

**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-012662**Date Inspected:** 16-Mar-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**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 102A-2:**

The QA Inspector witnessed WID #B62 (Marcus Belgarde), performing the submerged arc welding (SAW) on the a110-2 Base plate to ab106 HPS 485W stiffener. The QA Inspector noted that this weld joint was designated as a partial joint penetration (AWS D1.5 TC-P4-S), weld joint (WJ) #W2-23 and WID #B62 was performing the SAW in the flat (1G) position. The QA Inspector noted that the SAW root passes were currently in-process and noted that the OIW approved welding procedure specification (WPS 4020), was being utilized. The QA Inspector noted that QC Inspector Mike Gregson, was present and QC Inspector Gregson explained that the in-process welding parameters/pre-heat temperatures, were intermittently verified. QC Inspector Gregson explained that the average welding parameters for the SAW root passes, were recorded at 480 amps/31 volts, with a pre-heat of approximately 350 degrees Fahrenheit (177 C) and travel speed of 16 inches per minute (i.p.m). The QA Inspector randomly verified pre-heat of approximately 350 degrees Fahrenheit (177 C) and welding parameters to be in compliance with the applicable WPS 4020. The QA Inspector was later informed by QC Inspector Gregson that the weld joint #W2-23 root passes had been completed. QC Inspector Gregson then explained that the root pass had cooled to ambient temperature and he then performed 100% visual (VT) and magnetic particle testing (MT) and that no rejectable indications, were found, per AWS D1.5 and OIW MT procedure QC-113, Rev. #3. The QA Inspector noted that the SAW and VT/MT Inspection appeared to be in compliance with AWS D1.5, the

---

# WELDING INSPECTION REPORT

( Continued Page 2 of 3 )

---

applicable WPS and the OIW approved procedure.

## Hinge-K Pipe Beam Assembly 101A-1:

The QA Inspector witnessed WID #S53 (Jerry Shepherd), performing Submerged Arc Welding (SAW) on the Complete Joint Penetration (CJP), Fuse 120A-1 to Forging 102A-1, in the flat (1G) position. The QA Inspector noted that the SAW fill passes, on this weld joint #WM4-1, were currently in-process and noted that the OIW approved welding procedure specification (WPS 4016), was being utilized. The QA Inspector noted that the SAW was being performed on the interior portion of the weld joint and that OIW production lead, Troy Smith was present at the time of the welding. Lead Troy Smith explained to the QA Inspector that the SAW on the interior portion of the CJP will be completed first and that once complete, the backgouge of the root passes will then be performed from the exterior of the weld joint. Lead Troy Smith then explained that OIW had previously set-up a continuous water flow cooling system, utilizing 2 carbon steel welded boxes, with an inlet and outlet water flow through the boxes. Troy Smith explained that this system was previously attached next to the stainless steel overlay, to protect it during the pre-heating and welding of the CJP. The QA Inspector noted that OIW had previously set-up two torches on the exterior of the weld joint and had started the pre-heat, earlier in the shift. The QA Inspector noted that QC Inspector Mike Gregson, was currently present and QC Inspector Gregson explained that the in-process welding parameters/pre-heat temperatures, were intermittently verified. QC Inspector Gregson explained that the average welding parameters for this SAW fill pass, was recorded at 570 amps/34 volts, with a pre-heat of approximately 350 degrees Fahrenheit (177 C) and travel speed of 20 inches per minute (i.p.m). QC Inspector Gregson explained that the pre-heat was verified on the interior side. The QA Inspector randomly verified pre-heat of approximately 350 degrees Fahrenheit (177 C) and welding parameters to be in compliance with the applicable WPS 4016. The QA Inspector noted that the SAW appeared to be in compliance with AWS D1.5 and the applicable WPS. See attached pictures below.

## AG Machining (Boring,OR)

On this date, the QA Inspector arrived at AG Machine to observe OIW perform the weld repairs, on the finished overlay surface, on this Fuse 120A-7. The QA Inspector met with OIW QC Inspector Jose Salazar and OIW welder (WID# C34) Mark Craig. QC Inspector Salazar explained that WID #C34 is currently performing the Gas Tungsten Arc Welding (GTAW), on the previously excavated areas, on the finished overlay. QC Inspector Salazar explained that WID #C34 was currently qualified to perform these repairs and is utilizing welding procedure specification (WPS 8022). The QA Inspector then witnessed WID #C34 performing the pre-heat required, utilizing a torch and then observed a temperature of approximately 175 degrees Fahrenheit, after the pre-heat was complete. The QA Inspector noted that 125 degrees Fahrenheit minimum was required, per WPS 8022. The QA Inspector then witnessed the AG Machinist rotating the fuse assembly, in the horizontal lathe, to access the weld repair areas in the flat position. The QA Inspector then observed WID #C34 continue to perform the GTAW on the previously excavated repair areas. The QA Inspector also observed QC Inspector Jose Salazar recording the in-process welding parameters of 123 amps and 16 volts. The QA Inspector also verified these welding parameters. The QA Inspector was later notified by QC Inspector Salazar, that the GTAW was completed and the repaired areas still need to be smoothed flush with the overlay. QC Inspector Salazar explained that an OIW Machinist will arrive at AG to perform this task. 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 1 QC Inspector.

---

---

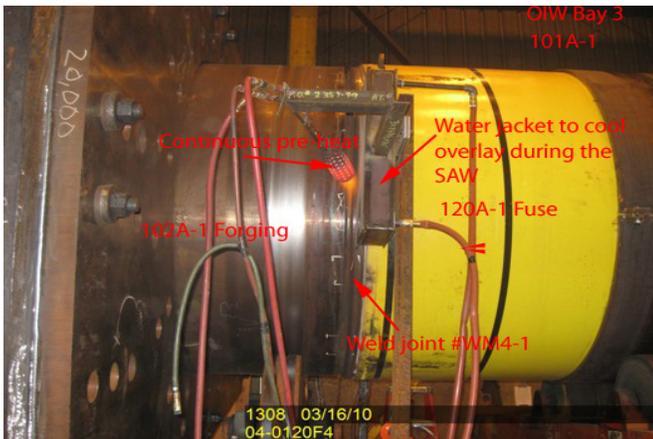
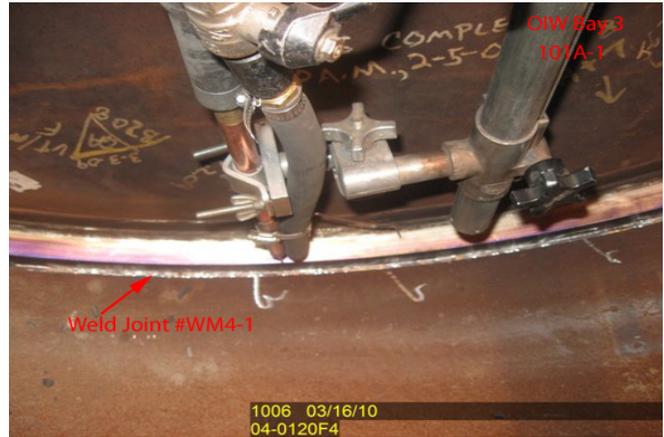
# WELDING INSPECTION REPORT

( Continued Page 3 of 3 )

---

---

The QA Inspector observed at AG Machine shop. 1 AG Machinist, 1 AG Supervisor, 1 OIW Welder and 1 OIW QC.



## 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

---