

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-027625**Date Inspected:** 18-May-2012**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site

CWI Name:	Bernie Docena and John Pagliero			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 Tower**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 Tower Base 13 meter outer West external diaphragm, QA randomly observed ABF/JV qualified welder Xiao Jian Wan continuing to perform Partial Joint Penetration (PJP) T-joint welding fill pass on 80mm thick shear plate to 45mm thick diaphragm plate weld joint #W110. The welder was observed welding in the 2G (horizontal) position utilizing a dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3160-1. The welder was using a track mounted welder holder assembly that was remotely controlled. The PJP T-joint was preheated to greater than 325 degrees Fahrenheit using Miller Proheat 35 Induction Heating System with the heater blankets located on top of the plate prior welding. During welding, ABF Quality Control (QC) Bernie Docena was noted monitoring the welding parameters of the welder. Measured welding parameters during welding were 252 amperes, 22.5 volts and 320mm travel speed. Calculated heat input was 1.06 Kjoules/mm which appears in compliance to the contract requirements. At the end of the shift, FCAW-G fill pass welding was still continuing and should remain tomorrow. The welder held the preheat using the same Miller Proheat 35 Heating System for three hours after welding as required.

At Tower Base Electro Slag Weld (ESW), QA randomly observed ABF/JV qualified welder Wai Kitlai continuing to perform CJP groove welding repair. The welder was observed welding in the 3G (vertical) position utilizing Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E7018H4R electrode implementing welding

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procedure ABF-WPS-D15-1000-Repairs. The repair excavation was preheated to more than 300 degree Fahrenheit using propylene gas torch prior welding. The ESW repair being welded was located at ESW 'F' face A with Y=3850mm was approved per Request for Welding Repair (RWR) #201110-002. During the shift, ABF QC John Pagliero was noted monitoring the welder. During the shift, the welder has completed the ESW weld repair mentioned above and has moved to same ESW location but different Y dimension. The welder moved to ESW 'F' face A and excavated using carbon air arc the other side of the defect where ABF welder Jin Pei Wang has welded the face B yesterday. Prior welding, ABF QC John Pagliero performed the verification of the defect removal using Visual Testing (VT) and Magnetic Particle Testing (MT) wherein he found the boat shape excavation acceptable. This QA also performed VT/MT verification on the same excavation and noted same result. The two first time repairs were noted being welded during the shift;

Location	Weld No.	Y-dim.	Length	Width	Depth	Remarks
1. ESW 'F'	E-045	3850mm	260mm	35mm	27mm	Completed
2. ESW 'F'	E-045	9100mm	180mm	30mm	24mm	Completed

At Tower Base 13 meter North external diaphragm, ABF welder Jin Pei Wang was observed perform buttering on the one side of the PJP T-joint W116 due to excessive root gap as previously reported. The welder was noted buttering the west side of the weld joint where the maximum measure root opening was 7.0mm. The welder was noted buttering at overhead position using Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-F1200A. The diaphragm plate being buttered was noted preheated to more than 150°F using propylene rose bud. After the buttering completion, ABF QC Bernie Docena was observed performing visual test (VT) and Magnetic Particle Testing (MT) on welded buttering then inform this QA that he found no relevant indication during the test. This QA perform the same MT test and noted same result. After the completion of MT, the welder preheated the plates to more than 150°F using propylene rose bud and welded the root pass of the PJP T-joint mentioned above. The welder was noted using the same SMAW process but used a bigger diameter 4.0mm E7018H4R electrode. The root pass welding was also completed during the shift and the welder had asked ABF QC Bernie Docena to check the root just welded. ABF QC Bernie Docena obliged to the welder's request and performed VT and MT on the completed root pass. During the inspection, ABF QC has found the welded root pass in compliance to the contract documents. This QA also performed verification on the same welded root and noted same result as that of QC. Since the welder needs the Miller Proheat 35 to preheat and maintain the heat during FCAW-G welding, ABF foreman James Zhen informed QC and this QA that the welder will continue to weld the joint tomorrow when the Induction Heating System will be available.

