

**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-014071**Date Inspected:** 18-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

<b>CWI Name:</b>	M. Gregson, J. Salazar, G. Mundt	<b>CWI Present:</b>	<b>Yes</b>	<b>No</b>			
<b>Inspected CWI report:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Rod Oven in Use:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Electrode to specification:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Weld Procedures Followed:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Qualified Welders:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Verified Joint Fit-up:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Approved Drawings:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Approved WPS:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
				<b>Delayed / Cancelled:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Bridge No:</b>	34-0006	<b>Component:</b>	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 observed that the Flux-Core arc welding (FCAW) on the two non-critical weld repairs were completed on the previous swing shift. The QA Inspector noted that this was the Complete Joint Penetration AWS D1.5 B-U7-S, Fuse 120A-4 to Forging 102A- designated as Weld Joint # W4-01. The QA Inspector observed that Lead QC Inspector Mike Gregson was present and QC Inspector Gregson explained that incorrect filler metal was utilized, on one of the repairs. See Summary of Conversations and 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 (W2-20). 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, a110 Base Cap plate to a106 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 verify welding amperage of 588 amps, 33 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

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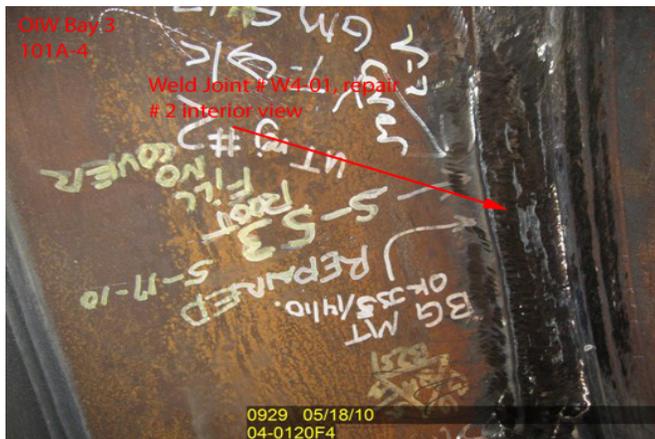
compliance with the applicable Welding Procedure Specification (WPS) 4020. The QA Inspector then randomly performed a pre-heat check and noted that the temperature was approximately 350 degrees Fahrenheit.

The QA Inspector observed that OIW Production Lead Troy Smith was present on this shift and Lead Troy Smith explained that the SAW will continue throughout the entire shift. Mr. Smith

The QA Inspector was present on this swing shift and observed WID # V7 (Vinny Vue) performing Submerged Arc welding on the above mentioned weld joint. The QA Inspector observed that OIW QC Inspector Gary Mundt was present and QC Inspector Mundt explained that the welding parameters were recorded as follows: 680 amps, 35 volts and a travel speed of 22 inches per minute. QC Inspector Mundt explained that pre-heat was recorded at 350 degrees Fahrenheit and the QA Inspector randomly verified this. QC Inspector Mundt explained that the SAW will probably continue the entire shift and he will be present to intermittently monitor the welding activities. The QA Inspector noted that the above mentioned SAW appears to be in compliance with the applicable WPS. 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 2 QC Inspectors.



## Summary of Conversations:

Lead QC Inspector Gregson informed the QA Inspector that WID # V7 (Vinny Vue) had continued the Flux Core Arc Welding, where the previous day shift had left off, on the interior weld repair. The QA Inspector noted that per the completed OIW Ultrasonic Testing Report (# 2244-10-UT-04), this non-critical repair was plotted and

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labeled as "Indication # 2". The QA Inspector had observed on the previous day shift that WID # S53 (Jerry Shepherd) had started the Flux Core Arc Welding (FCAW) on this repair # 2 and that OIW QC Inspector Jose' Salazar had been present to monitor the welding activities.

