

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 99.28**WELDING INSPECTION REPORT****Resident Engineer:** Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-018875**Date Inspected:** 27-Dec-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 700**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1900**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC)**Location:** Shanghai, China**CWI Name:** Li Yang and Zhu Zhong Hai**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:** OBG Trial Assembly**Summary of Items Observed:**

On this date Caltrans OSM Quality Assurance (QA) Inspector Mr. S. Manjunath Math was present during the time noted above for observations relative to the work being performed.

This QA Inspector randomly observed the following work in progress:

Orthotropic Box Girder (OBG) at Trial Assembly Areas

BAY 11 – (Skid More Test)

This QA Inspector witnessed Bolt Testing for ASTM A325 Grade. Observed ZPMC QC Mr. Zhang Hai Jung performing bolts testing and ZPMC QA Inspector Mr. Zhao Jianeng was present during the course of Bolt Testing.

The testing of bolts was performed to determine Nut Rotation from Snug-Tight condition for Turn-of-Nut Pre-tensioning and High Tension bolt capability verification test.

Bolt assembly identified as ASTM A325 (High Strength Bolt), Bolt Assembly comprises of (a Bolt, a Nut and a Washer).

Bolt testing was performed on a Unit: Skidmore-Wilhelm; Model: MS; Serial Number: 15866 (Calibration Expiration due date on April 29, 2011) and Torque Wrench identified as XO-326 and Torque Wrench with Dial

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## WELDING INSPECTION REPORT

( Continued Page 2 of 6 )

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gauge on it is identified as XO-2 (Calibration Expiration due date on April 14, 2011).

Tested bolt sizes were identified as M19x50 RC Set# DHG60708.

5 bolt assemblies were tested per lot.

After determining Nut Rotation from Snug-Tight condition for Turn-of-Nut Pre-tensioning Inspection Report for bolt size M19x50mm was generated by ZPMC QA.

After determining High Tension bolt capability verification test Inspection Report # 276 for bolt size M19x50mm was generated by ZPMC QA.

The generated reports were submitted to the Caltrans Lead Inspector Mr. Mark Miller and Caltrans Engineer Mr. Aaron Prchlik for review and disposition.

Please reference the pictures attached for more comprehensive details.

Segment 11DE to Segment 11EE (U-Rib to U-Rib)

This QA Inspector witnessed the final bolt tension verification on bolts connecting the U-Rib to U-Rib at the transverse splice between Panel Points (PP) 106 and PP 107 for Segment 11DE to Segment 11EE. The QA Inspector verified the bolt tension on a random basis and the results appeared to be in general compliance. The Inspection was performed against Notification No. 00581 dated December 27, 2010.

The bolt sizes used were M22 x 65 RC Lot # DHGM220114 and the final torque value established was 333 N-m.

The Manual Torque wrench used was Serial No. XO2-666.

Please reference the pictures attached for more comprehensive details.

Segment 11DE to Segment 11EE (Longitudinal Diaphragm to Longitudinal Diaphragm)

This QA Inspector witnessed the final bolt tension verification on bolts connecting the Longitudinal Diaphragm to Longitudinal Diaphragm between Panel Points (PP) 106 and PP 107 for Segment 11DE to Segment 11EE at work point E4, Cross Beam side and work point E3 Bike Path side. The QA Inspector verified the bolt tension on a random basis and the results appeared to be in general compliance. The Inspection was performed against Notification No. 00581 dated August 28, 2010.

The bolt sizes used were M24 x 70 RC Lot # DHGM240075 and the final torque value established was 680 N-m.

The bolt sizes used were M24 x 95 RC Lot # DHGM240021 and the final torque value established was 540 N-m.

The Manual Torque wrench used was Serial No. XO2-666.

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## WELDING INSPECTION REPORT

( Continued Page 3 of 6 )

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Please reference the pictures attached for more comprehensive details.

Segment 11DE to Segment 11EE (Transverse Splice T-Ribs)

This QA Inspector witnessed final bolt tension verification on bolts connecting T-Rib to T-Rib for Transverse Splice at Side Panel Bike Path Side (from work point E1 towards E3), Bottom Panel (from work point E3 towards E4) and Cross Beam side (from work point E4 to E6) between Panel Point (PP) 106 to PP 107 for Segment 11DE to 11EE. Inspected the bolt tensioning on a random basis and found the tension to be in general compliance. Inspection was performed against the Notification No. 00581 Dated December 27, 2010.

The bolt sizes used were M22 x 65 RC Lot # DHGM220114 and the final torque value established was 333 N-m.

The bolt sizes used were M22 x 70 RC Lot # DHGM220041 and the final torque value established was 460 N-m.

The Manual Torque wrench used was Serial No. XO2-666.

Please reference the pictures attached for more comprehensive details.

Segment 11DE to Segment 11EE (Transverse Splice T-Ribs)

This QA Inspector performed Dimension Control Inspection on the Transverse Splice T-Ribs to T-Ribs after bolting for the Segment 11DE to Segment 11EE between Panel Point (PP) 106 to PP 107 at the following locations:

Work Point E1 towards Work Point E3 (Side Panel Bike Path Side) total 19 T-Ribs.

