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 #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Casey, William
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-027212
Date Inspected: 15-Feb-2012

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 700
OSM Departure Time: 1730
Location: Job Site

CWI Name:	Steve Jensen			**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 Tower Base 13 meters diaphragm weld joint number W113, W118 and W101, ABF welder Wai Kitlai was observed perform 1G Shielded Metal Arc Welding (SMAW) welding root pass on the 45mm thick center diaphragm plate to 60mm shear plate and 45mm Tower shaft T-joints. The 45mm diaphragm has a 45 degrees bevel and has an average root opening of 4.2mm (W113), 2.7mm (W118) and 4.2mm (W101) with partial backing bar. The alignment for weld number W113 was noted 0mm minimum to +15mm maximum and for weld number W101 was noted -2mm minimum to -6mm maximum. Weld number W113 has an issue concerning the required effective throat of 36mm (per drawing detail FWT9) that will not be met considering the misalignment of +15mm (diaphragm plate is higher than the top of shear plate). This was brought to the attention of QC in which ABF QC Manager Jim Bowers went and assess the situation. Per QC Bonifacio Daquinag, the recommendation of Mr. Bowers is to weld (SAW) the top of the shear plate adjoining the two adjacent PJP T-joints due to diaphragm plate to shear plate misalignment and this will be forwarded to Caltrans for review and approval.

The welder was noted using 3/16” diameter E7018H4R implementing Welding Procedure Specification (WPS) ABF-WPS-D15-1160 and ABF-WPS-D15-1050A with measured working current of 206 amps. Prior welding, the welder has preheated the plates to required preheat temperature of more than 150 degrees Fahrenheit using a propylene gas torch. During welding, ABF QC Steve Jensen was noted monitoring the welder. At the end of the shift, root pass SMAW welding on the two T-joints were completed and one was in progress.

At Tower Base 13 meters diaphragm weld joint number W112, W117 and W103, ABF welder Jin Pei Wang was observed perform 1G Shielded Metal Arc Welding (SMAW) welding root pass on the 45mm thick North diaphragm plate to 60mm shear plate T-joint. The 45mm diaphragm has a 45 degrees bevel and has an average root opening of 4.4mm(W112), 3.0mm(W117) and 4.2 (W103) with partial backing bar. The alignment for weld number W112 was noted 0mm minimum to +8mm maximum and for weld number W101 was noted -1mm minimum to -6mm maximum. Weld number W112 has same misalignment scenario as the W113 weld joint mentioned above but same recommendation will be applied according to ABF QC.

The welder was noted using 5/32” diameter E7018H4R implementing Welding Procedure Specification (WPS) ABF-WPS-D15-1160 with measured working current of 184 amps. Prior welding, the welder has preheated the plates to required preheat temperature of more than 150 degrees Fahrenheit using a propylene gas torch. During welding, ABF QC Steve Jensen was noted monitoring the welder. At the end of the shift, root pass SMAW welding on the two T-joints were completed and one was in progress.

During the shift while the two welders were welding PJP T-joints W112 and W113, three tack welds were noted cracked at W101. These noted cracks were confirmed using the MT as shown on attached photograph. ABF QC Steve Jensen instructed the welder to remove the cracked tack welds by using the disc grinder. After the complete removal of the cracked tack welds, ABF QC Harry Scharein performed MT on their removal with noted positive results.

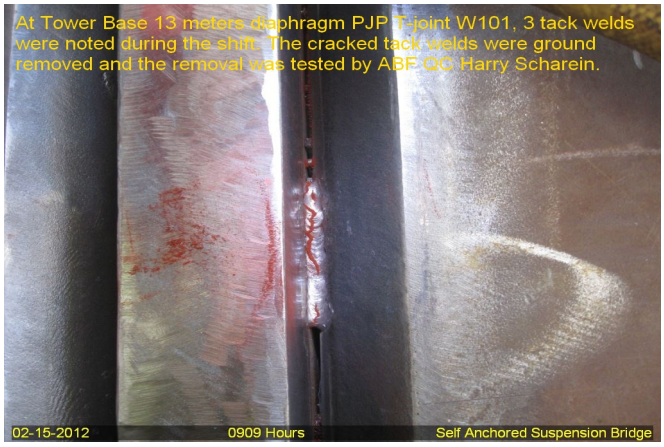
At the request of Quality Control Field Supervisor, Bonifacio Daquinag, QA has randomly verified the QC VT/MT of the Partial Joint Penetration (PJP) welding of top diaphragm plate to shear plate T-joints. The QA verification was performed to verify that the welding and the VT/MT inspection performed 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 with the contract documents.

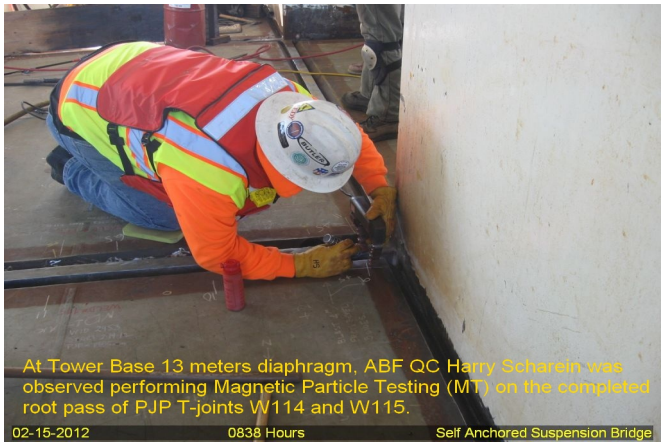
1. W112 South diaphragm to shear plate – root pass QA VT/MT verified
2. W113 Center diaphragm to shear plate - root pass QA VT/MT verified
3. W114 Center diaphragm to shear plate - root pass QA VT/MT verified
4. W115 North diaphragm to shear plate - root pass QA VT/MT verified

FW Spencer:

At OBG 8W location Panel Point PP69 to PP71 grid line W2, this QA randomly observed FW Spencer qualified welder Damian Llanos perform Complete Joint Penetration (CJP) 6G (all position) Shielded Metal Arc Welding (SMAW) welding root pass to cover pass on the field splice butt joint of 2.5" and 4” domestic water and compressed air lines respectively. The system lines being welded are field weld joints of expansion joints along the grid line of W2 of the OBG. The welder was noted welding the root pass with 3/32” diameter E6010 electrode and followed by fill pass to cover pass using 3/32” diameter E7018H4R electrode implementing Caltrans approved procedure FW Spencer WPS 1-12-1. The welder was noted preheating and removing the moisture of the joint using a portable propane gas torch prior welding. During welding, ABF QC Steve Jensen was noted monitoring the parameters of the welder. At the end of the shift, the welder has completed the welding of the splice butt joints at the following;

Line Service Line/Pipe Size Panel Point Location Joint Designation
1 Domestic Water 2 ½” 69 Northwest 36/2.5/69/NW
2 Compressed Air 4” 69 Northwest 36/4/69/NW
3 Domestic Water 2 ½” 71 Northwest 37/2.5/71/NW
4 Compressed Air 4” 71 Northwest 37/4/71/NW





Summary of Conversations:

The misalignment of +15mm (diaphragm plate is higher than the top of shear plate) was brought to the attention of ABF QC in which ABF QC Manager Jim Bowers went and assess the situation. Per QC Bonifacio Daquinag, the recommendation of Mr. Bowers is to weld (SAW) the top of the shear plate adjoining the two adjacent PJP T-joints due to diaphragm plate to shear plate misalignment and this will be forwarded to Caltrans for review and approval.

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.

WELDING INSPECTION REPORT

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Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer