

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-019047**Date Inspected:** 29-Dec-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**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 Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

- A). Lifting Lug Holes
- B). Deck Access Holes
- C). Field Splice E9/E10
- D). QC Inspection Request
- E). Miscellaneous Tasks

A). Lifting Lug Hole

The QAI observed the welder, Darcel Jackson ID-9967, perform the Complete Joint Penetration (CJP) groove welding of the Lifting Lug Hole (LLH) identified as WN: 2W-PP15-W3-Weld No. 2 located along the grid line W3 of the OBG identified as W1. The welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and the 3.2 mm, E7018 H4R electrode as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1110, Rev. 1. The WPS was also utilized by the QC inspector, William Sherwood, as a reference to monitor the welding and to verify the welding parameters. The QC verification of the welding parameters was observed by the QAI and recorded as 132 amps and the minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was also verified by the QAI. The welding was performed in the overhead (4G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the underneath side of the weld joint. The CJP welding was completed during this shift and

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appeared to comply with contract specifications.

The QAI also observed the welder, Mike Jiminez ID-4671, perform the Complete Joint Penetration (CJP) groove welding of the Lifting Lug Hole (LLH) identified as WN: 1W-PP11-W4-Weld No. 2 located along the grid line W4 of the OBG identified as W1. The welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process 3.2 mm, E7018 H4R electrode as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1070, Rev. 1. The WPS was also utilized by the QC inspector, Mike Johnson, as a reference to monitor the welding and to verify the welding parameters. The QC verification of the welding parameters was observed by the QAI and recorded as 129 amps and the minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was also verified by the QCI. The welding conducted during this shift was performed in the overhead (4G) position with the work in an approximately horizontal plane and the weld metal deposited from the underneath side of the weld joint.

At the conclusion of welding the CJP identified as WN: 1W-PP11-W4-Weld No. 2 the welder, Mr. Jiminez, mobilized to the topside of the OBG identified as W1. Later in the shift the QAI observed the welder performing the CJP welding of the weld joint identified as WN: 1W-PP11-W4-Weld No. 4 utilizing the SMAW process as per the WPS ABF-WPS-D15-1070, Rev. 1. The WPS was also utilized by the QC inspector, Mr. Johnson, to monitor and verify the DC welding parameters which were noted and recorded by the QC inspector as 127 amps with the welding performed in the flat (1G) position and the weld joint in an approximately horizontal plane and the weld metal deposited from the upper side. The welder utilized the 3.2 mm low hydrogen electrode which appeared to comply with the AWS specification and classification identified as A5.1-04 and E7018 H4R accordingly. The welding was conducted with minimum surface temperature of 65 degrees Celsius and the maximum surface temperature of 230 degrees Celsius which was verified by the QC inspector.

Later in the shift, the QAI also observed the welder, Mr. Jackson, perform the CJP groove welding of the LLH) identified as WN: 2W-PP15-W3-Weld No. 4 located along the grid line W3 of the OBG identified as W2. The welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and the 3.2 mm, E7018 H4R, electrode as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1070, Rev. 1. The WPS was also utilized by the QC inspector, Mike Johnson, as a reference to monitor the welding and to verify the welding parameters. The QC verification of the welding parameters was observed by the QAI and recorded as 137 amps. The welding was performed in the flat (1G) position with the work placed in an approximately horizontal plane and the weld metal deposited from the upper side. The CJP welding was not completed during this shift and appeared to comply with contract specifications.

B). Deck Access Holes

The QAI observed the welder, Jin Pei Wang ID-7299, perform the CJP welding of the Deck Access Hole (DAH) identified as Weld Number (WN): 3W-PP23.5-W2 located on the "A" deck of the Orthotropic Box Girder (OBG) W3. The welding was performed utilizing the SMAW process as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1110, Rev. 1. The WPS was also utilized by the QC inspector, Gary Ehram, as a reference to monitor the welding and to verify the welding parameters which was recorded as 158 amps by the QC inspector. The 4.0 mm low hydrogen electrode, E7018 H4R, was utilized with the welding performed in the overhead (4G) position with work placed in an approximately horizontal plane and the weld metal deposited from the underneath side. The minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230

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degrees Celsius were verified by the QC inspector. The CJP welding was completed during this shift which appeared to comply with the contract documents.

