DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 13.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-009988
Date Inspected: 02-Nov-2009

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Oregon Iron Works Clackamas, Or.

OSM Arrival Time: 700
OSM Departure Time: 1530
Location: Clackamas, OR

CWI Name: Mike Gregson

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☐ Yes	☐ No	☑ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ 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-3: 11/2/09
a111-3 Forging to a110-3 Base Plate
QA Inspector noticed this assembly 102A-3 had been previously placed in position and welder #O6, Mr. Tim O'Brian, was in process of performing submerged arc welding, on the c106 stiffener plate to a107 stiffener, designated as weld joint # W1-74, in the flat position. QA Inspector noted that this weld joint was designated as a 25mm fillet weld and QA Inspector 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 4020) and randomly recorded pre-heat temperatures of approximately 350 degrees Fahrenheit (177 C). QA Inspector noticed QC Inspector Mike Gregson was present to monitor in-process welding parameters (amps/volts) and Mr. Gregson had previously recorded in-process welding parameters of 590 amps and 35 volts, during the welding cover passes. QA Inspector noted that the submerged arc welding, performed by Mr. O'Brian, appeared to be in compliance with the applicable welding procedure specification and AWS D1.5.

AG Machining
Hinge-K Pipe Beam Fuse Assembly 120A-2: 11/2/09

a124-3 Half Fuse to a124-11 Half Fuse

QA Inspector arrived at AG Machine, on this date and noted that OIW welder #C34, Mr. Mark Craig and OIW QC Inspector, Mr. Jose Salazar, had previously arrived at AG at approximately 0630 and were in process of performing the weld repairs, on the previously noted indications, on this fuse assembly 120A-2. QA Inspector spoke with QC Inspector Jose Salazar and Mr. Salazar explained that a total of 2 indications, previously noted by AG during the second final machining cut pass, had been excavated out, utilizing a mechanical grinder and Mr. Salazar had measured and labeled these excavated areas as indication #1 and indication #2. Mr. Salazar explained that he had previously taken measurements on the excavations, which were located on the a124-11 half fuse and these were recorded as follows: Indication #1-Depth of 1.5mm, length of 19mm and width of 6mm. Indication #2-Depth of 2.5mm, length of 21mm and width of 8mm. Mr. Salazar also explained to QA Inspector that 100% penetrant testing was performed and no rejectable indications were noted, on either excavation #1 or #2, per AWS D1.5. QA Inspector witnessed Mr. Craig preparing to set-up and start the gas tungsten arc welding (GTAW),on the 2 excavations, utilizing welding procedure specification, (WPS 8022) and that the fuse assembly 120A-2 was currently rotated in the horizontal lathe, so the 1st indication repair, would be performed in the flat position, per the applicable WPS 8022. QA Inspector witnessed and noted that prior to performing the GTAW, Mr. Craig had applied pre-heat to the weld repair area, (indication #1) and surrounding heat affected zone/base metal and QC Inspector Jose Salazar had recorded a pre-heat temperature of 150 degrees Fahrenheit (65 Celsius), utilizing a digital thermometer. QA Inspector witnessed and noted that Mr. Craig had started the GTAW on the area marked as indication #1 and Mr. Salazar was performing in-process welding parameter verifications of 121 amps/15.1 volts, which appears to be in compliance with the applicable WPS 8022. QA Inspector noted that Mr. Craig had soon completed the GTAW repair on indication #1 and had started the pre-heating on the excavation, labeled as indication #2. QA Inspector witnessed QC Inspector Jose Salazar performing a temperature check on the area and surrounding base metal and noted that the pre-heat was approximately 160 degrees Fahrenheit (71 Celsius). QA Inspector noted that the excavation, was then rotated to the flat position, in the horizontal lathe and Mr. Craig had then started the GTAW, on the repair. QA Inspector witnessed Jose Salazar performing and recording in-process welding parameters of 125 amps and 15.2 volts, which is in accordance to the applicable WPS 8022. QA Inspector noted that Mr. Craig had soon completed the second weld repair and QC Inspector Jose Salazar explained that once the repair areas cool to ambient temperature, 100% informational penetrant testing will then be performed, on the repairs. QA Inspector later witnessed Mr. Salazar performing the penetrant testing and noted that no rejectable indications were found, per AWS D1.5. QA Inspector noted that the above mentioned weld repairs that were performed by OIW personell at AG Machine shop, appeared to be in compliance with the applicable WPS 8020 and contract requirements. See attached pictures after the repairs were completed, below.

Note: QA Inspector previously noted that the above mentioned indications appeared to be small, circular slag inclusions that were deposited during the electroslag overlay welding process performed by OIW.

