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-013193
Date Inspected: 16-Apr-2010

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

OSM Arrival Time: 1000
OSM Departure Time: 1830
Location: Clackamas, OR

CWI Name:	M. Gregson, J. Salazar, G. Mundt		**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:

Hinge-K Pipe Beam Assembly 120A-2:

The QA Inspector was informed by OIW QC Inspector Jose' Salazar that the temporary ring, which was previously tack welded to the end of the Fuse 120A-2, had been removed. The QA Inspector noted that OIW had tack welded this ring to the end of the Fuse, to accommodate a fit on the mechanical rollers, during the Electrolag Welding (ESW) and overlay repairs. QC Inspector Salazar explained that WID #F17 (Igor Frolov) had utilized a hand held oxygen acetylene cutting torch, to cut the temporary tacks. QC Inspector Salazar explained that once the tacks were cut and the ring was removed, WID #F17 ground the areas flush, with a mechanical grinder, to the base metal and 100 % Visual and Magnetic Particle Testing (VT/MT) was then performed. QC Inspector Salazar explained that the arc strikes, which were present on the a125 interior stiffener ring, were ground flush to sound metal and VT/MT testing was also performed. The QA Inspector noted that the arc strikes were due to improper placement of the welding ground clamp, during the previous overlay repairs at AG Machine Works. QC Inspector Salazar explained that the VT/MT testing was performed, per AWS D1.5 and OIW MT procedure QC-113 Rev. #3 and no rejectable indications were found, during the testing. QC Inspector Salazar explained that he had also performed a hardness test on the ground arc strike areas and the hardness test readings were acceptable. The QA Inspector then reviewed the hardness testing report and noted that QC Inspector recorded the following Brinell Hardness values: area #1-238 HB, area #2-238 HB, area #3-236 HB, area #4-237 HB, area #5-234 HB, area

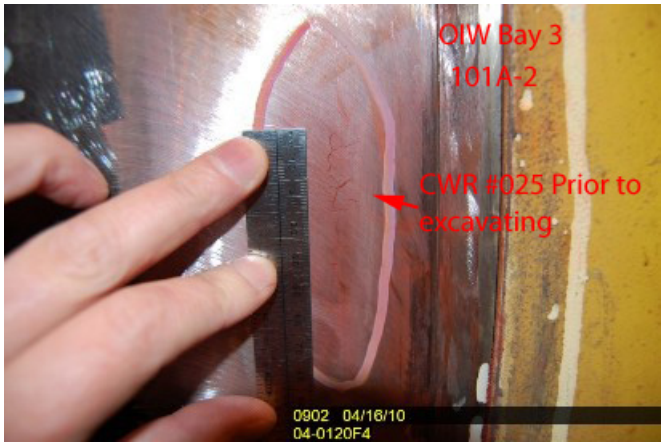
#6-226 HB, area #7-222 HB and area #8-221 HB. The QA Inspector noted that QC Inspector Salazar had performed Hardness testing on 2 areas of unaffected base metal and recorded values of 241 HB and 251 HB. The QA Inspector noted that the arc strike areas did not exceed the HB values of the unaffected base metal. The QA Inspector then performed 100% MT on the above mentioned areas and found no rejectable indication. The QA Inspector noted that above mentioned testing appeared to be in compliance with AWS D1.5 and the QA Inspector completed an applicable Magnetic Testing report (TL 6028), on this date. The QA Inspector was later informed by QC Inspector Salazar that OIW production personell will be moving the Fuse from Production Bay 8, to the outside storage yard and will be placed on wood dunnage and secured with wedges. The QA Inspector noted that this Fuse will eventually be transferred to AG Machine Works, for final machining of the overlay.