Work Point E4 towards Work Point E6 (Side Panel Cross Beam Side) total 19 T-Ribs.

The QA Inspector measured the Vertical Offset using 1(One) Meter Straight Edge.

The measurements were recorded in the Dimension Control Plan (DCP) on a separate form and submitted to the Lead Inspector and Engineer for review and disposition.

Note: Work Point E3 towards Work Point E4 (Bottom Panel) total 18 T-Ribs, the dimension control inspection after bolting was not performed as (2) two rows and 5 (five) columns of fasteners assembly were installed due to interference with temporary sea fastening structures.

Segment 12AW (Full Height Longitudinal Diaphragm)

This QA Inspector observed the in-process welding by Shielded Metal Arc Welding (SMAW) process on a Complete Joint Penetration (CJP) groove weld. The Weld joint was designated as Seg3004X-051. The welder identification was 046704 and was observed welding in the 2G (Horizontal) position using approved Welding Procedure Specification WPS-B-P-2212-Tc-U4b-FCM-1. The piece mark was identified as full height Longitudinal Diaphragm web to Bottom Panel hold back weld at work point W3.

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## WELDING INSPECTION REPORT

( Continued Page 4 of 6 )

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Please reference the pictures attached for more comprehensive details.

### Segment 12BW (Full Height Longitudinal Diaphragm)

This QA Inspector observed the in-process welding by Shielded Metal Arc Welding (SMAW) process on a Complete Joint Penetration (CJP) groove weld. The Weld joint was designated as Seg3005M-090. The welder identification was 046704 and was observed welding in the 2G (Horizontal) position using approved Welding Procedure Specification WPS-B-P-2212-Tc-U4b-FCM-1. The piece mark was identified as full height Longitudinal Diaphragm web to Bottom Panel hold back weld at work point W3.

### Segment 12AW (Deck Panel I-Rib Stiffeners, hold back weld)

This QA Inspector observed the in process fillet welding by Shielded Metal Arc Welding (SMAW) process. The Weld joint was designated as DP3049-001-035/036. The welder identification was 057333 and observed welding in the 4F (Overhead) position using approved Welding Procedure Specification WPS-B-T-4114-1. The piece mark was identified as Deck Panel I-Rib hold back weld, Counter Weight side.

### Segment 12BW (Deck Panel I-Rib Stiffeners, hold back weld)

This QA Inspector observed the in process fillet welding by Shielded Metal Arc Welding (SMAW) process. The Weld joint was designated as DP3060-001-009/010. The welder identification was 057333 and observed welding in the 4F (Overhead) position using approved Welding Procedure Specification WPS-B-T-4114-1. The piece mark was identified as Deck Panel I-Rib hold back weld, Counter Weight side.

### Segment 12AW (Bottom Panel to Side Panel hold back weld)

This QA Inspector observed the Visual Test (VT) repair welding by Shielded Metal Arc Welding (SMAW) process on a Complete Joint Penetration (CJP) groove weld. The Weld joint was designated as Seg3004A-001. The welder identification was 040611 and was observed welding in the 1G (Flat) position using approved Welding Procedure Specification WPS-345-SMAW-4G(4F)-FCM-Repair-1. The piece mark was identified as weld connecting Bottom Panel to Side Panel hold back weld at work point W3.

Please reference the pictures attached for more comprehensive details.

### Segment 11EE (Bottom Panel T-Ribs)

This QA Inspector observed during the random Visual Test (VT) Arc Strike at the Bottom Panel T-Rib at web location. Informed to the Lead Inspector Mr. Mark. J. Miller for disposition.

