

**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-007093**Date Inspected:** 04-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: 6/4/09

a111-1 Forging to a110-1 Base Plate

QA Inspector noticed that the critical weld repair (CWR-003 Rev. #1), had been previously completed on swing shift and was sitting idle, pending 100% preliminary ultrasonic weld inspection.

Hinge-K Pipe Beam Assembly 102A-2: 6/4/09

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: 6/4/09

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.

---

## WELDING INSPECTION REPORT

( Continued Page 2 of 5 )

---

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

a111-4 Forging to a110-4 Base Plate

QA Inspector witnessed welder #H49, Mr. Rick Hinkle, FCAW tacking of various stiffener plates, to the base plate, piece mark identified as a110, for assembly 102A-4, in the flat position. QA Inspector noted Mr. Rick Hinkle was performing pre-heat, utilizing a single torch and recorded temperatures of approximately 350 F (176C).

QA Inspector noticed QC Inspector Rob Walters was present to monitor in-process welding parameters (amps/volts) and continuous pre-heat temperatures. QA Inspector noted Mr. Rick Hinkle appeared to be tack welding in accordance with the applicable approved welding procedure specification (WPS 3049).

Hinge-K Pipe Beam Fuse Assembly 120A-1: 6/4/09

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: 6/4/09

a124-3 Half Fuse to a124-11 Half Fuse

QA Inspector noticed welder #T6, Mr. Craig Jacobson, was in-process of performing the excavation for the critical weld repair, on the CJP AWS D1.5 B-U3c-S weld splice (a124-3/a124-11), designated as weld joint #WM3-18.

QA Inspector noted that OIW had been previously informed by METS QA Representative Robert Mertz and had been given a verbal approval to proceed with the critical weld repair on the forging assembly 120A-2

(a124-3/a124-11), designated as CWR-005. QA Inspector later spoke with lead QC Inspector Mike Gregson and Mr. Gregson explained that the excavation had been completed and was visually acceptable. Mr. Gregson also explained that 100% magnetic particle inspection was performed and no rejectable indications were found. See summary of conversations below for additional details.

Hinge-K Pipe Beam Fuse Assembly 120A-3: 6/4/09

a124-12 Half Fuse to a124-10 Half Fuse

QA Inspector noticed that the stainless steel overlay welding was in-process, on this fuse assembly 120A-3. QA Inspector witnessed welder #J6, Mr. Craig Jacobson, performing electro slag welding (ESW) in the flat position, utilizing Soudokay brand Soudotape 316L stainless steel consumable strip. QA Inspector noted the first ESW welding passes were complete, utilizing Soudokay brand Soudotape 309L stainless steel consumable strip and the second layer passes were in-process, approximately 25% complete. QA Inspector noticed QC Inspector's Mike Gregson and Rob Walters were present, to verify in-process welding parameters (amps/volts) and monitor in-process continuous pre-heat temperatures. QA Inspector spoke with QC Inspector Rob Walters and Mr. Rob Walters explained that welding amps were recorded as 1260 amps/24.5 volts, with a pre-heat temperature of approximately 225 Fahrenheit. QA Inspector verified Mr. Craig Jacobson was currently qualified for this welding process/position and randomly recorded pre-heat temperatures of approximately 250 Fahrenheit. QA Inspector noted that Mr. Craig Jacobson appeared to be in compliance with the applicable approved welding procedure specification (WPS 7003). See picture below of fuse assemble 120A-3. See assembly 120A-3 picture below.

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

a124-13 Half Fuse to a124-4 Half Fuse

A&G Machining

QA Inspector spoke with A&G Machining on this date and A&G explained that the rough machining was

---

## WELDING INSPECTION REPORT

( Continued Page 3 of 5 )

---

previously completed, on this fuse assembly 120A-4 and would be transferred back to OIW fabrication shop. QA Inspector noted that once this fuse assembly arrives at OIW fabrication shop, 100% magnetic particle testing will be performed on the exterior machined surface, by qualified OIW QC personnel and 100% final ultrasonic weld inspection will be performed by qualified OIW QC Inspectors on the CJP weld splice. See summary of conversations below.

