

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
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Contract #: 04-0120F4Cty: 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-013051**Date Inspected:** 14-Apr-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> |

**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 witnessed WID #F17 (Igor Frolov), in-process of performing Flux Core Arc Welding (FCAW) on the completed stainless steel overlay. WID #F17 explained to the QA Inspector that he was currently performing repairs on low spots, underfill and on the weld start/stops. The QA Inspector noted that QC Inspector Jose' Salazar was present and QC Inspector Salazar explained that the welding parameters were previously recorded at 160 amps/ 24.6 volts and the approved Welding Procedure Specification (WPS) 3293, was being utilized, for the repairs. QC Inspector Salazar explained that pre-heat was consistently maintained, utilizing a stationary torch, which was previously set-up. The QA Inspector randomly recorded pre-heat of approximately 150 degrees Fahrenheit, during the in-process FCAW performed by WID #F17. The QA Inspector noted that the FCAW appeared to be in compliance with WPS 3293 and after these repairs are complete, this Fuse will eventually be sent to AG Machine Works, for final machining. See attached picture below.

**Hinge-K Pipe Beam Assembly 101A-2:**

The QA Inspector was informed by QC Inspector Jose' Salazar that the backgouging, on the Submerged Arc Welding (SAW) root pass, designated as weld joint (WJ) # WM4-1, was previously completed on Grave yard shift and 100% Visual and Magnetic Particle (VT/MT) testing had been performed. QC Inspector Salazar explained that

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## WELDING INSPECTION REPORT

( Continued Page 2 of 4 )

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the testing had been performed by OIW QC Inspector Jon Nickolich and no rejectable indications were found, during the testing. The QA Inspector noted that this weld joint was the 120A-5 Fuse to 102A-2 Forging and was designated as an AWS D1.5 B-U7-S Complete Joint Penetration (CJP), double U Groove, with a 20 degree included angle bevel prep. QC Inspector Salazar explained that the testing had been performed in accordance to AWS D1.5 and OIW procedure QC -113, Rev. #3. QC Inspector Salazar then explained to the QA Inspector that he wasn't sure if QC Inspector Nickolich had measured and recorded the depth of the backgouge. QC Inspector Salazar explained that he will measure the depth of the backgouge, prior to OIW production starting the SAW fill passes, from the second side. QC Inspector Salazar later informed the QA Inspector that he had measured the backgouge to be approximately 62 mm deep, from the second side of the weld joint. The QA Inspector noted that the backgouge depth required is a minimum of 60 mm deep, to remove the two root faces of the weld joint and to remove fusion type discontinuities, before welding the second side. QC Inspector Salazar then explained that OIW production had started pre-heating the weld joint, with a stationary torch and will start the SAW, when the joint is heated to the minimum required temperature of 350 degrees Fahrenheit.