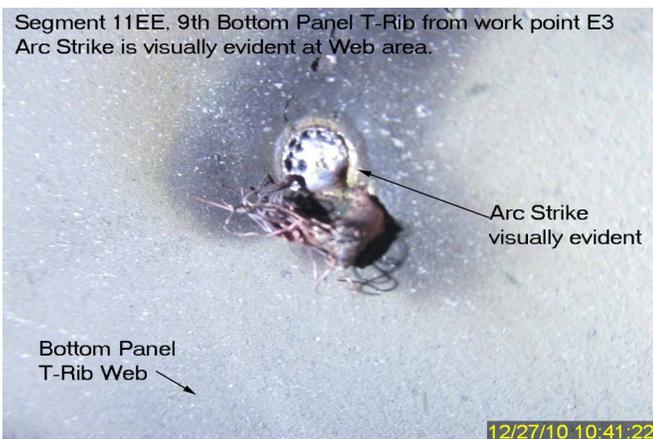
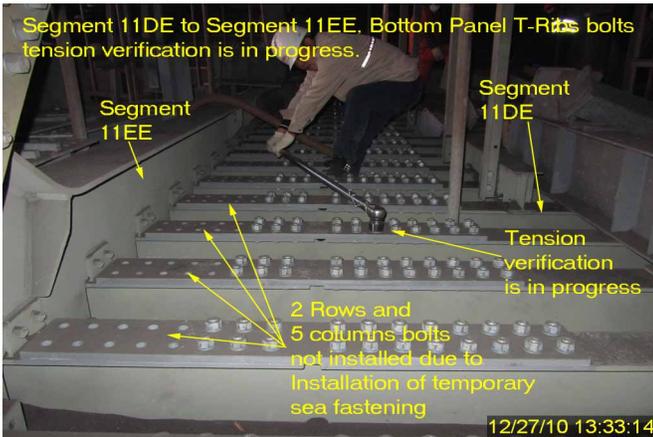
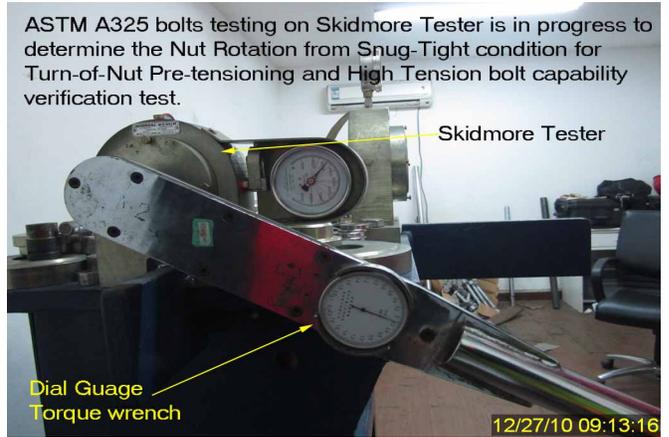
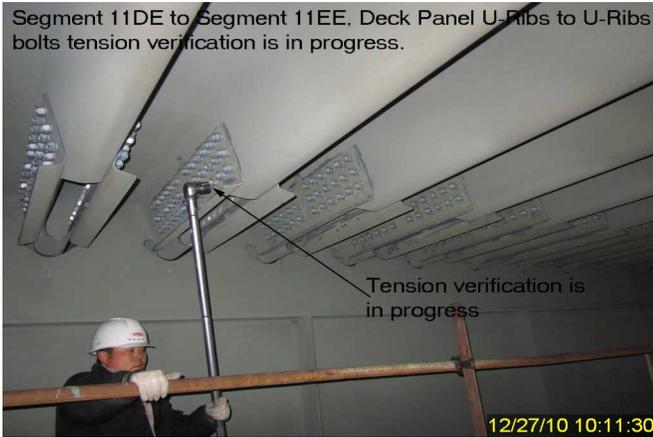
Informed the ABF QA Mr. Ding Xing Chi and ZPMC QC Mr. Zhu Yuan Yuan for proper repair followed by NDT testing.

Please reference the pictures attached for more comprehensive details.

# WELDING INSPECTION REPORT

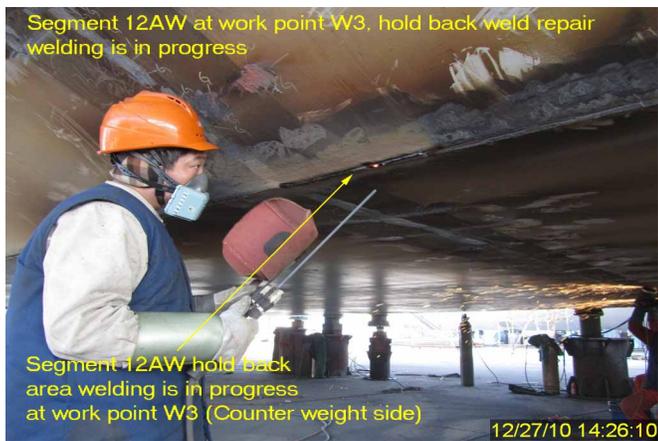
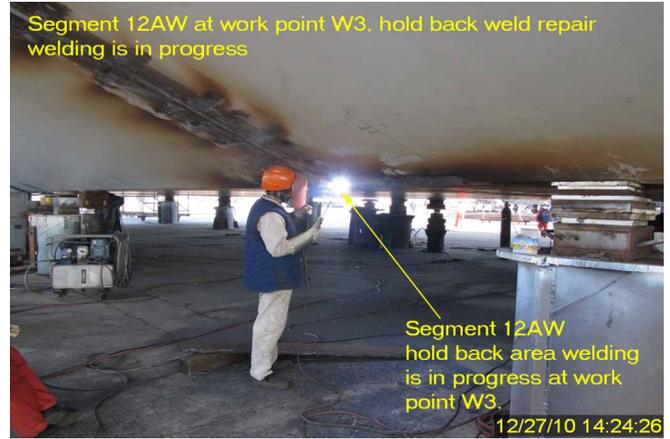
( Continued Page 5 of 6 )

Unless otherwise noted, all work observed on this date appeared to generally comply with applicable contract documents.



# WELDING INSPECTION REPORT

( Continued Page 6 of 6 )



## Summary of Conversations:

No relevant conversations were reported on this date.

## 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 Eric Tsang 150000422372, who represents the Office of Structural Materials for your project.

**Inspected By:** Math,Manjunath

Quality Assurance Inspector

**Reviewed By:** Dsouza,Christopher

QA Reviewer