

**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 #: 99.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-002985**Date Inspected:** 16-Jun-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 2230**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 830**Contractor:** Japan Steel Works, Ltd.**Location:** Muroran, Japan**CWI Name:** Makhmud Ashadi**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:**

On this date OSM Quality Assurance (QA) Representative Daniel L. Reyes observed the welding of the structural steel plate components scheduled on this date for the West Deviation Saddle. The following was observed:

**Fabrication Shop # 4**

At the start of the C-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 W2E1. The Welding Procedure Specification (WPS) SJ-3011-2 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.

The Shielded Metal Arc Welding (SMAW) was performed by JSW welding personnel Yuchi-Arai ID 08-5157 and Satoru-Watanabe ID 08-5159. The consumable utilized by the welding personnel appeared to be a Hobart Brothers Product and the trade name was identified as Hoballoy 9018-M which appeared to comply with the AWS Specification A5.5 and the AWS Classification E9018-M H4R. The size of the electrode was 4.8 mm in diameter. The Quality Control (QC) inspection was performed by Intertek Testing Services personnel Makhmud Ashadi. The QC inspector verified the preheat temperatures, the Alternating Current (AC) 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 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.

The 100% Magnetic Particle Testing (MPT) of the root passes was conducted by Nikko Inspection Service personnel Hiroshi-Aiuchi. The testing was performed utilizing an AC Yoke, Type A-6 testing unit which appeared

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## WELDING INSPECTION REPORT

( Continued Page 2 of 4 )

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to be manufactured by Eishin Kagaku Co., Ltd. and was conducted utilizing the MPT procedure identified as SF-MT-01. No indications were noted by the QC technician.

The welding, inspection, verification and MPT were performed on the weld joints identified as E1Y-4L-1, E1Y-4L-2, E1Y-17L-1 and E1Y-17L-2. The welding was performed in the horizontal (2G) position with the work in the vertical plane and the axis of the weld horizontal.

See Weld Joints in Progress Inspected on Page 3 of 4 of this report regarding the QA verification of the welding parameters recorded during this shift on this date.

The QA inspector's observations were performed at random intervals during the shift, except as noted below in "Other QA Observations." 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 preheat temperatures. The filler metal utilized by the JSW welding personnel was also verified. The QC inspector ITS personnel, Mukhmod Ashadi and the NIS personnel QC Technician, Hiroshi-Aiuchi appeared to perform the visual weld examinations, monitoring of the welding, the verification of the welding parameters and MPT in accordance with the contract documents.

### Other QA Observations

Upon the QA inspector's arrival at the Fabrication Shop # 4, QC inspector, Makhmud Ashadi informed the QA inspector that a cracked tack was discovered during the visual inspection of the end plate to base plate connection on the weld, joint identified as E1Y-17L-2 prior to the welding of the root pass. The crack was located approximately 250 millimeters from the left end of the plate to the leading edge with the approximate length of 120 millimeters. The crack was removed entirely by grinding and the area was MPT by Nikko Inspection Service (NIS) personnel QC Technician Hiroshi-Aiuchi. At the conclusion of the testing no rejectable indications were noted by the QC technician. The removal of the cracked tack, inspection and MPT was observed and witnessed by the QA inspector.

Later in the shift the QA inspector noted an arc burn had been induced on the end plate identified as 1-17. The QA informed the QC inspector of this discrepancy. At the conclusion of documenting the dimensions, the QC inspector requested the JSW welding personnel to remove the arc burn by grinding. After the removal of the arc burn the QC technician performed an MPT of the area and one indication was noted and at the request of the QC inspector the JSW personnel performed additional grinding of the area to remove the indication. A second MPT of the area revealed that the indication had been removed and the finished surface appeared to comply with the contract documents. Later in the shift a second arc burn was discovered on the end plate identified as 1-4. The JSW personnel followed the same removal sequence as performed on the plate 1-17. The MPT was performed on the area and no indications were noted by the QC technician. The QA inspector observed and witnessed the removal of the arc burns, inspection and MPT.

The QC inspector performed a visual weld inspection of the final SMAW layer on the weld joint identified E1Y-17L-1 and E1Y-17-2. At the conclusion of the QC inspection, the QA inspector observed what appeared to be slag entrapment at the area of the toe of the weld layer to the base metal and weld metal. The QA inspector informed the QC inspector of the condition of the weld and at this time the QC performed a second inspection and requested the JSW welding personnel to remove the slag. At the conclusion of the removal of the slag the QC inspector performed the visual weld inspection and no discrepancies were noted. The QA inspector concurs with

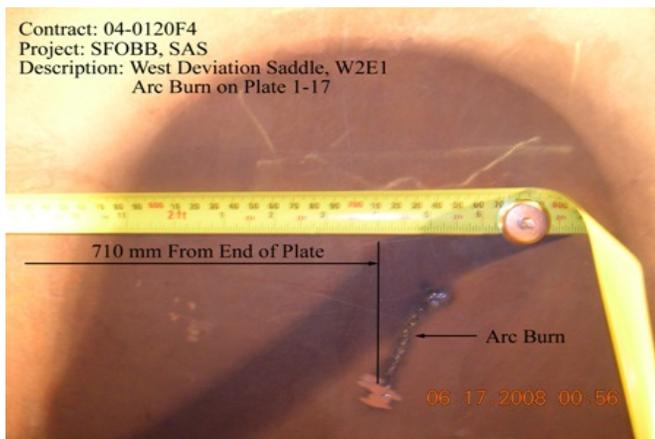
# WELDING INSPECTION REPORT

( Continued Page 3 of 4 )

the QC inspector's second assessment.

There was no work performed during this shift on this date at the Foundry Shop relative to the build-up repair welding on the ribs for the saddle casting identified as W2E1.

The following digital photographs illustrate the observations of the activities performed on this date.



Item	Weld Identification	Applicable WPS	CWI Name	Amperage	Voltage	TravelSpeed	Preheat Temp	Remarks
1	W2E1, E1Y-17L-2	SJ-3011-2	M. Ashadi	258 AC	24 .0AC	146 mm/m	202 Degrees C.	Yuichi-Arai
2	W2E1, E1Y-4L-2	SJ-3011-2	M. Ashadi	254 AC	25.0 AC	143 mm/m	198 Degrees C.	Satoru-Watanabe

### Summary of Conversations:

There were general conversations relative to this project with the QC inspector, Makhmud Ashadi on this date,"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.

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# WELDING INSPECTION REPORT

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<b>Inspected By:</b>	Reyes,Danny	Quality Assurance Inspector
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<b>Reviewed By:</b>	Lanz,Joe	QA Reviewer
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