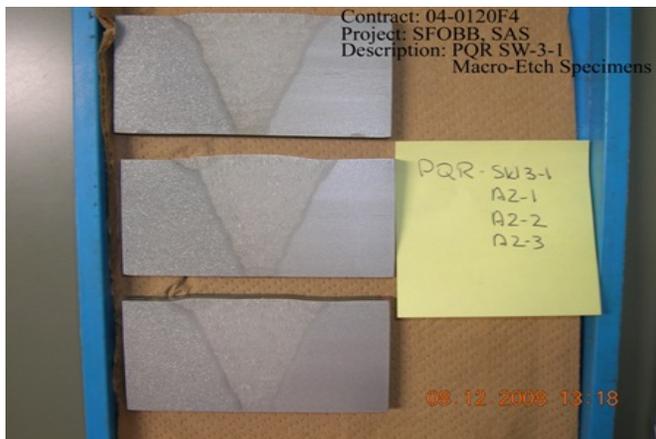
See Weld Joints in Progress Inspected on Page 4 of this report regarding the QA observations of the production welding parameters recorded during this shift on this date.

The digital photographs, below and on Page 4 of this report illustrates the observations of the activities performed on this date.



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Item	Weld Identification	Applicable WPS	CWI Name	Amperage	Voltage	TravelSpeed	Preheat Temp	Remarks
1	EY2-5L	SJ-3011-2	C. Fu-Kuan	317 DC	25 DC	280 mm/m	190 Degrees C.	Kashiwada
2	EY2-8V	SJ-3011-3	C. Fu-Kuan	314 DC	24 DC	276 mm/m	190 Degrees C.	Nishikawa
3	E2Y-6L	SJ-3011-2	C. Fu-Kuan	320 DC	25.5 DC	283 mm/m	185 Degrees C.	Kabayashi
4	7Y-9V (1-2)	SJ-3012-2	C. Fu-Kuan	150 AC	23.5 AC	99 mm/m	140 Degrees C.	Ohta

### Summary of Conversations:

There were no pertinent conversations relative to the project on this date, except 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:** Reyes, Danny

Quality Assurance Inspector

**Reviewed By:** Lanz, Joe

QA Reviewer