The QAI also observed the welder, Mick Chan ID-9265 , perform the CJP welding of the DAH identified as Weld Number (WN): 3W-PP19.5-W2 located on the "A" deck of the Orthotropic Box Girder (OBG) W3. The welding was performed utilizing the SMAW process as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1110, Rev. 1. The WPS was also utilized by the QC inspector, Mr. Ehrsam, as a reference to monitor the welding and to verify the welding parameters which was recorded as 149 amps by the QC inspector. The 4.0 mm low hydrogen electrode, E7018 H4R, was utilized with the welding performed in the overhead (4G) position with work placed in an approximately horizontal plane and the weld metal deposited from the underneath side. The minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were verified by the QC inspector. The CJP welding was completed during this shift which appeared to comply with the contract documents.

C). Field Splice E9/E10

At approximately 1000 the QAI arrived at this work station to observe the field fit-up and fillet welding of the fitting gear to the bottom plate field splice to be utilized during the alignment process of this field splice identified as WN: 9E-10E-D1 and D2. The welding and the assembly fit-up were performed by Rick Clayborn ID-2773 utilizing the SMAW process during the welding as per the WPS ABF-WPS-D15-F1200A Rev. 1. The WPS was also used by the QC inspector, William Sherwood, as a reference to verify the DCEP welding parameters and were noted and recorded as 134 amps. The fillet welding was performed in the overhead (4F) position so that each fillet weld was deposited on the underside of the horizontal surface and against the vertical surface. Later in the shift the QAI observed the QC inspector verify minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius which appeared to comply with the contract documents. At the conclusion of the field fit-up of the "D" plate the QAI observed Mr. Sherwood perform the inspection of the planar alignment and were noted as within 1 mm. The QAI randomly verified the dimensions and concurs with Mr. Sherwood's assessment. The field fit-up was not completed during this shift.

Prior to the field fit-up of the OBG field splice the QAI observed the bolting crew installing steel pins and temporary high strength bolts connecting the splice plate to the longitudinal floor beams at the side plate field splices identified as "C" and "E" and at the bottom plate field splice identified as "D". This operation was also performed at the longitudinal U-rib beams at the "A" deck field splice. The installation of the steel pins and temporary bolting was performed as per the Erection Procedure Plan . During the QAI continuous observations of the this operation, the QAI performed an in process observation of planar alignment of the side plate field splices utilizing a Cambridge Gage and it was noted as a 7 mm planar misalignment located at the filed splice identified as 9E-10E-E2 with Y coordinate as noted, Y=4677 mm to 5277 mm. Due to limited access, bolting crew installing temporary bolts and steel pins, the QAI will continue the observation and verification tasks on Thursday, December 30, 2010. Also, during the QAI observations, there was no evidence of attaining planar alignment by means of the use of mechanical equipment or the application of heat. The QAI departed this work station at approximately 1500.

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D). QC Inspection Request

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, the QAI randomly verified the visual appearance of the Complete Joint Penetration (CJP) welding of the following; WN: 8E-9E-A-LS1, LS2 and LS3, WN: 1W-PP11-W4-Weld No. 2 and 2W-PP15-W3-Weld No. 2. The QAI verification was performed to verify that the welding and visual inspection performed by the QC inspectors William Sherwood and John Pagliero, meet the requirements of the contract documents. At the conclusion of the QAI verification it appeared that the welds and the QC inspection complies with the contract documents.

E). Miscellaneous Task

This QAI also performed a review and update of the project progress utilizing QA field reports and NDT reports. The updated project information was documented into the various QA tracking logs.

QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The digital photographs below illustrate some of the work observed during this scheduled shift.



Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

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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 Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Reyes,Danny	Quality Assurance Inspector
Reviewed By:	Mertz,Robert	QA Reviewer
