

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 #: 99.28**WELDING INSPECTION REPORT****Resident Engineer:** Casey, William**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-029988**Date Inspected:** 10-Sep-2013**Project Name:** SAS Superstructure**OSM Arrival Time:** 800**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**Contractor:** Steward Machine Co.**Location:** Birmingham, AL

| | | | | | | | |
|------------------------------------|-----------------------------------|-----------|------------|----------------------------------|-------------------------|-----------|------------|
| CWI Name: | Fred Hudson / Darrell Nix / Jimmy | | | 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: | E2 Shear Key Anchorages | | |

Summary of Items Observed:

Quality Assurance Inspector (QAI) Andrew Webster was present on the date and times noted above in order to observe the fabrication and Quality Control (QC) functions performed by Steward Machine Company for the E2 Shear Key Anchorages for the SFOBB project. The following items were observed:

Steward Machine - Plant 1:

This QAI performed a walkthrough at the shop to verify plates on site and to observe Steward Machine personnel at work machining and welding. Work performed at the Steward Machine shop as noted below:

CNC Machine #176 milling plate S4C-g4. (Milling inside radius)
CNC Machine #211 milling plate S3C-g3. (Milling excess stock off ends)
CNC Machine #231 milling S10B assembly (Milling the shear key radius)
CNC Machine #245 milling plate S3B-h3. (Milling excess stock off ends)

The following plates were noted staged throughout the shop in various stages of processing.

Bay 2 – Plates:

S3C-h3. Formed, stressed relieved and partially machined.
S4C-h4. Formed, stressed relieved and partially machined.

Bay 4 – Plates:

S3B-a3. Formed, stressed relieved and partially machined.
S3B-b3. Formed, stressed relieved and partially machined.

WELDING INSPECTION REPORT

(Continued Page 2 of 5)

S3B-c3. Formed, stressed relieved and partially machined.
S3B-d3. Formed, stressed relieved and partially machined.
S3B-f3. Formed, stressed relieved and partially machined.
S3B-g3. Formed, stressed relieved and partially machined.
S3C-a3. Formed, stressed relieved and partially machined.
S3C-b3. Formed, stressed relieved and partially machined.
S3C-c3. Formed, stressed relieved and partially machined.
S3C-d3. Formed, stressed relieved and partially machined.
S3C-f3. Formed, stressed relieved and partially machined.
S4B-a4. Formed, stressed relieved and partially machined.
S4B-b4. Formed, stressed relieved and partially machined.
S4B-c4. Formed, stressed relieved and partially machined.
S4B-d4. Formed, stressed relieved and partially machined.
S4B-f4. Formed, stressed relieved and partially machined.
S4B-g4. Formed, stressed relieved and partially machined.
S4B-h4. Formed, stressed relieved and partially machined.
S4C-a4. Formed, stressed relieved and partially machined.
S4C-b4. Formed, stressed relieved and partially machined.
S4C-c4. Formed, stressed relieved and partially machined.
S4C-d4. Formed, stressed relieved and partially machined.
S4C-f4. Formed, stressed relieved and partially machined.
Pallet of R3 plates.

Welding jig Bay 4 – S10C assembly plates:

S10C-a1. Formed, stressed relieved and partially machined.
S10C-a2. Formed, stressed relieved and partially machined.
S10C-b1. Formed, stressed relieved and partially machined.
S10C-b2. Formed, stressed relieved and partially machined.
S10C-c1. Formed, stressed relieved and partially machined.
S10C-d1. Formed, stressed relieved and partially machined.

This QAI noted the welding of the above mentioned plates in the welding jig. The welding was done by qualified welders Benjamin Rhodes (481) and John Roy (469). The welding was done to the approved welding procedure (WPS) P2-W126-B. All welding done was monitored by Certified Welding Inspector (CWI) Fred Hudson. Welding was done on the non-shear key side.

This QAI noted the welding of the above mentioned plates in the welding jig for night shift. The welding was done by qualified welders Daniel Rowe (73) and Jeffery Hennington (476). The welding was done to the approved welding procedure (WPS) P2-W126-B. All welding done was monitored by Certified Welding Inspector (CWI) Jimmy Brewer. Welding was done on the non-shear key side.

S4B assembly plates:

S4B-a4. Formed, stressed relieved and partially machined.
S4B-b4. Formed, stressed relieved and partially machined.

WELDING INSPECTION REPORT

(Continued Page 3 of 5)

S4B-c4. Formed, stressed relieved and partially machined.
S4B-d4. Formed, stressed relieved and partially machined.
S4B-f4. Formed, stressed relieved and partially machined.
S4B-g4. Formed, stressed relieved and partially machined.
S4B-h4. Formed, stressed relieved and partially machined.

The above listed plates were blasted and put together in the lower assembly jig for the S4's.

It was noted by this QAI that the shear key cut out for the S10B assembly was machined past the weld of the c1 plate to the d1 plate. This QAI and the onsite SMR were told that this would be seal welded in the morning. When this QAI asked Mr. Whitney Debardeleben if there was a WPS for this welding Mr. Whitney Debardeleben said yes. When this QAI asked QC Manager Prince Debardeleben III for a copy of the seal weld WPS. QC Manager Prince Debardeleben III informed this QAI that they didn't have one and that Zach with American Bridge said to just weld it. This information was relayed to the lead QAI Fritz Belford so he was aware of this possible issue during his shift in the morning.

