

**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-009170**Date Inspected:** 14-Sep-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, Korea

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

<b>CWI Present:</b>	Yes	No	
<b>Rod Oven in Use:</b>	Yes	No	N/A
<b>Weld Procedures Followed:</b>	Yes	No	N/A
<b>Verified Joint Fit-up:</b>	Yes	No	N/A
<b>Approved WPS:</b>	Yes	No	N/A
<b>Delayed / Cancelled:</b>	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 and Onsan Korea and Korea Precision Co., located at Dooseo Korea. The Purpose of this trip was to observe quality control during fabrication and process of following items.

On this date DHIC continued Stainless Steel overlay welding on Solid Shaft(B2-02), QA inspector and HMIC QC Inspector has checked welding parameters prior start overlay welding. Welding process is Electro Slag Welding (ESW) with E309L (1st layer) and E316EL (2nd and remaining layers), 0.4mm x 30mm ESW strip wire manufactured by KOBE STEEL, brand name US-309L and US-316EL with KOBE PF-B7FK Flux. The QA inspector checked the welding parameters of 28-29 volts, 550-590 amps, travel speed 180-190mm/min, preheat temperature over 100°C with 24 hours maintaining preheat temperature. All of welding parameters were comply to approve welding procedure specifications No ESW-002.

Welder: Day shift Mr. KJ, Lee welding on B3-02.  
Mr. CK, Jang welding on B3-02.

Night Shift Mr. DJ, Kim welding on B3-02.

Forging

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1. Bearing Bottom Housing (B1-07/F07302-010): Completed final MT.
2. Bearing Bottom Housing (B2-07/F07302-020): Completed final MT.
3. Bearing Bottom Housing (B3-07/F07302-030): Completed final MT.
4. Bearing Bottom Housing (B4-07/F07302-040): Completed final MT.
5. Spherical Ring (S1-07/F07302-050): Completed PWHT after SS overlay welding.
6. Spherical Ring (S2-07/F07302-060): Completed PWHT after SS overlay welding.
7. Spherical Ring (S3-07/F07302-070): Completed PWHT after SS overlay welding.
8. Spherical Ring (S4-07/F07302-080): Completed PWHT after SS overlay welding.
9. Solid Shaft (B1-02/F07302-090): Completed SS overlay welding.
10. Solid Shaft (B2-02/F07302-100): Completed SS overlay welding.
11. Solid Shaft (B3-02/F07302-110): Completed SS overlay welding.
12. Solid Shaft (B4-02/F07302-120): Start SS overlay welding.

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

## Casting

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.

1. Bearing Top Housing (B1-06, C07039-010): Continue final machining.
2. Bearing Top Housing (B2-06, C07039-020): Continue final machining.
3. Bearing Top Housing (B3-06, C07039-030): Continue final machining.
4. Bearing Top Housing (B4-06, C07039-040): Continue final machining.
5. Bearing Hold Down Assembly (B1-01-1, C07039-050): Completed final MT.
6. Bearing Hold Down Assembly (B1-01-2, C07039-060): Completed final MT.
7. Bearing Hold Down Assembly (B2-01-1, C07039-070): Completed final MT.
8. Bearing Hold Down Assembly (B2-01-2, C07039-080): Completed final MT.
9. Bearing Hold Down Assembly (B3-01-1, C07039-170): Completed final MT.
10. Bearing Hold Down Assembly (B3-01-2, C07039-180): Completed final MT.
11. Bearing Hold Down Assembly (B4-01-1, C07039-190): Completed final MT.
12. Bearing Hold Down Assembly (B4-01-2, C07039-200): Completed final MT.
13. Shear Key Stub (S1-01, C07039-090): Continue final machining.
14. Shear Key Stub (S2-01, C07039-100): Continue final machining.
15. Shear Key Stub (S3-01, C07039-110): Continue final machining.
16. Shear Key Stub (S4-01, C07039-120): Continue final machining.
17. Shear key Housing (S1-03, C07039-130): Start final machining.
18. Shear key Housing (S2-03, C07039-140): Waiting for final machining at HMIC.
19. Shear key Housing (S3-03, C07039-150): Waiting for final machining at HMIC.
20. Shear key Housing (S4-03, C07039-160): Waiting for final machining at HMIC.

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\* S and B number is drawing number.

\* C number is DSHI ID number.

## STEEL STRUCTURE

On this date HMIC continued structural welding on retainer brackets and nut retainer brackets. The QA inspector and HMIC QC Inspector checked welding parameters prior to start welding. Welding process utilized Flux Core Arc Welding (FCAW) with E71T-1C with diameter 1.4mm wire manufactured by Hyundai STEEL, Brand name Supercored 71H(HYUNDAI) with Co2 gas. QA inspector checked welding parameters and observed 23-27 volts, 250-290 amps, travel speed of 320-390mm/min, Gas flow 25 l/min. preheat temperature over 20°C and interpass temperature was less then 250° C. All of welding parameters appear to comply with approved welding procedure specification No. FC-061-F.



### 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.

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**Inspected By:** Shin,DJ

Quality Assurance Inspector

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**Reviewed By:** Lanz,Joe

QA Reviewer