

**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-005248**Date Inspected:** 21-Jan-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 830**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**Contractor:** Japan Steel Works**Location:** Muroran, Japan**CWI Name:** Chung 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:**

Steel Structure Welding Shop:

T1-1 Tower Saddle Casting and Steel Structure Joint Section: Caltrans Quality Assurance Inspector (QAI) representative observed Japan Steel Works (JSW) welders perform Flux Cored Arc Welding (FCAW) process on rib plate welds 7S-2U-2 and 7S-3U-2. These two welds are connecting to casting and steel structure. The filler metal used for FCAW is Hoballoy wire TM-55, 1.6 diameter made by Hobart Brothers, USA. The parameters used for FCAW welding of assemblies were conducted in accordance with Caltrans approved WPS SJ-3011-6. The FCAW welding process and parameters have been monitored and recorded by CWI inspector Mr. Chung Kuan. Based on Caltrans QA observations, the FCAW welding operation appeared to be in general compliance with requirements of AWS D1.5 2002 and Caltrans contract documents.

W2W1 West Deviation Saddle Steel Structure: Caltrans QAI representative observed JSW welders in process fit up and Shielded Metal Arc Welding (SMAW) temporary tack welds on the W2W1 west deviation saddle steel structure portion. Rib plates numbered 4-5 4-6 and 4-7 have been fit up and tack weld attached to stem plate numbered 4-2. The proper filler metal used for SMAW is Hoballoy 9018-M with 4.2mm diameter electrode made by Hobart Brothers, USA. The tack weld areas have been preheated to 110C prior welding. The fit up and tack welding process and parameters have been monitored and recorded by CWI inspector Mr. Chung Kuan. Based on Caltrans observations, no discrepancies were noted.

T1-2 Tower Saddle Casting: Caltrans QAI representative observed two welders perform gouging and repair grinding process on 8S-2U buttering buildup metal surface which was found to contain porosity on the surface from night shift welding. Caltrans QAI, CWI Mr. Kuan and JSW welding Engineer Mr. Nagaya had meeting on

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# WELDING INSPECTION REPORT

( Continued Page 2 of 3 )

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the shop floor regarding what caused the porosity. JSW Mr. Nagaya informed Caltrans QAI that porosity was caused by preheat temperature. Caltrans QAI responded to Mr. Nagaya that porosity may not be caused by preheat temperature. Most porosity caused by chemical effect in weld pool during welding such as moisture pick-up. Caltrans QAI and CWI Mr. Kuan will talk to night shift CWI for future investigation. The grinding process continues to night shift.

## Casting Shop:

W2W2 and W2W1 West Deviation Saddle casting: Caltrans QAI observed NIS NDT level II technicians perform straight beam UT test on rib side of W2W2 and W2W3 West Deviation Saddles. The thickness of saddle segment is from 150mm to 500mm and both saddle test surface have been Magnetic Particle Test (MT) prior UT test. The straight beam tests have not been completed today and continue tomorrow. Based on Caltrans observations, no discrepancies were noted.

W2W1 West Deviation Saddle casting: Caltrans QAI observed NIS NDT level II technicians perform Liquid Penetrant (PT) on W2W1 west deviation saddle casting rib side surface after grinding. The PT test is not required by Caltrans, JSW used PT test for in house quality assurance. The test surface was free of oil, grease, water, or other contaminants prior PT test. First, two technicians apply the red penetrant by spraying and brushing the saddle surface in a penetrant bath. Next, the penetrant is left on the surface for a sufficient time (dwell times) to allow as much penetrant as possible to be drawn into a defect. Then, the excess penetrant has been removed from the surface of the saddle. Finally, a thin layer of developer is then applied to the saddle by spraying to draw penetrant trapped in flaws back to the surface where it will be visible. Numerous indications have been found on the surface after PT test. All of indications have been marked and wait for MT and UT test for future evaluation. Based on Caltrans observations, no discrepancies were noted.



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# WELDING INSPECTION REPORT

( Continued Page 3 of 3 )

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## Summary of Conversations:

As noted within the report.

## 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 Nina Choy (510)385-5910, who represents the Office of Structural Materials for your project.

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

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