

**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 #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-010651**Date Inspected:** 10-Dec-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 645**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1845**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Liu Fawen**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:** Orthotropic Box Girder (OBG) & Tower Com**Summary of Items Observed:**

On this date Caltrans Office of Structural Materials Quality Assurance Inspector, Sandeep Kumar (QA) was present during the times noted above for observations relative to the work being performed.

**BAY 5**

The following Non Destructive Testing (NDT) inspection carried out as per the ZPMC submitted Notification No. 004834

**Magnetic Particle Testing (MT)**

This QA inspector performed MT of approximately 15% of the area previously tested and accepted by ZPMC Quality Control personnel. This QA Inspector generated an MT report for this date. The members are identified as OBG Components. The weld designations reviewed are as follows:

1. 10TR6 – 002 – 003
2. 11TR9 – 002 – 003

This QA Inspector observed the following work in progress:

**Flux Core Arc Welding (FCAW):**

Weld joint # 009 located on Traveler Rail 10TR4 – 001. Welder is identified as 205390. ZPMC Quality Control (QC) Inspector is identified as Zhong Chong Biao. The welding variables recorded by QC appeared to comply

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## WELDING INSPECTION REPORT

( Continued Page 2 of 6 )

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with the WPS – B – T – 2132.

Weld joint # 010 located on Traveler Rail 11TR5 – 006. Welder is identified as 215078. ZPMC Quality Control (QC) Inspector is identified as Zhong Chong Biao. The welding variables recorded by QC appeared to comply with the WPS – B – T – 2232 – Tc – U5 – F.

Weld joint # 012 located on Traveler Rail 10TR4 – 001. Welder is identified as 066239. ZPMC Quality Control (QC) Inspector is identified as Zhong Chong Biao. The welding variables recorded by QC appeared to comply with the WPS – B – T – 2132.

Weld joint # 014 located on Traveler Rail 11TR5 – 006. Welder is identified as 067275. ZPMC Quality Control (QC) Inspector is identified as Zhong Chong Biao. The welding variables recorded by QC appeared to comply with the WPS – B – T – 2232 – Tc – U5 – F.

Weld joint # 011 located on Traveler Rail 11TR5 – 006. Welder is identified as 215078. ZPMC Quality Control (QC) Inspector is identified as Zhong Chong Biao. The welding variables recorded by QC appeared to comply with the WPS – B – T – 2132.

This QA Inspector observed the following work not in compliance:

This Quality Assurance Inspector (QA) observed ZPMC personnel build up with weld (buttering) one (1) end of a bottom plate for a bike path cantilever bracket. This QA observed that ZPMC has deposited approximately 40mm of weld metal for the entire width of this plate. This exceeds the limits specified on the approved Critical Weld Repair (CWR) report presented to this QA by ZPMC Quality Control (QC). CWR #B-CWR0948 specifies 10mm to 15mm of buttering is required to correct the insufficient length of the plate. Additionally, the amount of buttering exceeds the limits specified in American Welding Society (AWS) D1.5 2002 section 3.3.4.1 (20mm). The bike path cantilever bracket is identified as BK001-044; bottom plate BKX2A.

The member is located in Orthotropic Box Girder (OBG) subassembly Bay 5.

Applicable reference:

AWS D1.5-2002, Section 3.3.4.1- “Root openings wider than those allowed in 3.3.4, but not greater than twice the thickness of the thinner part or 20 mm [3/4 in.], whichever is less, may be corrected by welding to acceptable dimensions prior to joining the parts by welding.”

AWS D1.5-2002, Section 3.3.4.2- “Root openings larger than those allowed in 3.3.4.1 may be corrected by welding only with the approval of the engineer.”

Approved CWR report #B-CWR948 specifies 10mm to 15mm of weld metal is required.

This QA notified ZPMC QC identified as Mr. Wang Liyang and ABF inspector identified as Mr. Wang Wen Bin of the above issue and that an incident report will be generated.

See attached photos:

BAY 6

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## WELDING INSPECTION REPORT

( Continued Page 3 of 6 )

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The following Non Destructive Testing (NDT) inspection carried out as per the ZPMC submitted Notification No. 004835

### Visual Inspection Testing

This QA inspector performed VT of the area previously tested and accepted by ZPMC Quality Control personnel. The member is identified as Tower Component. The identified component reviewed as follows:

#### WEST TOWER LIFT 2 STRUT PLATE

1. WD1 – A305 – 53M – 4

### Magnetic Particle Testing (MT)

This QA inspector performed MT of approximately 15% of the area previously tested and accepted by ZPMC Quality Control personnel. This QA Inspector generated an MT report for this date. The member is identified as Tower Component. The weld designations reviewed are as follows:

#### WEST TOWER LIFT 2 STRUT PLATE

1. WD1 – A305 – 53M – 4 – 10~45; 1B; 2B; 9B; 58; 59

This QA Inspector observed the following work not in compliance:

During the Quality Assurance Magnetic Particle Testing (MT) review of welds located on Tower Strut WD1-A305-53M-4, this Quality Assurance Inspector (QA) discovered the following issues:

-Total Two (2) transverse indications found.

