

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 #: 13.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-012976**Date Inspected:** 08-Apr-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1000**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**Contractor:** Oregon Iron Works Clackamas, Or.**Location:** Clackamas, OR**CWI Name:** M. Gregson, J. Salazar**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:** Hinge K Pipe Beams**Summary of Items Observed:**

The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

AG Machining (Boring, OR)

On this date, the QA Inspector arrived at AG Machine Works, to observe OIW perform the final surface finish and Penetrant Testing (PT), on the Fuse 120A-6. The QA Inspector arrived at approximately 1000 and met with OIW QC Inspector Jose Salazar, OIW welder #C34 (Mark Craig) and AG Machinist (Terry Schmale). Upon arriving, QC Inspector Salazar explained that AG Machinist Schmale, had previously setup 2 propane heaters, to pre-heat the Fuse to the required minimum temperature of 60 degrees Fahrenheit (16 C). QC Inspector Salazar explained that he had recently recorded the Fuse temperature to be approximately 72 degrees Fahrenheit (22 C), utilizing a digital thermometer and the QA Inspector verified the temperature of the Fuse to be approximately 70 degrees Fahrenheit (21 C). QC Inspector Salazar then explained that 2 spot weld repairs were completed, prior to the QA Inspector arriving. The QA Inspector noted that these 2 areas were discovered by AG during the final finish honing of the Fuse overlay and OIW was previously notified of the repairs needed. QC Inspector Salazar explained that WID #C34 had performed excavations on the repair areas, utilizing a mechanical grinder with an attached stainless steel burring bit and then applied pre-heat, prior to the Gas Tungsten Arc Welding (GTAW). QC Inspector Salazar explained that the pre-heat temperatures and welding parameters (amps/volts) were verified, during the GTAW and were in compliance with the applicable welding procedure specification (WPS) 8022. The QA Inspector then witnessed QC Inspector Salazar perform the final surface testing, utilizing a profilometer.

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The QA Inspector verified that the profilometer had a calibration sticker and had been calibrated by OIW on 12/10/09, with a next due date of 12/10/10. The QA Inspector then witnessed QC Inspector Salazar perform random testing on the surface finish and on the previously repaired and smoothed surfaces on the overlay. The QA Inspector noted that the following test readings were recorded: .09, .13, .14, .48, .58, .33, .50, .39, .50, .55 and .44 um. QC Inspector Salazar explained that he had removed the highest (.58 um) and lowest (.09 um) numbers and then averaged the remaining numbers, to a surface finish of approximately .40 um. The QA Inspector noted that the contract requires a surface finish of .8um and that this surface, appears to be in compliance with the contract requirements.

The QA Inspector then witnessed QC Inspector Salazar setting up to perform the Final Penetrant Testing (PT), on the Fuse 120A-6. QC Inspector Salazar explained to the QA Inspector that the final PT testing on the remaining first-half Fuse will be performed, utilizing OIW's procedure QC-114, sect. 8.0, Water Washable Visible Die Penetrant. The QA Inspector then witnessed QC Inspector cleaning approximately one-half of the Fuse overlay surface with acetone, to remove all surface irregularities, which would otherwise mask the indications of unacceptable indications. The QA Inspector witnessed QC Inspector Salazar performing pre-heat checks, utilizing a digital thermometer and noted that the surface temperature was approximately 68-74 degrees Fahrenheit (20-23 C). The QA Inspector witnessed QC Inspector Salazar then applying DP50 penetrant, utilizing a hand pump sprayer, on the Fuse overlay. The QA Inspector noted that the penetrant was applied evenly and QC Inspector Salazar explained that the DP 50 will sit for approximately 25-30 minutes (dwell time). The QA Inspector then verified the dwell time to be approximately 25 minutes and noted that QC Inspector had started to wipe the penetrant off with lint free rags. The QA Inspector then witnessed QC Inspector Salazar applying water, with a hand sprayer, to remove the excess DP50. The QA Inspector then witness QC Inspector Salazar applying D-100 spray can type developer, over the entire one-half surface, in a thin uniform coating. The QA Inspector noted that during the application of the D-100, that no relevant indications were present at the time. After approximately 20 minutes dwell time, the QA Inspector witnessed QC Inspector Salazar performing visual testing on the tested area. QC Inspector Salazar then explained that that no relevant indications were present and the PT was acceptable, on this one half of the Fuse. The QA Inspector then witnessed QC Inspector Salazar cleaning off the applied developer with a water hose. The QA Inspector noted that the PT testing appeared to be in compliance with AWS D1.5 visual acceptance criteria and QC-114. QC Inspector Salazar then explained that he will be arriving on the following day, 4/9/10, to complete the Final PT on the remaining half, in the same manner, as mentioned above. See attached pictures below.