At Tower Base, the 60mm thick bearing plate stiffener replacement for the ED1-A29 Base Shear plate Assembly was noted arrived at the job site. Upon cursory inspection, it was noted that it has the correct bevel and dimensions of the original stiffener that was cut due to distortion during PJP welding. ABF welders Rory Hogan and Richard Garcia were noted tack welding the stiffener in place then tack welded strong back to keep the stiffener from distortion during welding. The welders were noted tack welding until the end of the shift.

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, QA has randomly verified the QC VT/MT of the butter pass, root pass and cover pass weld joints. The QA verification was performed to verify that the welding and the VT/MT inspection performed by the QC inspector meet the requirements of the contract documents. At the conclusion of the QA verification it appeared that the weld and the QC inspection complied

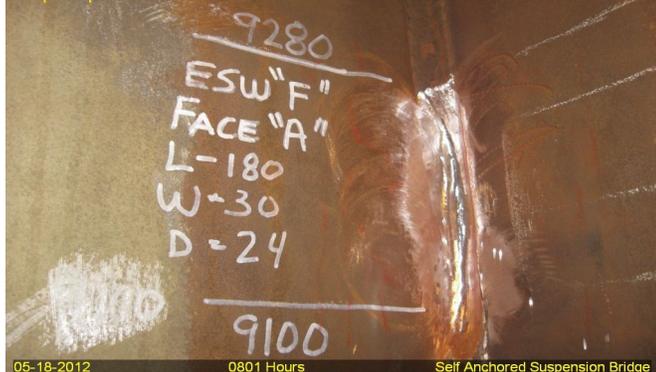
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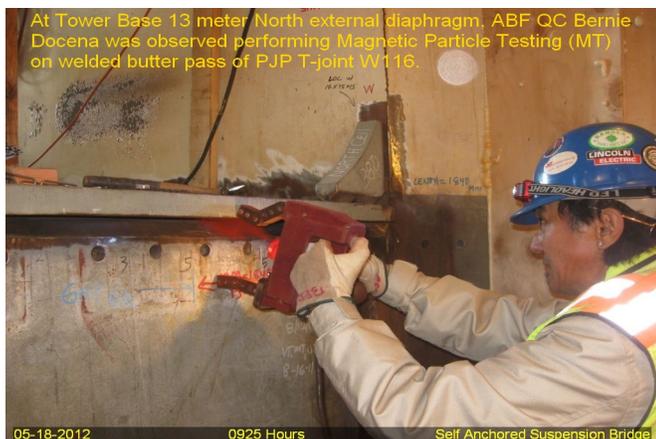
with the contract documents.

1. W116 PJP T-joint – weld butter pass QA verified
2. W116 PJP T-joint – weld root pass QA verified
3. W102 PJP T-joint – weld cover pass QA verified

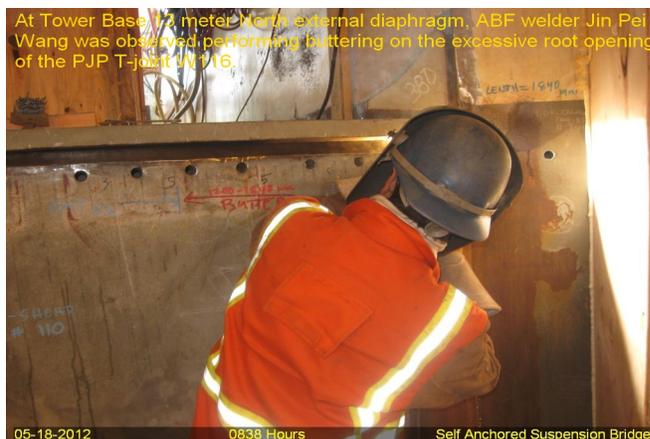
At Tower Base Electro Slag Weld (ESW) location 'F' face A, ABF welder Wai Kitlai was observed performing 3G SMAW welding repair on boat shape repair excavation.



At Tower Base 13 meter North external diaphragm, ABF QC Bernie Docena was observed performing Magnetic Particle Testing (MT) on welded butter pass of PJP T-joint W116.



At Tower Base 13 meter North external diaphragm, ABF welder Jin Pei Wang was observed performing buttering on the excessive root opening of the PJP T-joint W116.



Summary of Conversations:

No significant conversation occurred today.

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