-The welds are identified as:

1. WD1-A305-53M-4-46 – One (1) transverse indication measuring approximately 5mm in length  
The Weld is a T-joint fillet weld joining web plate (A305) to the stiffener plate (P1035).
2. WD1-A305-53M-4-55 – One (1) transverse indication measuring approximately 5mm in length  
The Weld is a T-joint fillet weld joining web plate (P556) to the stiffener plate (P1035).

-The member is located in Bay 6.

-During the confirmation of the above indications by ZPMC MT technician, technician identified as Liu Zhang Min failed to find the indications with his MT equipment (yoke).

ZPMC MT equipment details:

Parker Contour Probe

Serial Number: (Indistinguishable)

Model Number: B310S

Calibration Due Date: 12/27/09

The Notice of Witness Inspection Number (NWIT) is 004835. The indication is located inside the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel. As per the contract documents, ZPMC's QC personnel are required to perform 100% MT inspection of these welds.

Applicable reference:

Special Provisions Section 8.3 – “Quality Control (QC) shall be the responsibility of the Contractor. As a minimum, the Contractor shall perform inspection and testing of each weld joint prior to welding, during welding, and after welding as specified in this section and to ensure that materials and workmanship conform to the requirements of the contract documents.”

AWS D1.5 (02) Section 6.26.2 – “Welds that are subject to MT in addition to visual inspection shall have no

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# WELDING INSPECTION REPORT

( Continued Page 4 of 6 )

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cracks.”

This QA notified ZPMC QC identified as Mr. Sun Zi Wang and ABF inspector identified as Mr. Zhang Hui Long of the above issue and that an incident report will be generated.

See attached photos:

## OUTSIDE MILLING YARD

The following Non Destructive Testing (NDT) inspection carried out as per the ZPMC submitted Notification No. 004831

### Visual Inspection Testing

This QA inspector performed VT of the area previously tested and accepted by ZPMC Quality Control personnel. The member is identified as Tower Component. The identified component reviewed as follows:

#### NORTH TOWER LIFT 3

1. NST13 – 3F/K – 59~66; 69~76 (92.5 M FIT LUG ON SKIN”D”)
2. NST13 – 3F/K – 146~152; 77 (95.5 M FIT LUG ON SKIN”D”)
3. NST13 – 3F/K – 12~15 (92.5 M FIT LUG ON SKIN”C”)
4. NST13 – 3F/K – 87; 88; 91; 92 (95.5 M FIT LUG ON SKIN”C”)
5. NST13 – 3F/K – 67; 68 ( SKIN”D” WITH 92.5 M DIAPHRAGM)
6. NST13 – 3F/K – 144; 145 (SKIN”D” WITH 95.5 M DIAPHRAGM)
7. NST13 – 3F/K – 6; 7 (SKIN”C” WITH 92.5 M DIAPHRAGM)
8. NST13 – 3F/K – 89; 90 ((SKIN”C” WITH 95.5 M DIAPHRAGM)

### Magnetic Particle Testing (MT)

This QA inspector performed MT of approximately 15% of the area previously tested and accepted by ZPMC Quality Control personnel. This QA Inspector generated an MT report for this date. The member is identified as Tower Component. The weld designations reviewed are as follows:

