

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 73.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-006864**Date Inspected:** 20-May-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 800**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1800**Contractor:** HoChang, Korea**Location:** Unyang/Changwon, Korea

CWI Name:	Sang Ho Kwak		
Inspected CWI report:	Yes	No	N/A
Electrode to specification:	Yes	No	N/A
Qualified Welders:	Yes	No	N/A
Approved Drawings:	Yes	No	N/A

CWI Present:	Yes	No	
Rod Oven in Use:	Yes	No	N/A
Weld Procedures Followed:	Yes	No	N/A
Verified Joint Fit-up:	Yes	No	N/A
Approved WPS:	Yes	No	N/A
Delayed / Cancelled:	Yes	No	N/A

Bridge No: 34-0006**Component:** Pier E2 bearing and Shear key**Summary of Items Observed:**

The following report is based on METS observations at HoChang Machinery Industries (HCMI). Current work: Casting, forging and machining.

On this date the Caltrans Quality Assurance (QA) inspector, Dong J. Shin arrived at HoChang Machinery Industries (HCMI) located at Unyang, Korea and DooSan Heavy Industries (DHIC) located at Changwon, Korea. The Purpose of this trip was to observe quality control during fabrication and process of following items.

DHIC NDT personnel Mr. H. S. Cho and Mr. J. H. Lim performed Ultrasonic testing with straight beam, angle beam, and dual element straight beam transducers on nine (9) forgings per the required MIP test plan. The QA inspector verified the calibration date, Distance Amplitude Correction curve and calibration blocks.

The following is equipment utilized;

Straight beam transducer: 2 MHz, 24mm Dia.

Dual element straight beam transducer: 4MHz, 24mm Dia.

Shear wave angle beam transducer: 1MHz, 20 x 22 mm square.

Forging

1. Bearing Bottom Housing (B1-07/F07302-010): Completed final UT.
2. Bearing Bottom Housing (B2-07/F07302-020): Completed final UT.
3. Bearing Bottom Housing (B3-07/F07302-030): Completed final UT.

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4. Bearing Bottom Housing (B4-07/F07302-040): Second Quality heat treatment.
5. Spherical Ring (S1-07/F07302-050): Completed final UT.
6. Spherical Ring (S2-07/F07302-060): Completed final UT.
7. Spherical Ring (S3-07/F07302-070): Completed final UT.
8. Spherical Ring (S4-07/F07302-080): Completed final UT.
9. Solid Shaft (B1-02/F07302-090): Completed final UT.
10. Solid Shaft (B2-02/F07302-100): Completed final UT.
11. Solid Shaft (B3-02/F07302-110): Second Quality heat treatment.
12. Solid Shaft (B4-02/F07302-120): Second Quality heat treatment.

- F number is DooSan Production Number.
- B number is drawing Number.

Casting

On this date, DHIC has started repair welding on following castings. The QA inspector, HMIC QC Inspector and DHIC QC inspector have checked welding parameters prior start repair welding.

DHIC used listed qualified welders Mr. J. H. Nam, Mr. B. K. Shin and Mr. K. S. Kim.

Welding process utilized Flux Core Arc Welding (FCAW) with E81T1-K2, 1.6mm diameter Flux Core wire Manufacture by SEAH-ESAB, Brand name Dual shield 1181-K2.

QA inspector checked welding parameters 23-26 volts, 210-250 amps, travel speed 13-16 cm/min, Gas flow 10-25l/min, preheat temperature over 100°C and 24 hours maintaining preheat temperature.

All of welding parameters were comply to approve welding procedure specifications No A-F-Z1Z1-219.

Mr. J. H. Nam welding on S2-03 (Shear key housing).

Mr. B. K. Shin welding on B4-01-1 and B4-01-2 (Bearing hold down).

Mr. K. S. Kim welding on S2-01 (Stub).

DHIC NDT personnel Mr. K. S. Lee and Mr. D. S. Lee performed ultrasonic testing (UT) and magnetic particle testing (MPT) on following castings after repair weld completed. Casting piece Numbers: B3-06, B1-01-1, B2-01-1, B2-01-2, B3-01-1 and S1-01.

The MPT used a Yoke probe with wet visible method. QA inspector verified weight lift, calibration due date and field verification with pie gauge.

The QA inspector verified the calibration date, Distance Amplitude Correction curve and calibration blocks used for the UT.

The following is equipment utilized;

Straight beam transducer: 2 MHz, 24mm Dia.

Dual element straight beam transducer: 4MHz, 24mm Dia.

Shear wave angle beam transducer: 1MHz, 20 x 22 mm square.

1. Bearing Top Housing (B1-06, C07039-010): Completed defect removal and initial NDT.
2. Bearing Top Housing (B2-06, C07039-020): Completed defect removal and initial NDT.

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3. Bearing Top Housing (B3-06, C07039-030): Post weld heat treatment started.
4. Bearing Top Housing (B4-06, C07039-040): Completed repair welding.
5. Bearing Hold Down Assembly (B1-01-1, C07039-050): Post weld heat treatment started.
6. Bearing Hold Down Assembly (B1-01-2, C07039-060): Completed repair welding.
7. Bearing Hold Down Assembly (B2-01-1, C07039-070): Post weld heat treatment started.
8. Bearing Hold Down Assembly (B2-01-2, C07039-080): Post weld heat treatment started.
9. Bearing Hold Down Assembly (B3-01-1, C07039-170): Post weld heat treatment started.
10. Bearing Hold Down Assembly (B3-01-2, C07039-180): Completed repair welding.
11. Bearing Hold Down Assembly (B4-01-1, C07039-190): Completed repair welding.
12. Bearing Hold Down Assembly (B4-01-2, C07039-200): Completed repair welding.
13. Shear Key Stub (S1-01, C07039-090): Post weld heat treatment started.
14. Shear Key Stub (S2-01, C07039-100): Completed repair welding.
15. Shear Key Stub (S3-01, C07039-110): Completed repair welding.
16. Shear Key Stub (S4-01, C07039-120): Completed defect removal and initial NDT.
17. Shear key Housing (S1-03, C07039-130): Completed defect removal and initial NDT.
18. Shear key Housing (S2-03, C07039-130): Continue repair welding.
19. Shear key Housing (S3-03, C07039-130): Completed defect removal and initial NDT.
20. Shear key Housing (S4-03, C07039-130): Continue to remove defects.

* S and B number is drawing number.

* C number is DSHI ID number.



Summary of Conversations:

*Discuss with Mr. S. H. Kwak regarding general project schedule.

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

Inspected By: Shin,DJ

Quality Assurance Inspector

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Reviewed By: Lanz,Joe

QA Reviewer