

**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 #: 1x.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-012974**Date Inspected:** 10-Apr-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1630**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** As noted in Summary**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:** Orthotropic Box Girder**Summary of Items Observed:**

This Quality Assurance Inspector (QAI), was present at the Self Anchored Suspension (SAS) job site. The following items were observed; see individual item numbers in the body of this report for further details.

**Field Splice 1E-2E**

- 1, Side Plate C, welding of side 2 completed.
- 2, Side Plate E. Ultrasonic Testing in process.

**Field Splice 2E-3E**

- 3, Side Plate C, Magnetic Particle Testing of side 2 back-gouge in process.
- 4, Side Plate E, removal of backup bar complete and back-gouging in process.

**Field Splice 3E-4E**

- 5, Side Plate C, Heating elements installed on bottom for preheat.
- 6, Side Plate E, welding of side 1 in process. Welding not completed.

**Field Splice 1W-2W**

- 7, Deck Plate A, Visual and Magnetic Particle Testing completed. Minor surface repairs completed.
- 8, Bottom Plate D, welding of side 1 in process.

**Field Splice 2W-3W**

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9, Deck Plate A, tack welding of backing bar to W2 in process.

Field Splice 3W-4W

10, Bolt up in process.

1, The QAI observed the automated Flux Cored Arc Welding (FCAW-G) process of the of the complete joint penetration (CJP) groove weld side plate field splice 1E-2E-C. The welding was performed from the exterior face by the welding operators Rory Hogan ID-3186 and Jeremy Dolman ID-5042 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3042A-1 Rev. 0 in the vertical up (3G) welding position. The welding was observed by Quality Control (QC) Inspector James Cunningham. The minimum preheat temperature of 60 degrees Celsius and maximum interpass temperature of 230 degrees Celsius was verified utilizing Tempilstik temperature indicators. The FCAW-G fill pass by Mr. Hogan average amperage of 225 DC, voltage of 23.4 DC at the welding lead and average travel speed of 162 millimeters per minute were verified to be within the WPS parameter ranges of 214 to 267 DC amps, 20.9 to 24.4 DC volts and travel speed of 188 to 455 millimeters per minute by the QA inspector. At the end of this shift, the welding was completed and appears to be in general compliance with contract documents. Grinding of the weld reinforcement and removal of weld run off tabs was not started.

2, The QA inspector periodically observed The NDT technician Jesse Cayabyab perform ultrasonic testing of the complete joint penetration (CJP) groove weld side plate field splice 1E-2E-E. The welds and base metal were scanned utilizing a Krautkramer USM 55 for the following scans. The base metal lamination check was performed with a 1.0" dia. round 2.25 MHz transducer. The shear wave scan in the longitudinal and transverse direction was performed with a 0.75" x 0.75" 2.25 MHz transducer on a 70 degree angle wedge. The testing was performed in accordance with the approved procedure SE-UT-D1.5-CT-100 Rev.4. Following is a list of welds examined and acceptance in accordance with AWS D1.5-2002 table 6.3 in the longitudinal and transverse direction. There appears to be 4 rejectable indications identified at this time.

3, The QA inspector periodically observed The NDT technician Jesse Cayabyab perform the Magnetic Particle Testing of the complete joint penetration (CJP) groove weld side plate field splice 2E-3E-C after back gouging. The testing was performed in accordance with the approved procedure SE-MT-CT-D1.5-101. Multiple indications were marked for removal. Work was not completed on this date.

4, The QA inspector periodically observed utilizing the removal of the backing bar of complete joint penetration (CJP) groove weld side plate field splice 2E-3E-E. The ABF welding personnel Salvador Sandavol performed the plasma arc cutting process utilizing an automated track system. After removal of the backing bar was complete. Back gouging of the weld joint was started. The work was not completed on this date appears to be in general compliance with contract documents.

5, The QA inspector observed ABF personnel installing heating units on the outside surface of the complete joint penetration (CJP) groove weld side plate field splice 2E-3E-C in preparation for welding. Preheating was not started on this date.

6, The QAI observed the automated Flux Cored Arc Welding (FCAW-G) process of the of the complete joint penetration (CJP) groove weld side plate field splice 3E-4E-E. The welding was performed from the interior face

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by the welding operators Mitch Sittinger ID-0315 and Songtao Huang ID-3794 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3042A-1 Rev. 0 in the vertical up (3G) welding position. The welding was observed by Quality Control (QC) Inspector Bonifacio Daquinag. The minimum preheat temperature of 60 degrees Celsius and maximum interpass temperature of 230 degrees Celsius was verified utilizing Tempilstik temperature indicators. The FCAW-G fill pass average amperage of 230 DC, voltage of 23.8 DC at the welding lead and average travel speed of 240 millimeters per minute were verified to be within the WPS parameter ranges of 214 to 267 DC amps, 20.9 to 24.4 DC volts and travel speed of 188 to 455 millimeters per minute by the QA inspector. At the end of this shift, the welding was not completed and appears to be in general compliance with contract documents.

7, The QA inspector periodically observed in process grinding of the complete joint penetration (CJP) groove weld deck plate field splice 1W-2W-A exterior weld face reinforcement. ABF welding personnel performed the grinding. The exterior weld reinforcement was ground to a smooth flush surface. After grinding, the QC inspector Tom Pasqualone performed Magnetic Particle Testing on finished weld surface. Mr. Pasqualone utilized the procedure SE-MT-CT-D1.5-101. Mr. Pasqualone then performed a visual examination of the finished weld surface and marked weld A1, 0 to 50mm, A5, 23,750 to 24,000mm and A5, 24,400 to 24,600 for repair due to under fill.