Lead QC Inspector Gregson explained that during the FCAW on this interior weld repair, Swing Shift QC Inspector Gary Mundt had randomly verified the welding parameters and pre-heat temperature, during the in-process FCAW being performed by WID # V7. QC Inspector Gregson explained that the parameters and pre-heat were in compliance to the applicable Welding Procedure Specification (WPS 3048). QC Inspector Gregson explained that after the parameters and pre-heat were verified by QC Inspector Mundt, that QC Inspector Mundt then randomly verified that the filler metal being used was in compliance to the applicable WPS 3048. QC Inspector Gregson explained that during the check of the filler metal, QC Inspector Mundt determined that the filler metal was not in compliance to the WPS 3048. QC Inspector Gregson then explained that the filler metal which was used for the interior weld repair # 2, was designated as an E8X Electrode Classification, as verified by QC Inspector Mundt. The QA Inspector noted that per the applicable WPS 3048 which was utilized for the repair, E9X Electrode Classification is listed for the consumable to be used. QC Inspector Gregson explained that QC Inspector Mundt had discovered this at the completion of the weld repair # 2 and notified WID # V7 of the discrepancy.

The QA Inspector then spoke with OIW QC Jose' Salazar on this date, who was present during the FCAW on day shift, on this weld repair # 2. QC Inspector Salazar explained that he had intermittently monitored the welding parameters and pre heat temperatures, at each half-hour of welding time and these were in compliance with the applicable WPS 3048. QC Inspector Salazar explained that he had then verified the 24 hrs. exposure time on the filler metal, to also be in compliance. QC Inspector Salazar explained that due to the position of the filler metal spool at the time, he was not able to physically verify the correct filler metal specification on the spool label, which was being used for the FCAW repair. QC Inspector Salazar explained that WID # S53 had picked up the E8X spool of filler material which had been inadvertently placed on the rolls of E9X spools, in the connex which is utilized for storage. QC Inspector Salazar explained that the identical spool of filler metal was left on the FCAW machine, which was then utilized by WID # V7, on swing shift to continue with the repair.

QC Inspector Gregson explained that a second weld repair was also performed on Swing Shift by WID # V7 on the exterior of the Weld Joint # W4-01, later in the shift. The QA Inspector noted that per the completed OIW Ultrasonic Testing Report (# 2244-10-UT-04), this non-critical repair was plotted and labeled as "Indication # 1". QC Inspector Gregson explained that prior to performing the Flux Core Arc Welding on this repair, that QC Inspector Mundt had verified that the filler metal being used was in compliance to the WPS 3048. QC Inspector Gregson explained that a Critical Weld Repair and a QC Non-Conformance report will be generated. QC Inspector Gregson explained that the weld repair # 2, in which the incorrect filler metal was used, will be excavated out and re-welded, utilizing the correct filler metal.

The QA Inspector then informed Lead QA Inspector Joe Adame about this conversation with Lead QC Inspector Mike Gregson. Lead QA Inspector Adame later informed the QA Inspector that he had spoken with QCM Tom Tomovick regarding this and advised Mr. Tomovick that a Critical Weld Repair should not be needed for this, as it is a second time excavation on the weld joint and the depth of the excavation will not exceed 65 % of the thickness. Lead QA Inspector Adame explained to the QA Inspector that Mr. Tomovick agreed with this being a non-critical weld repair (WRR) and that a QC Corrective Action report will also be generated with the WRR. QA Inspector Adame explained that since OIW QC is generating a Corrective Action report with the WRR, that QA will not generate a Non-Conformance Report, regarding this.

The QA Inspector later spoke with QC Inspector Mundt after he arrived for the scheduled swing shift. QC Inspector Mundt explained that he had just spoken with Mr. Tomovick and he was still currently working on the

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WRR and Corrective Action for this. QC Inspector Mundt explained to the QA Inspector that the applicable WPS 3048 will be listed on the WRR instead of "an approved WPS", which was listed on the WRR originally. QC Inspector Mundt explained that the WRR will include specific instructions to carbon arc and grind the excavation 5 mm past the original depth, length and width, to insure removal of the incorrect filler metal, which was used. QC Inspector Mundt explained that production personnel will not proceed with this repair, until the WRR and Corrective Action is completed, by QCM Tomovick.

### 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.

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<b>Inspected By:</b>	Vance,Sean	Quality Assurance Inspector
<b>Reviewed By:</b>	Adame,Joe	QA Reviewer

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