

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
690 Walnut Ave. St. 150
Vallejo, CA 94592-1133
(707) 649-5453
(707) 649-5493

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-014512**Date Inspected:** 27-May-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, 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 101A-4

The QA Inspector was informed by OIW QC Inspector Jose' Salazar that he had discovered rejectable porosity during final Magnetic Particle testing (MT), on the weld joint # W2-23. The QA Inspector noted that this weld joint was designated as a Partial Joint Penetration (PJP) AWS D1.5 TC-P4-S, a110 Base plate to HPS 485 W stiffener. QC Inspector Salazar explained that OIW production was currently grinding on the porosity which was marked, to potentially remove it.

The QA Inspector observed an OIW production helper performing the grinding utilizing a hand held mechanical grinder with an attached 9" wheel. The QA Inspector observed that during the grinding and removal of the porosity, that additional indications were discovered in the weld joint. The QA Inspector observed that QC Inspector Salazar was present at the time and performing an in-process visual examination of the grinding and explained to production that the grinding should continue to remove the additional indications. QC Inspector Salazar explained that the indications appeared to be incomplete fusion of the weld metal.

The QA Inspector observed OIW production performing the additional grinding. After the additional grinding was complete, the QA Inspector observed QC Inspector Salazar perform Visual and Magnetic Particle testing (VT/MT), on the area which was ground. The QA Inspector observed that during the VT being performed by QC Inspector Salazar, that he was measuring the dimensions of the area in which the grinding was performed, or excavated. The

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QA Inspector observed that the following measurements were recorded by QC Inspector Salazar: 267 mm Long x 15 mm Wide x 10 mm Deep. QC Inspector Salazar then explained that no rejectable indications were found, during the MT and that the area which was excavated will require a non-critical weld repair.

The QA Inspector later observed WID # D23 (Viktor Deyna) performing the pre-heat in preparation for the Flux Core Arc Welding, for the repair. The QA Inspector observed that QC Inspector Salazar was present at the time, to verify the pre-heat and in-process welding parameters, during the repair. QC Inspector Salazar explained that the pre-heat was sufficient and the parameters were in compliance with the applicable WPS. QC Inspector Salazar explained that the repair was being performed to OIW Welding Procedure Specification (WPS) 3050. QC Inspector Salazar explained to the QA Inspector that WID # D23 was currently qualified to perform the repair and the QA Inspector verified this with OIW's Qualified Welders List, Revision # 13. The QA Inspector observed that the welding was being performed in the vertical position and appeared to be in compliance with the applicable WPS. The QA Inspector observed that by end of shift, the FCAW had been completed and QC Inspector Salazar explained that the final VT/MT will be performed after the weld has cooled to ambient temperature for a minimum of 48 hrs. See attached pictures below.

Hinge-K Pipe Beam Assembly 102A-3:

The QA Inspector observed WID # B62 (Marcus Belgarde) performing Submerged Arc Welding (SAW) on weld joint (# W2-23). The QA Inspector observed that WID # B62 was performing the SAW in the flat position and was currently qualified for this. The QA Inspector noted that this weld joint was a partial penetration, AWS D1.5 TC-P4-S, a109 Base plate to ab106 HPS 485 W stiffener. The QA Inspector observed that OIW QC Inspector Jose' Salazar was present at the time of welding and QC Inspector Salazar explained that he was intermittently checking the welding parameter amps, volts, travel speed and pre-heat temperatures. The QA Inspector randomly observed QC Inspector Salazar verify welding amperage of 588 amps, 32.9 volts and a travel speed of 20 inches per minute. The QA Inspector observed that the fill passes were currently in process and that the parameters were in compliance with the applicable Welding Procedure Specification (WPS) 4020. The QA Inspector then randomly performed a pre-heat check and noted that the temperature was approximately 350 degrees Fahrenheit. The QA Inspector later observed that the SAW on the above mentioned weld joint had been completed by the end of shift. The QA Inspector was present on this swing shift and observed WID # B10 (Liem Bui) removing the run-off tabs on the above mentioned weld joint. The QA Inspector observed that WID # B10 was utilizing the Carbon Arc process to perform this and that OIW QC Inspector Gary Mundt was present, on this shift. QC Inspector Mundt explained that prior to the Carbon Arcing being performed, he had witnessed and verified a pre-heat temperature at the minimum 150 degrees Fahrenheit required, prior to backgouging. QC Inspector Mundt explained that WID # B10 will continue to remove the run-off tabs, which were utilized to perform the SAW on the weld joint # W2-23 and # W2-24, throughout the shift. QC Inspector Mundt explained that once the tabs are removed, grinding will be performed to smooth and blend the areas on the ends of the weld joints.