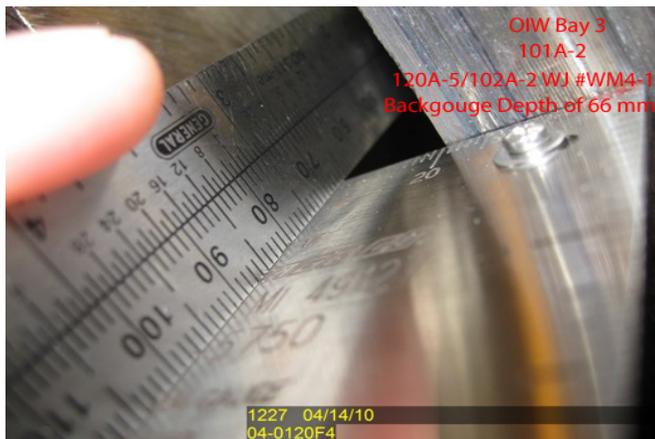
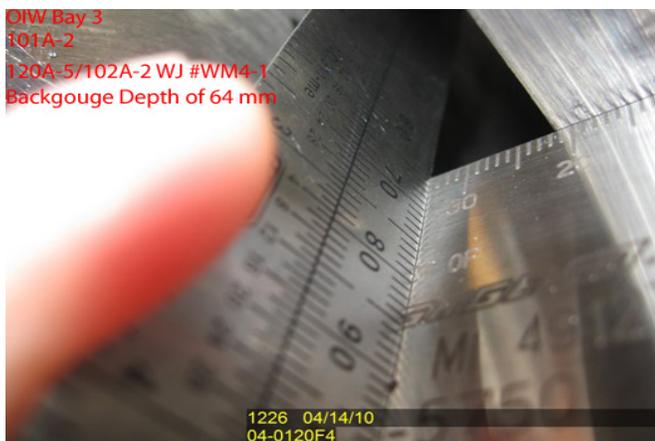
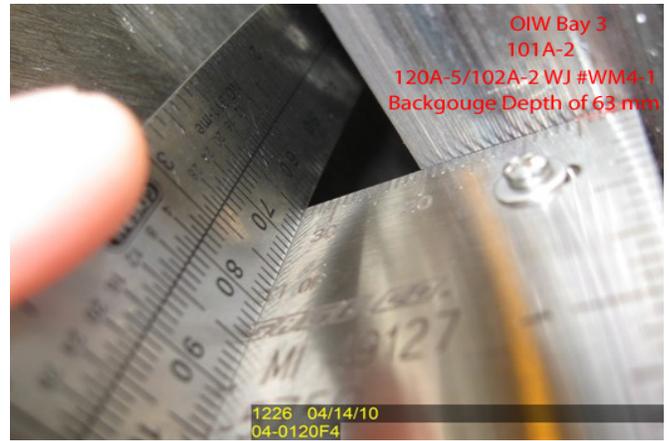
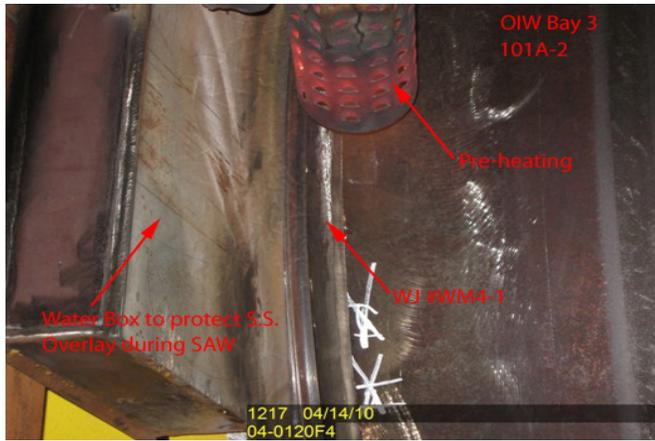
The QA Inspector then randomly visually inspected and measured the backgouged area from the second side, during the pre-heating. The QA Inspector noted that the backgouged area appeared to be ground to sound metal and the QA Inspector recorded depths of the backgouge, to be 60 mm-67 mm deep and this depth appeared to be within the minimum requirements. The QA Inspector then performed Magnetic Particle testing (MT) on the completed backgouged root pass and found no rejectable indications. The QA Inspector notified Lead QC Inspector Mike Gregson of the testing results and completed the applicable Magnetic Testing report (TL6028), on this date. QC Inspector Gregson explained that the pre-heat will continue on swing shift and will possibly start the SAW, when the temperature reaches the required minimum of 350 degrees Fahrenheit. The QA Inspector was present on swing shift till approximately 1830 and OIW was still continuing to pre-heat the weld joint. The QA Inspector noted that OIW QC Inspector Gary Mundt was present to verify pre-heat, prior to starting SAW and monitor in-process welding parameters. See attached pictures below.

### Hinge-K Pipe Beam Assembly 102A-3:

The QA Inspector witnessed OIW WID #B62 (Marcus Belgarde ) cutting the bevel prep on the b106 and ab106 HPS 485W stiffeners. The QA Inspector noted that WID #B62 was utilizing an oxygen-acetylene cutting torch, attached to a track and the bevel angle of the torch was set to approximately 60 degrees. The QA Inspector noted that the bevel prep was being cut in preparation for the a109 Post Tension Cap plate fit-up, to these stiffeners and noted that this weld joint, is designated as an AWS D1.5 TC-P4-S. The QA Inspector spoke with WID #B62 and he explained that once the bevel prep is cut with the torch, that the prep will be finished with a mechanical grinder. See attached picture below.

# WELDING INSPECTION REPORT

( Continued Page 3 of 4 )



## 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.

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# WELDING INSPECTION REPORT

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