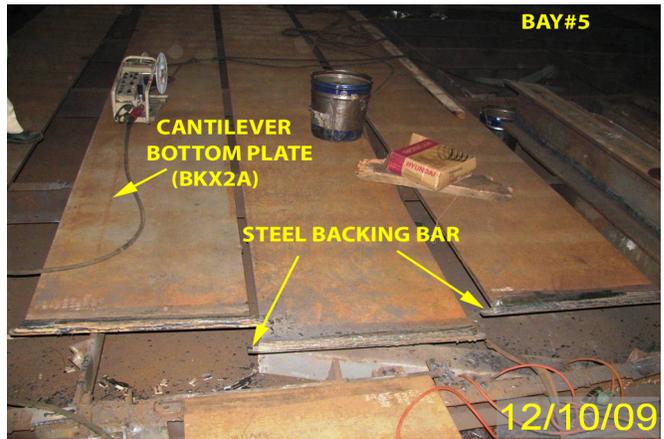
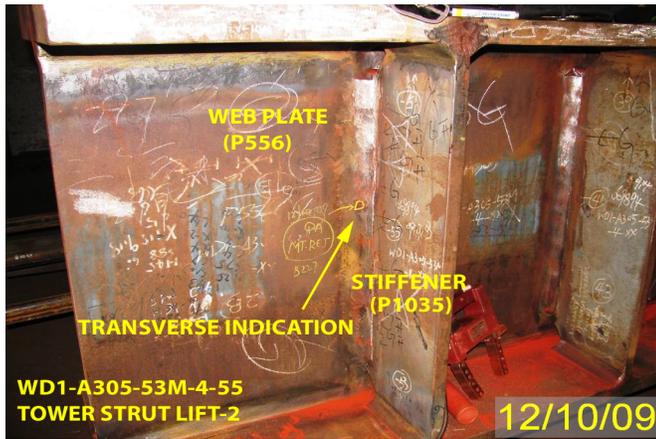
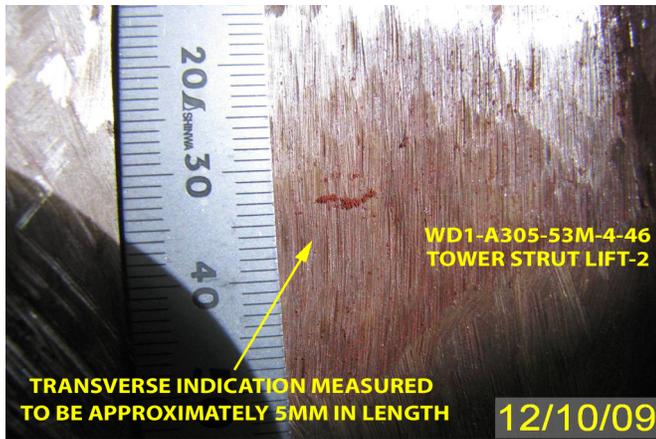
#### NORTH TOWER LIFT 3

1. NST13 – 3F/K – 59~66 (92.5 M FIT LUG ON SKIN”D”)
2. NST13 – 3F/K – 146~152 (95.5 M FIT LUG ON SKIN”D”)
3. NST13 – 3F/K – 12~15 (92.5 M FIT LUG ON SKIN”C”)
4. NST13 – 3F/K – 87; 88 (95.5 M FIT LUG ON SKIN”C”)
5. NST13 – 3F/K – 67; 68 ( SKIN”D” WITH 92.5 M DIAPHRAGM)
6. NST13 – 3F/K – 144; 145 (SKIN”D” WITH 95.5 M DIAPHRAGM)
7. NST13 – 3F/K – 6; 7 (SKIN”C” WITH 92.5 M DIAPHRAGM)
8. NST13 – 3F/K – 89; 90 ((SKIN”C” WITH 95.5 M DIAPHRAGM)

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

# WELDING INSPECTION REPORT

( Continued Page 5 of 6 )

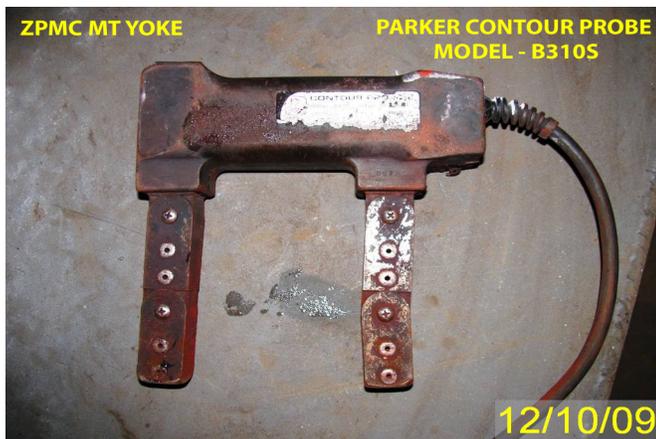


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# WELDING INSPECTION REPORT

( Continued Page 6 of 6 )

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## Summary of Conversations:

No Relevant Conversations.

## 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 - 15000422372, who represents the Office of Structural Materials for your project.

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**Inspected By:** Kumar,Sandeep

Quality Assurance Inspector

**Reviewed By:** Hall,Steven

QA Reviewer

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