Hinge-K Pipe Beam Assembly 101A-2:

The QA Inspectors Sean Vance and Joe Adame arrived in Vancouver at approximately 1400, as requested by OIW to perform a paint inspection on the HPB 101A-2. Upon arrival, the QA Inspectors met with OIW paint Foreman Mike Smith and two painters. Mr. Smith explained to the QA Inspectors that he will be performing the required tests on the inorganic zinc primer (Carbozinc II), per the contract requirements. The QA Inspectors observed that OIW had applied the zinc primer to the inside of the assembly and on the area which had been previously masked on the outside, for the Critical Weld Repair # 026. The QA Inspectors observed Mr. Smith performing Dry Film Thickness (DFT) readings utilizing a Defelsko Positector 6000 digital paint meter. The QA Inspectors observed

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that Mr. Smith was performing the test on random areas of the interior and on the outside which had the application of the zinc primer. The QA Inspectors observed that the DFT readings were in compliance to the required 3.5-5.9 mil (90-150 um) range. The QA Inspectors then observed Mr. Smith perform a surface hardness check on random areas of the applied zinc primer, utilizing a quarter and a # 2 pencil. After the hardness checks were complete and acceptable, the QA Inspectors observed Mr. Smith perform a Solvent Rub test, to check surface insolubility and observed that a slight amount of zinc was present on the cloth and a slight burnished appearance was present on the rubbed area, after 50 double rubs. The QA Inspector noted that per ASTM Table 1 Scale for Resistance Rating, this was a 4 rating and acceptable. The QA Inspectors then witnessed Mr. Smith perform an adhesion test on the zinc primer. The QA Inspector observed Mr. Smith attach a hydraulic ram gauge to a previously glued anode on the interior portion of the applied primer and observed the anode fail at approximately 3.5 mpa. The QA Inspectors observed that the failure occurred in the glue portion and did not affect the primer area. Lead QA Inspector Joe Adame explained to Mr. Smith that a minimum of 4 Mpa is required for this test and another anode should be placed and re-tested. Mr. Smith agreed to perform this task. The QA Inspectors then observed Mr. Smith perform the adhesion test on the outside of the application of zinc primer, on the repair area and observed that the anodes failed in the glue portion, were in compliance to the minimum 4 Mpa required and did not affect the primer area. After observing Mr. Smith performing the above mentioned tests, the QA Inspectors performed Visual testing on the zinc primer application and it appeared to be in compliance with the contract requirements.

Mr. Smith explained that the areas which were blemished and stained during the repair work on the CWR # 026 will be sweep blasted and a new top coat of paint will then be applied. Mr. Smith also stated that a new anode will be attached, due to the failure mentioned above. Mr. Smith explained that he will notify the QA Inspector when these tasks are complete, to witness and collect copies of the paint reports and in-process checklist of the tests which were performed.

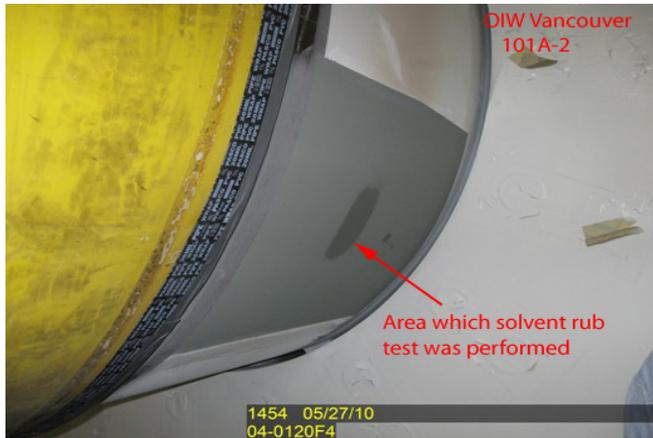
Material, Equipment, and Labor Tracking (MELT)

QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project. The QA Inspector observed at Oregon Iron Works Clackamas: 4 OIW production personnel and 2 QC Inspectors. The QA Inspector observed at Oregon Iron Works Vancouver: 3 painters.



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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