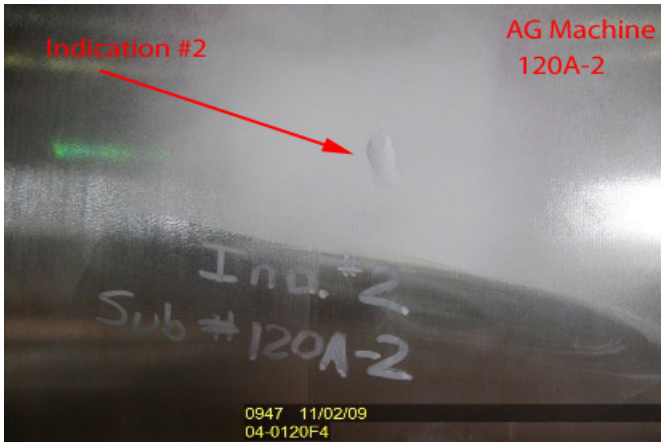
QA Inspector later spoke with AG machinist and AG explained that the 2nd cut pass would resume on 11/3/09 and any additional visual indications will be noted after finished and AG will then inform OIW personell and OIW will perform the required weld repairs at AG. QA Inspector was previously informed by AG that a third cut pass would be needed, set to a depth of approximately 1mm, utilizing a cutting bit and the final finish profile of .8µm will then be achieved, utilizing a “superfinisher” (a block of honing stones, for finishing).

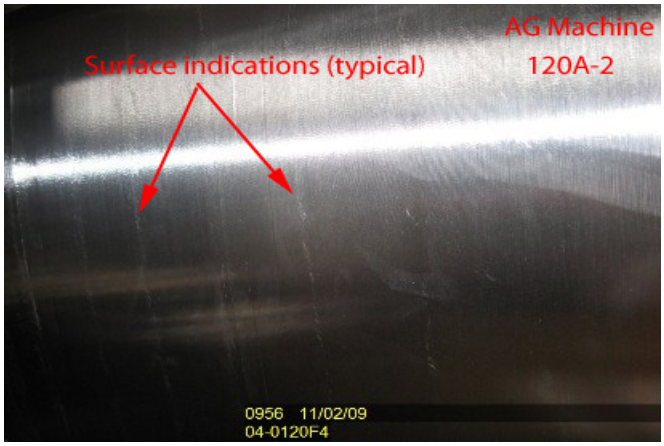
Material, Equipment, and Labor Tracking

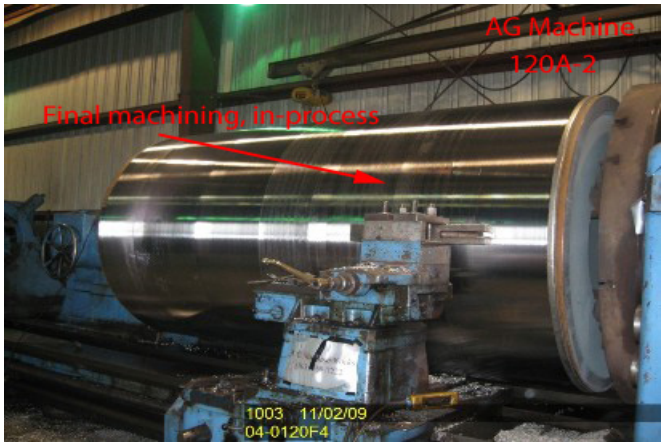
QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project. The QA Inspector observed at Oregon Iron Works: 5 OIW production personnel and 1 QC Inspector.

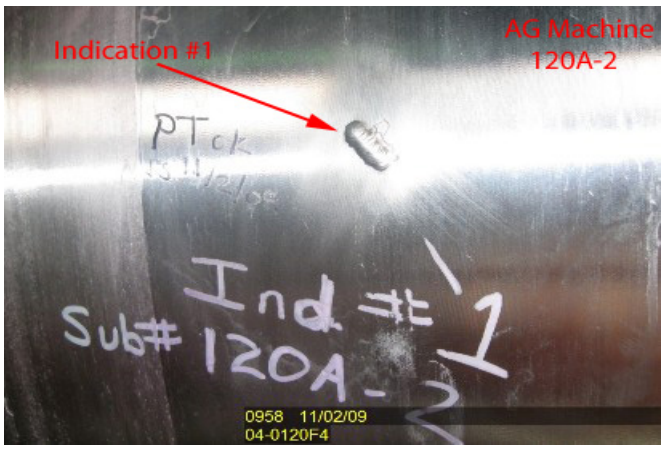
The QA Inspector observed at AG Machine shop: 1 AG machinist, 1 AG supervisor, 1 OIW welder and 1 OIW QC.

The QA Inspector noted that the following were present OIW Vancouver paint shop: 1 painter and 1 supervisor.









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