

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 #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Casey, William**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-026476**Date Inspected:** 30-Sep-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site

CWI Name:	N/A	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:	OBG Sections	

Summary of Items Observed:

This Quality Assurance (QA) Inspector, Craig Hager was on site at the job site between the times noted above. This QA Inspector was on site to randomly observe Quality Control (QC) personnel perform Non-Destructive Testing (NDT) and monitor American Bridge/Fluor (ABF) welding operations. This Quality Assurance (QA) Inspector, Craig Hager observed the following.

Self Anchored Suspension (SAS) Tower section, Electro Slag Welding (ESW) joints:

ESW weld joint, locations "R": This QA Inspector previously observed that QC Inspection personnel had marked this weld, at location Y-600 to Y-710, as an area for repair due to a "cold start" using the ESW process. This QA Inspector had previously observed QC Inspector John Pagliero perform Ultrasonic Testing (UT) on at this location (Y-600 to Y-710) and the surrounding areas above and below. Lead QC Inspector Danny Reyes requested this QA Inspector to perform UT using both the standard shearwave technique and the "pitch - catch" technique referenced in AWS D1.5-02 for ESW joints.

This QA Inspector first performed UT with the standard technique following the QC procedure using a single 70 degree transducer, scanning from face - B (outside) and using only the first leg of the sound path. This QA Inspector observed markings which appeared to have been from the QC - UT inspection indicating an indication at a depth of 32 mm. This QA Inspector observed a signal representative of an indication at a depth of 32 mm, the signal was maximized, producing an indication rating of +8 (96.7 mm sound path at 14 dB's above reference level). An indication rating of +8 is a Class D indication which is acceptable regardless of length. This QA Inspector scanned the area and also observed a signal, greater than the established reference level, which appeared

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to be an indication ranging in depth from approximately 21 mm to 40 mm deep. This UT signal stayed on the screen while scanning at +17 dB's above the reference level; this type of signal appears to fit the description of a planar discontinuity as described in AWS D15-02, paragraph 6.23.3.2. This paragraph also states a more detailed evaluation of the discontinuity by other means may be required.

This QA Inspector performed UT using the "pitch-catch" technique with two 70 degree transducers. This QA Inspector positioned the "pitch" transducer at a surface distance approximately 70 mm from the indication marked on the surface of the weld. The "catch" transducer was positioned approximately 185 mm (surface distance) behind the "pitch" transducer. Both transducers were manually manipulated to obtain a maximum signal at this location (approximately Y-675). A sketch of the approximate placement of transducers, sound paths and indication depth was submitted to Lead QA Inspector Danny Reyes. The standard attenuation factor (sound path -1 times 2) was used and resulted in an indication rating of -13. A Class - A indication is defined as being -2 and lower.

There appears to be a significant difference in the indication ratings between the two techniques used above. If the indication is planar and orientated perpendicular to the surface of the plate then the vast majority of the sound beam energy could be reflected away from the single transducer technique. The "pitch - catch" technique appears to be able to receive or catch the sound beam energy as it is reflected from the indication.

Summary of Conversations:

This QA Inspector had general conversations with American Bridge/Fluor (ABF) and Caltrans personnel during this shift. Except as described above and noted above there were no notable conversations.

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:	Hager, Craig	Quality Assurance Inspector
Reviewed By:	Levell, Bill	QA Reviewer
