

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 #: 04-0120F4Cty: 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-005234**Date Inspected:** 15-Jan-2009**Project Name:** SAS Superstructure**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Contractor:** Japan Steel Works**OSM Arrival Time:** 830**OSM Departure Time:** 1830**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:

Witnessing AWS D1.5 standard SMAW and FCAW welder qualification welding test: Caltrans QAI representative witnessed two welders perform welder qualification tests. The qualification welding tests utilizing the Shielded Metal Arc Welding (SMAW) and Flux Cored Arc Welding (FCAW) process were conducted by welders performed in the SMAW vertical position (3G) and FCAW flat position (1G). The welder Mr. Ryouichi Uzuka (06-2143) performed FCAW welding test and welder Mr. Toshiaki Wakamatsu (93-2299) performed SMAW and FCAW welding test. The material used for the both welder qualification test specimens was reported by JSW Welding Engineer Mr. Takaaki Maruya as ASTM A 709M-HPS-485WT plate having a wall thickness measurement of 25mm. The weld joint design used butt joint, single-V-groove weld with 25mm backing bar. The proper filler metal used in the test for SMAW is Hoballoy 9018-M with 5mm diameter electrode made by Hobart Brothers, USA. The filler metal and shield gas used in the test for FCAW is Hoballoy wire TM-95K2, 1.6 diameter with 100% CO₂ made by Hobart Brothers, USA. The SMAW and FCAW welding process and parameters have been monitored and recorded by CWI inspector Mr. Chung Kuan. Based on Caltrans QA observation, the welder qualification tests appeared to be in general compliance with requirements of AWS D1.5 2002 Section 5 and Caltrans contract documents.

T1-1 Tower Saddle Casting and Steel Structure joint section: Caltrans Quality Assurance Inspector (QAI) representative observed three Japan Steel Works (JSW) welders performed Flux Cored Arc Welding (FCAW) processes on rib plate welds 7Y-9U-1, 7Y-9U-3, 7Y-7U and 7Y-8U of T1-1 tower. These three welds are connecting to casing 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

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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 observation, the FCAW welding operation appeared to be in general compliance with requirements of AWS D1.5 2002 and Caltrans contract documents.

W2E3 West Deviation Saddle Steel Structure: Caltrans QAI representative, CWI Mr. Chung Kuan and NIS NDT level II technician performed VT and dry MT testing on longitudinal and transverse cracks which caused from metal shrinkage and located on horizontal tack welds during fit up process. The horizontal tack welds used are tie in rib plates and stem plate to base plate. The horizontal tack welds on welds E3Y-3L, E3Y-7L, E3Y-13L, E3Y-15L, E3Y-8L and E3Y-14L have been accepted by NIS, CWI and Caltrans after the VT and dry MT test. A total of 10 cracks on tack welds have been found on weld# E3Y-5L, E3Y-15L, E3Y-6L and E3Y-16L after MT test. All the cracks have been removed by grinding. The crack remove areas have re-examined by dry MT test. After MT test completion, Caltrans QAI observed three JSW welders performed SMAW root pass welding. The SMAW root pass welding surface also has been MT test after welding. The proper filler metal used for SMAW is Hoballoy 9018-M with 5mm diameter electrode made by Hobart Brothers, USA. The entire steel structure remains at a preheat temperature of 110 C degree during the crack removal and root pass welding. The root pass welding process and parameters have been monitored and recorded by CWI inspector Mr. Chung Kuan. Based on Caltrans observation, no discrepancies were noted.



Summary of Conversations:

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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.

Inspected By:	Pau,Wai	Quality Assurance Inspector
Reviewed By:	Lanz,Joe	QA Reviewer