Hinge-K Pipe Beam Fuse Assembly 120A-5: 6/4/09

a124-14 Half Fuse to a124-2 Half Fuse

QA Inspector noticed this fuse assembly 120A-5 was being loaded on a trailer in preparation for the transfer to A&G Machining, for the rough machining process. See attached picture below.

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

a124-1 Half Fuse to a124-9 Half Fuse

QA Inspector randomly witnessed welder #S53, Mr. Jerry Shepherd, perform backgouging of the weld root on the CJP (AWS D1.5 B-U3c-S), half fuse pipe assembly, (piece mark identified as a124-1), to half fuse pipe assembly, (piece mark identified as a124-9). QA Inspector randomly recorded pre-heat temperatures of approximately 200 degrees Fahrenheit, which is in compliance with the applicable welding procedure specification (WPS 4020). QA Inspector noted that OIW QC Inspector Rob Walters was present to perform a visual inspection and 100% magnetic particle testing, after completion of the weld root backgouging.

Hinge-K Pipe Beam Sub-Assembly a124-5: 6/4/09

a125 & b125 Ring Stiffeners to a124-5 Half Fuse

QA Inspector randomly witnessed OIW welder #O6, Mr. Tim O'Brian, performing submerged arc welding on the b125 internal ring stiffener to a124-1 half fuse, designated as weld joint #WM3-03. QA Inspector noticed the submerged arc welding was being performed in the flat position and verified Mr. Tim O'Brian was currently qualified for this welding process/position and randomly recorded pre-heat temperatures of approximately 350 F, which is in accordance with the applicable welding procedure specification (WPS 4020). QA Inspector randomly recorded in-process welding parameters of 390 amps and 25 volts and noticed that QC Inspector Rob Walters was present to randomly verify in-process welding parameters (amps/volts) and pre-heat temperatures. QA Inspector noted that the submerged arc welding being performed by Mr. Tim O'Brian, appeared to be in compliance with the applicable welding procedure specification (WPS 4020).

OIW South Storage Yard: 6/4/09

QA Inspector noticed the following half-fuse sub assemblies were sitting idle, pending submerged arc welding on the internal stiffener rings, piece marks identified as a125 & b125: a124-8, a124-15 and a124-16.

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

---

# WELDING INSPECTION REPORT

( Continued Page 4 of 5 )

---



## Summary of Conversations:

Hinge-K Pipe Beam Fuse Assembly 120A-2: 6/4/09

a124-3 Half Fuse to a124-11 Half Fuse

QA Inspector was later notified by lead QC Inspector Mike Gregson that the weld repair was completed and welder #T6, Mr. Craig Jacobson, had performed the FCAW repair in the vertical position. QA Inspector was informed by lead QC Inspector Mike Gregson that OIW had used the welding procedure specification (WPS 3050), for this weld repair. QA Inspector noted that OIW had deviated from the original welding procedure specification (WPS 3049), which was the original welding procedure specification that was previously approved for this CWR-005. The following resolution was agreed upon by Caltrans and OIW Project Manager Bill Pender:

- 1.) OIW will generate an NCR stating issue and resolution --- Caltrans will not generate an NCR at this time.
- 2.) OIW will retract CWR-005 as is with WPS 3049 listed as repair WPS.
- 3.) OIW will then submit Revised CWR-005 showing WPS 3050 as the WPS to be used for repair.

## A&G Machining

Lead QA Inspector Joe Adame arrived at A&G Machining, on this date and noticed the fuse assembly 120A-4 was being loaded on a trailer, in preparation for transfer back to OIW fabrication shop. Mr. Adame witnessed the arrival of fuse assembly 120A-5 at A&G and the placement on the horizontal lathe, in preparation for rough machining. A&G explained that the following final outside diameter measurements were recorded by A&G machinist, on the completed fuse assembly 120A-4: 1902.76mm, 1902.59mm, 1902.53mm, 1902.66mm, 1902.97mm, 1902.76mm, 1902.66mm and 1902.89mm. OIW machinist was present at A&G on 6/1/09, to verify these dimensional measurement and release the assembly 120A-4.

## 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.

---

---

# WELDING INSPECTION REPORT

*( Continued Page 5 of 5 )*

---

---

**Inspected By:** Vance,Sean

Quality Assurance Inspector

**Reviewed By:** Adame,Joe

QA Reviewer