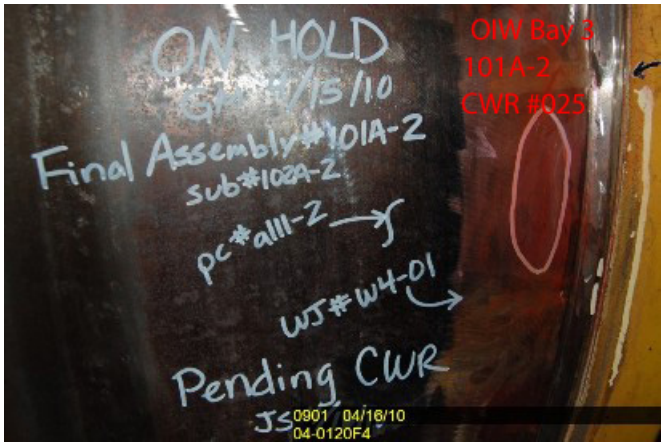
Hinge-K Pipe Beam Assembly 101A-2:
The QA Inspector was present to witness WID #V7 (Vincent Vue) setting up to perform the excavation, on the CWR #2244-025. The QA Inspector noted that thiswas the Complete Joint Penetration, AWS D1.5 B-U7-S 120A-5 Fuse to 102A-2 Forging, Weld Joint #WM4-1. The QA Inspector witnessed WID #V7 applying pre-heat, utilizing a hand held torch and witnessed QC Inspector Gary Mundt performing a pre-heat check, prior to carbon arcing. QC Inspector Mundt explained that the pre-heat was at the minimum of 150 degrees Fahrenheit and the QA Inspector verified this. The QA Inspector then witnessed WID #V7 perform the carbon arc and then grinding the excavated area to sound base metal. The QA Inspector then witnessed QC Inspector Mundt measuring the completed backgouge and perform Visual and Magnetic Particle Testing (VT/MT) on the completed backgouged area. QC Inspector Mundt explained that no rejectable indications were found. The QA Inspector then performed VT/MT on the backgouge and found no rejectable indications. The QA Inspector measured the area to be as follows: 171 long x 10 mm wide x 11 mm deep. The QA Inspector noted that WID #V7 had performed the excavation on the crack and continued the excavation 60 mm on each side of the crack. The QA Inspector noted that per AWS D1.5 Sect. 3.7.2.4, “The metal shall be removed for the full length of the crack plus 50 mm each end of the crack and rewelded”. The QA Inspector was then informed by QC Inspector Mundt that WID #V7, will be setting up to perform the Flux Core Arc Welding (FCAW), on the repair. QC Inspector Mund explained that Welding Procedure Specification (WPS) 3048, will be utilized for the repair and he will be present the entire shift, to monitor the welding parameters and pre/post-heat, during and after the FCAW. See attached pictures below.

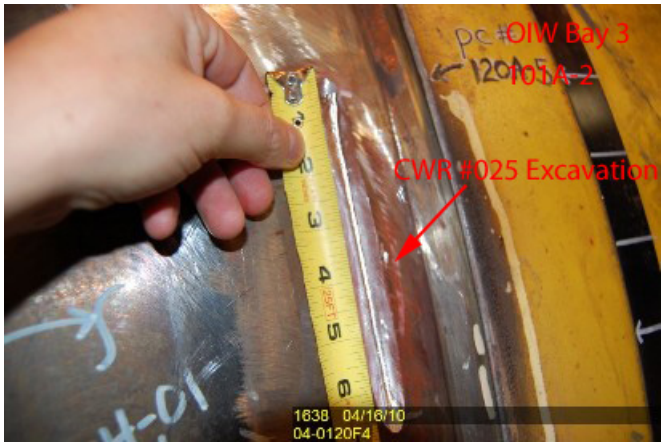
Material, Equipment, and Labor Tracking (MELT)
QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project. The QA Inspector observed at Oregon Iron Works: 4 OIW production personnel and 2 QC Inspectors.

Summary of Conversations:
The QA Inspector spoke with Swing Shift QC Inspector Gary Mundt and he explained that WID #V7 (Vincent Vue) had visually discovered the crack, on the previous swing shift, during the grinding flush of the exterior weld joint cap, #WM4-1. QC Inspector Mundt explained that WID #V7 had notified him of the crack and QC Inspector Mundt then performed Magnetic Particle Testing (MT) on the area and the testing clearly revealed the crack. QC Inspector Mundt explained that he then marked on the part as “QC Hold” and then performed additional informal MT on the remaining cap and found no additional indications.
The QA Inspector was informed by Lead QA Inspector Joe Adame that Lead QC Inspector Mike Gregson had informed him, of the crack discovered in the weld Joint #WM4-1, on assembly 101A-2. QA Inspector Adame explained that OIW production is requesting to proceed with the Critical Weld Repair (CWR) 32244-025. QA Inspector Adame explained that he had spoke with Robert Mertz and Mr. Mertz explained that OIW may start the

repair after a preliminary submittal of the CWR report, which will include a Description of Condition, Cause and Disposition to correct the issue from re-occurrence, etc. QA Inspector Adame explained that Lead QC Inspector Mike Gregson had provided a preliminary copy of the CWR report and after corrections were made, a verbal to proceed with the repair was granted, per Robert Mertz. QA Inspector Adame explained that OIW has agreed to formally submit the CWR, which will include pictures and drawings, on 4/19/10.







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