

**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-007248**Date Inspected:** 15-Jun-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Oregon Iron Works Clackamas, Or.**Location:** Clackamas, OR**CWI Name:** Mike Gregson, Rob Walters**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:

OIW Fabrication Shop-Bay 3

Hinge-K Pipe Beam Assembly 102A-1: 6/15/09

a111-1 Forging to a110-1 Base Plate

QA Inspector noticed that the critical weld repair (CWR-003 Rev. #1) had been previously completed and was sitting idle.

Hinge-K Pipe Beam Assembly 102A-2: 6/15/09

a111-2 Forging to a110-2 Base Plate

QA Inspector noticed this assembly 102A-2 was sitting idle, with a pending non-critical weld repair.

Hinge-K Pipe Beam Assembly 102A-3: 6/15/09

a111-3 Forging to a110-3 Base Plate

QA Inspector noticed this assembly 102A-3 was sitting idle, with a pending non-critical weld repair.

Hinge-K Pipe Beam Assembly 102A-4: 6/12/09

a111-4 Forging to a110-4 Base Plate

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QA Inspector noticed this assembly 102A-4 had been previously placed in position in preparation for the flux-core arc welding of the various stiffener plates to the forging, piece mark identified as a111-4 and stiffener plates, piece marks identified as a107 & b106. QA Inspector noted these various stiffener plates had previously been tack welded and this assembly 102A-4 was sitting idle. See attached picture of assembly 102A-4 below.

Hinge-K Pipe Beam Fuse Assembly 120A-1: 6/15/09

a124-6 Half Fuse to a124-7 Half Fuse

QA Inspector noticed this fuse assembly 120A-1 was sitting idle in OIW Bay 6, pending the stainless steel overlay process.

Hinge-K Pipe Beam Fuse Assembly 120A-2: 6/15/09

a124-3 Half Fuse to a124-11 Half Fuse

QA Inspector noticed this assembly 120A-2 was sitting idle, pending transfer to A&G Machining for rough machining.

Hinge-K Pipe Beam Fuse Assembly 120A-3: 6/15/09

a124-12 Half Fuse to a124-10 Half Fuse

QA Inspector noticed that the stainless steel overlay welding was complete on this fuse assembly 120A-3 and was sitting idle. QA Inspector noted that a total of three ESW passes were utilized using OIW approved welding procedure specification (WPS 7003) and various welding terminations (start/stops) were blended utilizing a grinder. QA Inspector noted that the final outside dimensional measurements were measured at 12 ½" (152mm) increments and an average diameter of 1927.45mm was recorded, which appears to be in compliance with the applicable contract requirements. See attached picture of completed ESW fuse assembly 120A-3 below.

Hinge-K Pipe Beam Fuse Assembly 120A-4: 6/15/09

a124-13 Half Fuse to a124-4 Half Fuse

QA Inspector noticed that this fuse assembly 120A-4 was sitting idle.

Hinge-K Pipe Beam Fuse Assembly 120A-6: 6/15/09

a124-1 Half Fuse to a124-9 Half Fuse

QA Inspector noticed the submerged arc welding on the CJP (AWS D1.5 B-U3c-S) weld splice, sub-assemblies identified as (a124-1/a124-9), weld joint identified as WM3-18, for fuse assembly 120A-6, had been previously completed and QC Inspector Rob Walters had previously performed 100% preliminary ultrasonic weld inspection, on this CJP weld splice. QA Inspector reviewed the applicable ultrasonic testing report, after completion of the ultrasonic weld inspection and noted that Mr. Rob Walters had performed the inspection utilizing a 60 and 70 degree transducer angle on the exterior (face "A") and a 60 degree transducer angle on the interior (face "B"). QA Inspector noted that Mr. Walters had previously performed a 0 degree transducer angle on the heat affected zone and found no rejectable indications. QA Inspector also noted that Mr. Walters had found no rejectable indications, utilizing a 60 and 70 degree transducer angle. QA Inspector noted that Mr. Walters appeared to be in compliance with AWS D1.5. QA Inspector performed approximately 10% ultrasonic weld inspection on this CJP (AWS D1.5 B-U3c-S) weld splice, sub-assemblies identified as (a124-1/a124-9), weld joint identified as WM3-18, for fuse assembly 120A-6. QA Inspector performed the ultrasonic weld inspection utilizing a 60 and 70 degree transducer angle on the exterior (face "A") and a 60 degree transducer angle on the interior (face "B") and found no rejectable indications. QA Inspector notified lead QC Inspector Mike Gregson of the testing results and completed the

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applicable ultrasonic testing report (TL6027).

Hinge-K Pipe Beam Fuse Assembly 120A-7: 6/15/09

a124-5 Half Fuse to a124-15 Half Fuse

QA Inspector noticed the half-fuse sub-assemblies identified as a124-5 and a124-15 were in-process of being fit-up in preparation for FCAW tacking. QA Inspector measured bevel prep angles on this CJP (AWS D1.5 B-U3c-S) weld joint to be 30 degrees (60 degrees included angle), which is in compliance with AWS D1.5. QA Inspector spoke with Lead QC Inspector Mike Gregson and Mr. Gregson explained that a OIW QC Inspector would be present to verify weld joint fit-up and minimum pre-heat temperatures, prior to weld tacking. See attached pictures below of fuse assembly 120A-7, in-process of being fit-up.

Hinge-K Pipe Beam Sub-Assembly a124-16: 6/15/09

a125 & b125 Ring Stiffeners to a124-16 Half Fuse

QA Inspector noticed this half-fuse sub-assembly had been transferred to OIW Bay 3, from OIW storage yard, in preparation for the submerged arc welding on the internal ring stiffeners, piece marks identified as a125 and b125.

OIW South Storage Yard: 6/15/09

QA Inspector noticed the following half-fuse sub assembly was sitting idle, pending submerged arc welding on the internal stiffener rings, piece marks identified as a125 & b125: a124-8.

Material, Equipment, and Labor Tracking

QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project. The QA Inspector observed at Oregon Iron Works: 6 OIW production personnel and 2 QC Inspectors. The following personell were present at A&G: 1A&G supervisor and 1 A&G machinist



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

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