

**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-002381**Date Inspected:** 01-Apr-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 830**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1630**Contractor:** Japan Steel Works**Location:** Muroran, Japan**CWI Name:** MaKhmun 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:** PQR test plate**Summary of Items Observed:**

Witness Procedure Qualification Record (PQR) qualification test (SW-6): Caltrans Quality Assurance Inspector (QAI) representative Mr. Danny Reyes and Mr. Wai Pau, travel to Japan Steel Works (JSW) Muroran plant to witness an AWS D1.5 standard PQR qualification welding test. The number of PQR qualification welding test is SJ-2942-WP-9 (test plate SW-6). The PQR qualification test utilizing Flux Cored Arc Welding (FCAW) welding processes were conducted by welder Mr. Naoki Murai (05-00434) performed in the flat position (1G). The material used for the PQR qualification test specimens was reported by JSW Welding Engineer Mr. Takaaki Maruya as ASTM A709M-Gr.345T (plate to plate) having a wall thickness measurement of 50mm. The weld joint design used butt joint, single-V-groove weld with 20mm x 75mm backing bar. The filler metal and shield gas used in the test for FCAW is wire TM-95K2, 1.6 diameter with 100% C02 made by Hobart Brothers, USA. The FCAW welding and parameters have been monitored and recorded by CWI inspectors Mr. MaKhmun Ashadi and JSW Welding Engineer Mr. Takaaki Maruya, and were also observed by Caltrans QAI. A total of sixteen interior filler weld passes (#17 to #36) were completed on this date and the PQR welding for this plate has been completed. Based on Caltrans QA observation, The PQR welding test was appeared to be in general compliance with the requirements of AWS D1.5 2002 and Caltrans contract document. The PQR will schedule to radiographic testing (RT) test.

Observed Magnetic Particle Test (MT) on West Deviation Saddle Segments numbered W2E2: Caltrans QAI Mr. Danny Reyes and Mr. Wai Pau, observed Nikko Inspection Service (NIS) NDT level II technician Mr. Harumi Kohama and an assistant performed Wet MT test on non-stamp side of West Deviation Saddle Segments numbered W2E2. The power source of MT testing is used electromagnetic yoke with Alternating Current (AC) made by Magnaflux; model number Y-8 AC/DC. The detection media is used wet red suspension particles. The

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technique uses wet suspension particles that are applied while the magnetizing force (multi direction) is on. The particle application must cease before the current flow ceases. A flaw indicator used to check the magnetic field direction and to ensure adequate field strength during MT testing. The test surface has been machined and relatively cleaned free of grease, oil and other moisture prior MT test.

First, the technician used 10 liter water mixed with 1kg non-fluorescent red magnetic particles in a container for 10 minutes. Next, the mixed wet suspension particle samples have been filled into a measureable glass container for settling volumes standard. The settling volumes have showed on glass container as is 2.4 ml (ASME standard from 1.2 ml to 2.4 ml per 100ml). Then, the technician performed wet MT test, the wet suspension particle carrier by a squeeze bottle. The wet suspension particle is gently sprayed out and flowed over the surface of the test part quickly and easily covered with a relatively uniform layer of particles. The magnetizing force applied immediately after applying the suspension of magnetic particles. The use of wet suspension particles is useful for detecting slightly discontinuities on the smooth surface such as after machining. The discontinuity is forming by magnetic leakage fields and visible indication. The test saddle appeared to be approximately 20% complete at this time and no relative indication was found on the test surface for today. The wet MT test will continue tomorrow 4-2-08.

### **Summary of Conversations:**

As Note within the report 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)697-6363, 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>  | Brasel,Ron | QA Reviewer                 |

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