Steward Machine - Plant 2:

This QAI performed a walkthrough at the shop to verify plates on site and to observe Steward Plant 2 personnel at work. Work performed at the Steward Plant 2 shop as noted below:

This QAI noted the stud welding of the S3B-e3, S4B-e4, S3C-e3, S4C-e4 and p3 (x8) plates. The stud welding was done by welder David Hych (37). This QAI and QC Inspector CWI Darrell Nix witnessed welder (37) perform the qualification for welding the studs per section 7 in the AWS D1.5 2002 code. The stud welding was done with Steward Machine's approved stud welding WPS. During the visual inspection of the stud welds it was noted that three of the welds did not meet the codes 360 flash requirement. Onsite SMR Courtney Goldstein was informed of this issue. SMR Aaron Prchlik was consulted and it was relayed thru the onsite SMR to QC Inspector Darrell Nix that Steward Machine needed to bend the three studs to the required 15 and if they passed then Steward Machine needed to weld repair to achieve the 360 requirement. This QAI later learned thru the onsite SMR that Steward Machine was informed by Zach with American Bridge to cut the three studs off. The onsite SMR contacted SMR Aaron Prchlik again and was told that the studs where not to be cut off. This QAI contacted QC Inspector Darrell Nix to see if they had started and was informed that one had already been cut off. This QAI informed Mr Nix that he may want to hold off on the remaining two as he should be getting a call from his boss to not cut the studs off. All of this information was relayed to the lead QAI Fritz Belford so he was aware of this possible issue during his shift in the morning.

The following plates were noted staged throughout the shop.

S3B-e3. Formed, stressed relieved, partially machined and stud welded.
S4B-e4. Formed, stressed relieved, partially machined and stud welded.
S3C-e3. Formed, stressed relieved, partially machined and stud welded.
S4C-e4. Formed, stressed relieved, partially machined and stud welded.
p3 (x8). Cut, beveled and stud welded.

NON-DESTRUCTIVE TESTING (NDT).

The QA performed NDT on the following.

WELDING INSPECTION REPORT

(Continued Page 4 of 5)

Plate S4B-b4:

- Visual Testing (VT) & Magnetic Particle Testing (MPT) Accept. (See TL-6028 for detailed information.)

Plate S4B-c4:

- Visual Testing (VT) & Magnetic Particle Testing (MPT) Accept. (See TL-6028 for detailed information.)

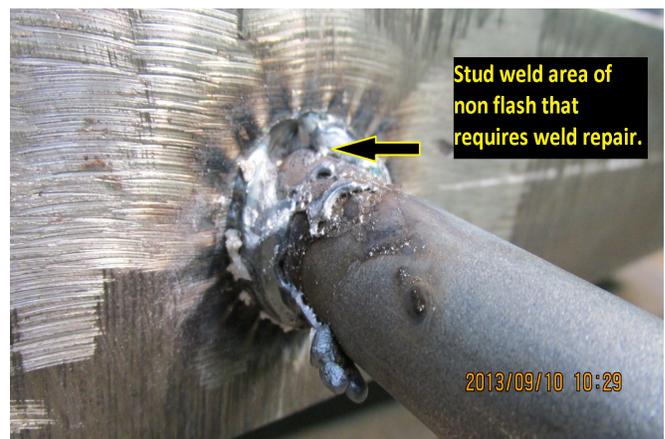
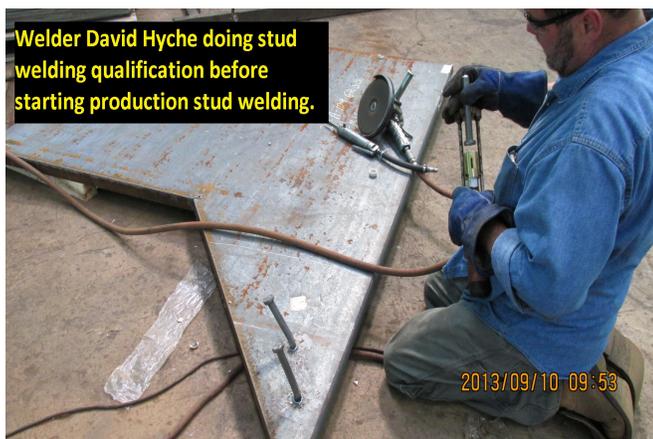
Plate S4C-d4:

- Visual Testing (VT) & Magnetic Particle Testing (MPT) Accept. (See TL-6028 for detailed information.)

Assembly S10B (b10 lugs 1 to 4 from west end to east end) at Steward Plant 1:

- Visual Testing (VT) & Magnetic Particle Testing (MPT) Accept. (See TL-6028 for detailed information.)

The Non Destructive Testing (NDT) listed above were observed performed and accepted by the QC Inspectors prior to the QA Inspector performing the tests. The QC Inspectors performed 100% NDT with the QA Inspector performing over 10% NDT.



Summary of Conversations:

As noted in the body of the report above. Other basic communication was performed between the QAI and the QC Inspector during the observations.

WELDING INSPECTION REPORT

(Continued Page 5 of 5)

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 Gary Thomas 916-764-6027, who represents the Office of Structural Materials for your project.

| | | |
|----------------------|----------------|-----------------------------|
| Inspected By: | Webster,Andrew | Quality Assurance Inspector |
|----------------------|----------------|-----------------------------|

| | | |
|---------------------|--------------|-------------|
| Reviewed By: | Foerder,Mike | QA Reviewer |
|---------------------|--------------|-------------|