

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-008855**Date Inspected:** 04-Sep-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1100**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**Contractor:** Oregon Iron Works Clackamas, Or.**Location:** Clackamas, OR**CWI Name:** Mike Gregson, Jose 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:

OIW Fabrication Shop-Bay 3

Hinge-K Pipe Beam Assembly 102A-2: 9/4/09

a111-2 Forging to a110-2 Base Plate

QA Inspector noticed this assembly 102A-2 had been previously placed in position and welder #O6, Mr. Tim O'Brian, was in process of performing submerged arc welding, on the b108 stiffener plate to a111-2 forging, designated as weld joint # W1-141, in the flat position. QA Inspector noted that this weld joint was designated as a partial joint penetration (AWS D1.5 TC-P5-S) and verified Mr. O'Brian was currently qualified for this process/position. QA Inspector noted that Mr. O'Brian was utilizing OIW approved welding procedure specification (WPS 4016) and randomly recorded pre-heat temperatures of approximately 350 degrees Fahrenheit (177 C). QA Inspector noticed QC Inspector Jose Salazar was present to monitor in-process welding parameters (amps/volts) and noted that Mr. Salazar had previously recorded in-process welding parameters of 430 amps and 30 volts. QA Inspector verified in-process welding parameters of 435 amps and 30 volts, which appears to be in compliance with the applicable welding procedure specification and contract requirements.

QA Inspector noticed welder #J6, Mr. Craig Jacobson, was in process of performing submerged arc welding, on

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the c108 stiffener plate to a111-2 forging, designated as weld joint # W1-137, in the flat position. QA Inspector noted that this weld joint was designated as a partial joint penetration (AWS D1.5 TC-P5-S) and verified Mr. Jacobson was currently qualified for this process/position. QA Inspector noted that Mr. Jacobson was utilizing OIW approved welding procedure specification (WPS 4016) and randomly recorded pre-heat temperatures of approximately 350 degrees Fahrenheit (177 C). QA Inspector noticed QC Inspector Jose Salazar was present to monitor in-process welding parameters (amps/volts) and noted that Mr. Salazar had previously recorded in-process welding parameters of 563 amps and 33 volts. QA Inspector verified in-process welding parameters of 560 amps and 33 volts, which appears to be in compliance with the applicable welding procedure specification and contract requirements.

Hinge-K Pipe Beam Assembly 102A-3: 9/4/09

a111-3 Forging to a110-3 Base Plate

QA Inspector witnessed QC Inspector Jose Salazar performing 100% magnetic particle testing on the base metal of forging a111-3, after removal of the following stiffeners: e108 (WJ #126, 127), f108 (WJ #138, 139), c107 (WJ #142, 143), e108 (WJ #146, 147) and d108 (WJ #3148, 149). QA Inspector noted that after performing magnetic particle inspection on the full length tack welds on these stiffeners to a111-3 forging, that Mr. Salazar had previously found multiple linear indications, which were presumed to be cracks. Mr. Salazar explained to QA Inspector that these indications appeared, in most cases to run the full length of the tack welds and possibly into the base metal of the a111-3 forging. Mr. Salazar explained that these stiffeners were removed, to accommodate the 100% magnetic particle testing on the base metal. After performing the magnetic particle testing, Mr. Salazar explained that multiple linear indications were still present and OIW welder #H49, Mr. Rick Hinkle was in-process of grinding the indications, to possibly remove them. QA Inspector performed 100% magnetic particle inspection on all the full length tack welds, on the radial stiffeners and found additional linear indications, which appeared to be cracks, on the a108 stiffener to a111-3 forging (WJ # 145) and the b108 stiffener to a111-3 forging (WJ #160). QA Inspector notified QC Inspector of the testing results and Mr. Salazar explained that the indications would be ground out and magnetic particle inspection will be performed, after the grinding is completed. See attached pictures below.

OIW Fabrication Shop-Bay 6 (ESW Overlay Process)

Hinge-K Pipe Beam Fuse Assembly 120A-7: 9/4/09

a124-5 Half Fuse to a124-15 Half Fuse

QA Inspector noticed that the first/second ESW stainless steel overlay passes were complete and welder #F17, Mr. Igor Frolov, was in-process of performing the third layer ESW passes (approximately 95% complete), on this fuse assembly 120A-7. QA Inspector noted that the first electro slag welding (ESW) passes were completed in the flat position, utilizing Soudokay brand Soudotape 309L stainless steel consumable strip and the second/third layer (in-process) electro slag welding (ESW) passes, utilizing Soudokay brand Soudotape 316L stainless steel consumable strip, per contract requirements. QA Inspector randomly noticed QC Inspector's Mike Gregson and Jose Salazar were present, to verify in-process welding parameters (amps/volts) and monitor in-process continuous pre-heat temperatures. QA Inspector spoke with QC Inspector Jose Salazar and Mr. Salazar explained that welding amps were recorded as 1200 amps/25.2 volts, travel speed at 241mm/min. and a pre-heat temperature recorded at 70 Fahrenheit (21 C). QA Inspector verified Mr. Igor Frolov was currently qualified for this welding process/position, verified amps/volts (1200/25.2) and randomly recorded pre-heat temperatures of approximately 70 Fahrenheit (21C). QA Inspector spoke with lead QC Inspector Mike Gregson and Mr. Gregson explained that the third and final layer ESW passes, will be completed on this date and Mr. Frolov will be setting up, in

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preparation for the FCAW repairs on any low spots. Mr. Gregson explained that the welding procedure specification (WPS 3293) will be utilized. QA Inspector noted that Mr. Igor Frolov appeared to be in compliance with the applicable approved welding procedure specification (WPS 7003) and contract requirements.

Material, Equipment, and Labor Tracking

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

The QA Inspector observed at Oregon Iron Works: 6 OIW production personnel and 2 QC Inspectors.

The QA Inspector observed at AG Machining: 1 Machinist using a horizontal lathe.



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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