The QAI observed the shielded metal arc welding (SMAW) of the complete joint penetration (CJP) groove weld of the transverse deck plate field splice 1W-2W-A. The welding was performed at repair locations identified by QC inspector Tom Pasqualone noted above by the welder Kenneth Chappell ID-3833 utilizing the Welding Procedure Specification ABF-WPS-D15-F1200A Rev. 1 in the flat (1G) position with 5/32" E7018 H4R low hydrogen electrodes. The welding was observed by Quality Control (QC) Inspector Tom Pasqualone. The minimum preheat temperature of 60 degrees Celsius and maximum interpass temperature of 230 degrees Celsius was verified by the QC. The SMAW average amperage of 170 DC at the welding lead was verified to be within the WPS parameter ranges of 130 to 210 DC amps by the QA inspector. The repairs were completed and ground to a smooth flush surface. Welding and grinding is complete and appears to be in general compliance with contract documents. The QA inspector noted that the weld run off tabs were not removed on this date.

8. The QAI observed the shielded metal arc welding (SMAW) of the complete joint penetration (CJP) groove weld of the transverse deck plate field splice 1W-2W-D. The welding was performed in the areas of the stiffeners by the welder Chun Fai Tsui, ID-3426 and James Zhen, ID-6001 utilizing the Welding Procedure Specification ABF-WPS-D15-1040C Rev. 1 in the flat (1G) position with 5/32" E7018 H4R low hydrogen electrodes. The welding was observed by Quality Control (QC) Inspector Bernie Docena. The minimum preheat temperature of 60 degrees Celsius and maximum interpass temperature of 230 degrees Celsius was verified by the QC. The SMAW fill pass by Mr. Zhen average amperage of 160 DC at the welding lead was verified to be within the WPS parameter ranges of 130 to 210 DC amps by the QA inspector. At the end of this shift the welding was completed at the longitudinal plates and Stiffeners S1, S2, S3, S4, S5, S6, S8, S9, S10, S13, S14, S15, S16, S17, S18, S19 and appears to be in general compliance with contract documents.

The QAI observed the Submerged Arc Welding (SAW) of the complete joint penetration (CJP) groove weld of the transverse deck plate field splice 1W-2W-D. The welding was performed in the areas between the stiffeners by the welding operators Jordan Hazelaar ID-2135 and Bryce Howell ID-5591 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The welding was observed by Quality Control (QC) Inspector Bernie Docena. The minimum preheat temperature of 60 degrees Celsius and maximum interpass

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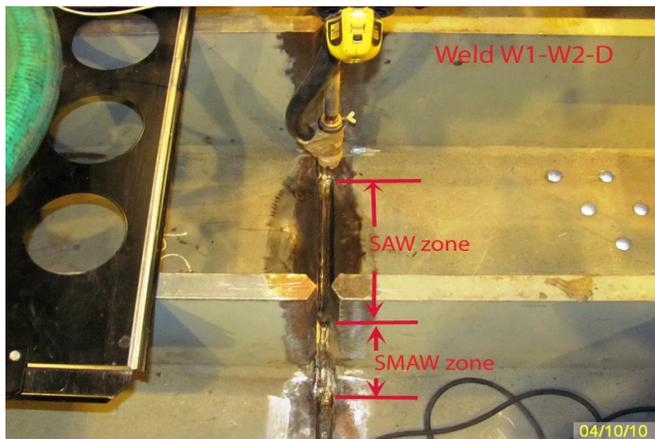
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temperature of 230 degrees Celsius was verified utilizing Tempilstik temperature indicators. The SAW fill pass by Mr. Hazalaar average amperage of 600 DC and voltage of 32.5 DC at the welding head gages and average travel speed of 410 millimeters per minute were verified to be within the WPS parameter ranges by QA inspector. At the end of this shift, the welding was completed at D9 and D10 and appears to be in general compliance with contract documents. Locations D4, D5 and D6 are 90% complete.

9, The QAI observed the shielded metal arc tack welding (SMAW) of the complete joint penetration (CJP) groove weld backing bar of the transverse deck plate field splice 1W-2W-A. The welding was performed at the backing bar to segment W1. The welding was performed in area A1 where there was no gap between the backing bar and the segment by the welder Kenneth Chappell ID-3833 utilizing the Welding Procedure Specification ABF-WPS-D15-F1200A Rev. 1 in the flat (1G) position with 5/32" E7018 H4R low hydrogen electrodes. The welding was observed by Quality Control (QC) Inspector Tom Pasqualone. The minimum preheat temperature of 10 degrees Celsius was verified by the QC inspector utilizing Tempilstik temperature indicators. The SMAW average amperage of 175 DC at the welding lead was verified to be within the WPS parameter ranges of 130 to 210 DC amps by the QA inspector. The repairs were completed and ground to a smooth flush surface. The tack welding was not completed and appears to be in general compliance with contract document.

10, The QAI observed the fit up and alignment of segments 3W to 4W. Bolt up of longitudinal plates was completed. Bolt up of the deck plate closed ribs and bottom plate stiffeners was started.



## Summary of Conversations:

Quality Control (QC) Inspector Bernie Docena reported that preheat for in process weld 1W-2W-D was to be maintained until welding continued on Monday, April 12, 2010.

General conversations with QC personnel regarding welding locations and schedule.

## 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>	Lanz,Joe	Quality Assurance Inspector
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<b>Reviewed By:</b>	Levell,Bill	QA Reviewer
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