

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:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-012249**Date Inspected:** 23-Feb-2010**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:** Mike Johnson, Jesse Cayabayab**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:** SAS OBG 1E/2E**Summary of Items Observed:**

The Quality Assurance (QA) Inspector, Rick Bettencourt was on site at the job site between the times noted above.

The QA Inspector was on site to randomly observe the in process joint restoration and welding of the 1E/2E-D.

The following observations were made:

- 1.) 2820mm crack in weld between D1 and D7
- 2.) FCAW weld build up, fill and cover passes
- 3.) Failure to maintain the minimum required preheat (Incident Report)
- 4.) Joint restoration or butter and joining the parts by welding (Incident Report)

1E/2E-D

Upon the arrival of the QA Inspector it was observed the Smith Emery (SE) Quality Control (QC) Inspector Jesse Cayabayab had located a linear indication determined to be a crack in the weld pass previously deposited. The QA Inspector randomly observed the crack to be in the weld build up or joint restoration flux cored arc welding (FCAW) pass. It was noted the above identified weld joint had been buttered or restored on both sides of the joint from D1 thru D17. The QA Inspector randomly observed and noted the FCAW passes were joining the steel backing on both sides of the joint, tying or joining the two members together. The QA Inspector randomly observed the crack (pictured below) in the FCAW pass to extend from section D1 thru D7, approximately 2820mm in length.

The QA Inspector noted the ABF Welding Quality Control Manager (WQCM) Jim Bowers was on site to observe the MT indication. Mr. Bowers confirmed to the QA Inspector the MT indication was in fact a crack and would

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require a critical weld repair to repair it. Mr. Bowers informed the QA Inspector he would submit a repair procedure for approval, in addition no repair would be made on the crack area until prior engineering approval is granted by Caltrans.

1E/2E-D9/D10 & D13/D14

The QA Inspector randomly observed the ABF welder identified as Jordan Hazelaar performing the FCAW butter passes on both sides of the joint at the above identified location. After the joint restoration or butter passes were completed, the QA Inspector randomly observed the SE QC Inspector Jesse Cayabayab performed visual testing of the fit up. After the fit up was completed the QA Inspector was informed the fit up of the groove between the areas identified as D9/D10 were acceptable. The QA Inspector verified the fit up and noted it appeared to be in general compliance with the contract requirements. The QA Inspector noted at the time of completion of the joint restoration the minimum required preheat appeared to be maintained at 200°F. The QA Inspector noted the ABF welder began performing the FCAW root/fill passes. The QA Inspector noted the ABF welder identified as Al McDaniel was performing the FCAW root/fill passes between D13/D14.

The QA Inspector observed the ABF Welding Foreman Dan Ieraci instructed the both of the above identified welders and all other ABF personnel out of the OBG. The QA Inspector observed the remaining ABF personnel in the OBG were Jim Bowers, Dan Ieraci, QC Inspector Jesse Cayabayab, QC Inspector Mike Johnson and the QA Inspector Rick Bettencourt. The QA Inspector noted Mr. Bowers was discussing the welding sequence and process with Mr. Ieraci. It was observed by the QA Inspector during the lapse in welding, the areas identified above where the FCAW was in process had cooled to approximately 70°F. It was noted and recorded by the QA Inspector the minimum required preheat was not maintained continuously.

The QA Inspector informed the QC Inspector Mike Johnson of the loss of preheat, the QA Inspector noted the QC Inspector was not aware of the heat loss. The QA Inspector observed and verified with a temperature indicating marker, the heat was restored to 200°F. After the minimum required preheat was restored the QA Inspector randomly observed both of the above identified welders commence welding. The QA Inspector randomly observed the ABF welder Al McDaniel was performing the FCAW fill pass between sections D13/D14. The QA Inspector randomly observed the ABF welder experienced porosity in both sections identified as D13/D14 (pictured below). The QA Inspector observed the ABF welder begin excavating the porosity utilizing a burr bit grinder. In addition it was observed the minimum required preheat was not maintained during the weld excavation of the porosity. The QA Inspector observed the porosity removal through completion. The QA Inspector randomly observed the SE QC Inspector Jesse Cayabayab perform magnetic particle testing (MT) of the excavated weld. The QA Inspector noted no relevant indications were located at the time of the testing. It was observed the induction heat blankets were placed back on the weld joint and the minimum required preheat was restored. The QA Inspector verified the minimum required preheat utilizing a temperature indicating marker.

The QA Inspector randomly observed the in process FCAW through out the duration of the QA Inspectors shift. It was observed and noted both of the locations where welding was being performed, failed to maintain the minimum required preheat two more times each. The QA Inspector generated and submitted an Incident Report for the non conforming issues with maintaining the minimum required preheat. In addition the QA Inspector generated and submitted an Incident Report for the contractor joining the two members by buttering. As per AWS D1.5-02 section 3.3.4.1 the weld joint may be corrected by welding to acceptable dimensions prior to joining the parts by welding. The QA Inspector observed and noted the two parts were joined by welding during the weld build up or

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buttering process between sections D1-D17. During a random visual inspection, the QA Inspector observed a crack in the section identified as D17. The QA Inspector noted the crack appeared to be as the same type of indications as the crack identified between D1-D7. The QA Inspector informed the QC Inspector Mike Johnson of the cracked area of weld.



Summary of Conversations:

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 Mohammad Fatemi (916)-813-3677, who represents the Office of Structural Materials for your project.

Inspected By: Bettencourt,Rick

Quality Assurance Inspector

Reviewed By: Levell,Bill

QA Reviewer
