

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:** Casey, William**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-028191**Date Inspected:** 15-Aug-2012**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1930**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** William Sherwood**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:** SAS OBG**Summary of Items Observed:**

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At OBG 13W/14W drop-in corner plate 'G' inside, QA randomly observed ABF/JV qualified welder Lin E. Yun perform back welding fill pass on the Complete Joint Penetration (CJP) splice butt joint. The welder was observed manually welding in the 3G (vertical) position utilizing a Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E7018H4R electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1110A-1. The joint being welded has a single V-groove butt joint with steel backing bar that has been back gouged and ground smooth. ABF Quality Control (QC) William Sherwood was noted monitoring the welding parameters of the welder. QA randomly verified the welding parameter with measured working current of 120 amperes on the 3.2mm E7018H4R electrode which appears in conformance to the contract requirements. At the end of the shift, SMAW fill pass back welding was still continuing and should remain tomorrow.

At OBG 13W-PP122.2-LS5 deck stiffener flange inside, QA randomly observed ABF/JV qualified welder Xiao Jian Wan continuing to perform PJP groove welding fill pass on the deck stiffener flange PJP T-joint. The welder was observed perform manual welding in the 4G (overhead) position utilizing a Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E9018H4R electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1162-4. The stiffener flange plate has a bevel groove being welded PJP T-joint to the longitudinal stiffener LS5. The plates were preheated to more than 200 degree Fahrenheit using Miller Proheat 35 Induction Heating System. During welding, ABF Quality Control (QC) William Sherwood was

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noted monitoring the welding parameters of the welder with measured working current of 134 amperes on the 3.2mm E9018H4R. During the shift, QC was noted monitoring the issuance of the E9018 electrode due to limited time exposure. The welder was noted welding until the end of the shift wherein he was not able to finish the weld joint and the welder held the same preheat of >200 degree Fahrenheit for three hours after welding as required.

During the shift, the same welder was noted 4G welding CJP T-joint between the deck stiffener flange to one of the existing cross stiffener. The welder was noted using the same process but using 3.2mm diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1060A. The CJP T-joint has a 45° bevel with permanent steel backing bar. The welder has welded the root pass and fill pass but was not able to complete the T-joint. Welding fill pass to cover pass should continue tomorrow.

At location OBG 13W-PP121.5/122.5-W3, ABF personnel have requested this QA to perform Visual Test (VT) on the lifting lug bracket removal. These lifting lug brackets were welded to the longitudinal diaphragm (LD) that have been cut to 19.0mm from the LD then ground smooth to transition per ABF Request for Information (RFI) ABF-RFI-001151R01 dated March 31, 2008. During the QA verification, all the lifting lug brackets that were shown that were cut and ground to transitions were noted smooth but the required transition ratio of 3:1 per submitted RFI was not met. The results of the QA verification were verbally relayed to ABF Superintendent Scott Smith. This QA also informed Mr. Smith that the removal of the lifting lugs brackets needs further grinding to meet the requirements of the RFI.

At OBG location 13W-PP121.5-W3 longitudinal diaphragm WT12 stiffener inside, this QA randomly observed ABF welder Gue Wu Chen perform fillet welding on the above mentioned stiffener. The welder was noted fillet welding in 3F (vertical) position using Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E7018 H4R electrode implementing Welding Procedure Specification (WPS) ABF-D15-F1200A. The vertical WT12 stiffener web is being welded to the longitudinal diaphragm on both sides of the web. During welding, the welder was noted preheating the plates using propylene gas torch prior welding. ABF QC William Sherwood was noted monitoring the welding parameters with measured working current of 128 amperes during welding. At the end of the shift, fillet welding was completed on both sides of the WT stiffener web.

At OBG 13W-PP123.5-W2.1 BF1 drop-in floor beam inside, QA randomly observed ABF/JV qualified welder Rick Clayborn continuing to perform CJP groove welding repair from location Y=0mm to Y=460mm (whole length of the flange). The welder was observed welding in the 4G (overhead) position utilizing Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E7018H4R electrode implementing welding procedure ABF-WPS-D15-1000-Repairs. Prior welding, ABF QC was noted performing Magnetic Particle Testing (MT) on the groove of the excavation after grinding. During the shift, ABF QC William Sherwood was noted monitoring the welder with measured working current of 132 amperes on 3.2mm E7018H4R electrode. At the end of the shift, repair welding at location mentioned above was still continuing and should remain tomorrow.

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, QA has randomly verified the QC MT of the Partial Joint Penetration (PJP) welding of three (3) deck stiffener flange to longitudinal stiffeners LS1, LS2 & LS3. The QA verification was performed to verify that the welding and the MT inspection performed by the QC inspector meet the requirements of the contract documents. At the conclusion of the QA MT verification it appeared that the weld and the QC inspection complied with the contract documents.

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1. W13-PP122.2-LS1 deck stiffener flange PJP T-joint – weld cover QA MT verified.
2. W13-PP122.2-LS2 deck stiffener flange PJP T-joint – weld cover QA MT verified.
3. W13-PP122.2-LS3 deck stiffener flange PJP T-joint – weld cover QA MT verified.

At OBG 13W-PP121.5-W3 longitudinal diaphragm (LD) vertical stiffener WT12, ABF welder Gue Wu Chen was observed performing 3F (vertical) position Shielded Metal Arc Welding (SMAW) fillet welding WT12 web plate to LD web plate.



At OBG 13W-PP122.2-LS5 deck stiffener flange inside, ABF welder Xiao Jun Wan was observed performing 4G (overhead) position Shielded Metal Arc Welding (SMAW) welding root pass on the flange plate to LS5 CJP T-joint.



At location OBG 13W-PP122.5-W3 lifting lug bracket removal from the longitudinal diaphragm (LD) web plate was noted not in conformance to the required slope ratio of 3:1.



At OBG 13W/14W edge plate 'G' inside, ABF welder Lin E. Yun was observed performing 3G (vertical) position Shielded Metal Arc Welding (SMAW) back welding fill pass on CJP splice butt joint.



Summary of Conversations:

At location OBG 13W-PP121.5/122.5-W3 lifting lug bracket removal, this QA has informed Mr. Scott Smith that the removal of the lifting lugs brackets did not meet the required 3:1 slope ratio and that it needs further grinding to meet the requirements of the approved RFI.

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

Inspected By: Lizardo, Joselito

Quality Assurance Inspector

Reviewed By: Levell, Bill

QA Reviewer