Hinge-K Pipe Beam Assembly 120A-2:

The QA Inspector witnessed WID #F17 (Igor Frolov), in-process of performing electro slag welding (ESW), on an additional overlay welding pass, utilizing Soudotape 316L stainless steel consumable strip. The QA Inspector noted that WID #F17 was currently qualified for this and was performing the ESW in the flat position. The QA Inspector noted that Lead QC Inspector Mike Gregson was present to witness the ESW. QC Inspector Gregson explained that he had previously recorded in-process welding parameters of 1150 amps and 25.7 volts, with a minimum pre-heat temperature of 150 degrees Fahrenheit. QC Inspector Gregson explained that he had previously recorded a travel speed of 10.5 inches per minute (i.p.m.) and that Welding Procedure Specification (WPS) 7003 was being utilized. The QA Inspector randomly verified a pre-heat temperature of approximately 150 degrees Fahrenheit and verified welding parameters to be in compliance with AWS D1.5 and the applicable WPS 7003. See attached picture below.

Hinge-K Pipe Beam Assembly 101A-2:

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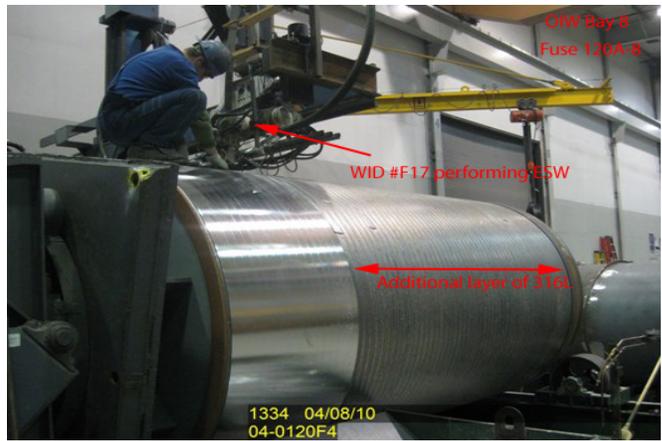
The QA Inspector noted that OIW production personell had previously transferred the Fuse 120A-5, into production bay 3. The QA Inspector noted that Production Lead Troy Smith, was present in Bay 3 and he explained that the Fuse had been previously placed on a flatbed trailer, from the laydown yard and transferred to the production bay. Lead Troy Smith explained that the assembly 102A-2 had been previously picked up, utilizing the overhead bay crane and placed in the welding manipulator. Lead Troy Smith then explained that the Fuse 120A-5, will be eventually fit-up and tack welded, to the Forging 102A-2. The QA Inspector noted that this is the second final assembly, to be fit-up and welded. See attached picture below.

Material, Equipment, and Labor Tracking (MELT)

QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project.

The QA Inspector observed at Oregon Iron Works: 4 OIW production personnel and 1 QC Inspector.

The QA Inspector observed at AG Machine Works: 1 AG Machinist, 1 AG Supervisor, 1 OIW QC and 1 OIW welder.



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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:	Vance,Sean	Quality Assurance Inspector
Reviewed By:	Adame,Joe	QA Reviewer
