

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 #: 1.28**WELDING INSPECTION REPORT**

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

Report No: WIR-028009
Date Inspected: 19-Jul-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: 1830
Location: Job Site

| | | | | |
|------------------------------------|---------------|----------------------------------|-----------|--------|
| CWI Name: | Bernie Docena | 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 Electro Slag Weld (ESW) location 'P' face B (N-043), QA randomly observed ABF/JV qualified welder Wai Kitlai continuing to perform CJP groove welding repair. The combined repair excavations being welded have Caltrans approval per Request for Weld Repair (RWR) #201206-070 and #201206-071. The welder was observed perform automatic welding in the 3G (vertical) position utilizing a Bug -o track mounted 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-D15-3000-3 Repair. The repair excavation was preheated and continuously maintained to more than 350 degree Fahrenheit using Miller Proheat 35 Induction Heating System prior/during welding. The ESW repair being welded is located at ESW 'P' face B, from Y=3380mm to Y=3860mm having dimensions of 480mm long X 65mm wide X 50mm deep. During the shift, ABF QC Bernie Docena was noted monitoring the welder with measured working current of 265 amperes, 22.6 volts with travel speed of 210mm per minute and calculated heat input of 1.7Kjoules per mm. At the end of the shift, 3G FCAW-G repair welding at location mentioned above was completed and the welder held the same preheat of 350°F on the excavation repair for three hours after welding as required.

| Location | Weld No. | Y-dim. | Length | Width | Depth | Remarks |
|----------|----------|-------------|--------|-------|-------|------------|
| 1. 'P' | N-043 | 3380/3860mm | 480mm | 65mm | 50mm | Completed. |

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At Tower Base Electro Slag Weld (ESW), this QA observed ABF welder Lou Xiao Hua continuing to perform repair excavation at location 'Q' face B (E-043) Y=6160mm due to Ultrasonic Testing (UT) detected defect. The repair excavation is being undertaken per Caltrans approved Request for Weld Repair RWR #201206-084. The welder was noted using carbon air arc gouging followed by grinding using a die grinder. The excavation was alternately gouged and ground then Magnetic Particle Testing (MT) tested by ABF QC Bernie Docena and this QA. The following excavation events were noted during the repair excavation;

| ESW location | Y-dim | Depth of excavation | Noted defect |
|--------------|--------|---------------------|-------------------------------|
| 1. 'Q' (B) | 6160mm | 5mm | No relevant indication noted. |
| 2. 'Q' (B) | 6160mm | 10mm | No relevant indication noted. |
| 3. 'Q' (B) | 6160mm | 15mm | No relevant indication noted. |
| 4. 'Q' (B) | 6160mm | 20mm | No relevant indication noted. |

Since the reported depth of the UT defect was at 75mm from face A (5mm from face B) and no whatsoever indication found up to 20mm deep, ABF QC Bernie Docena has stopped the excavation and considered the excavation good enough. The final dimensions of the excavation after smooth grinding were from Y=6110mm to Y=6360 with 250mm long X 40mm wide X 20mm deep. The excavation was MT'd and accepted by ABF QC Jesse Cayabyab and this QA.

After the excavation completion of the ESW with the corresponding Y location mentioned above, the same welder went back to ESW 'P' face B Y=7250mm where he left off last Saturday. This excavation has Caltrans approval per RWR #201206-075. The welder continued excavation at depth more than 40mm and noted the following;

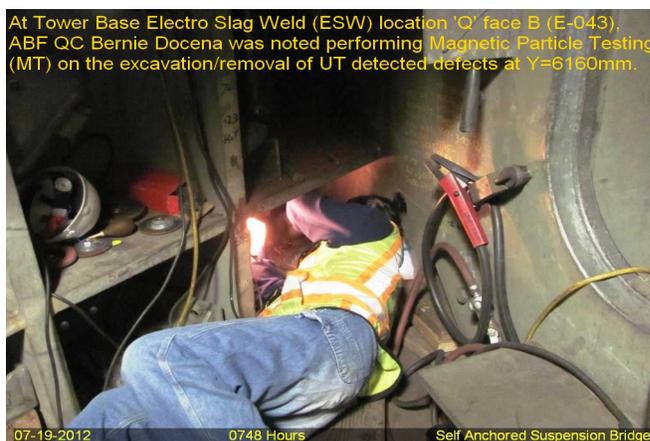
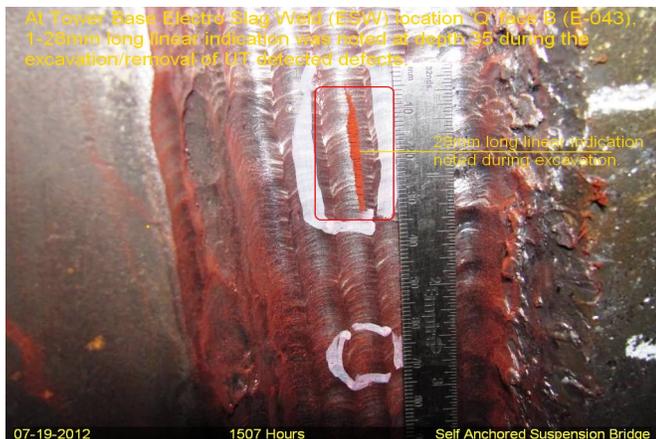
| ESW location | Y-dim | Depth of excavation | Noted defect |
|--------------|--------|---------------------|--------------------------------------|
| 1. 'P' (B) | 7250mm | 40mm | 1-75mm long linear indication noted. |
| 2. 'P' (B) | 7250mm | >40mm | Excavation in progress.. |

At Tower Base Electro Slag Weld (ESW), this QA observed ABF personnel continuing to perform repair excavation at location 'Q' face B (E-043) Y=3190mm and Y=3220mm due to Ultrasonic Testing (UT) detected defect. The combined repair excavation is being undertaken per Caltrans approved Request for Weld Repair RWR #201206-080 and #201206-081 respectively. The welder was noted using carbon air arc gouging followed by grinding using a die grinder. The excavation was alternately gouged and ground then Magnetic Particle Testing (MT) tested by ABF QC Bernie Docena and this QA. The following excavation events were noted during the repair excavation;

| ESW location | Y-dim | Depth of excavation | Noted defect |
|--------------|-------------|---------------------|---|
| 1. 'Q' (B) | 3190/3220mm | 35mm | 1-28mm & 2-5mm long linear indication noted. |
| 2. 'Q' (B) | 3190/3220mm | 40mm | 1-45mm, 1-12mm, 1-18mm & 1-5mm long linear indications noted. |
| 3. 'Q' (B) | 3190/3220mm | >40mm | Excavation in progress. |

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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