

**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 #: 04-0120F4  
 Cty: SF/ALA Rte: 80 PM: 13.2/13.9  
 File #: 69.25B

**QUALITY ASSURANCE -- NON-CONFORMANCE REPORT**

**Location:** Changxing Island, Shanghai, PRC **Report No:** NCR-000434  
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV **Date:** 28-Sep-2009  
**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0408

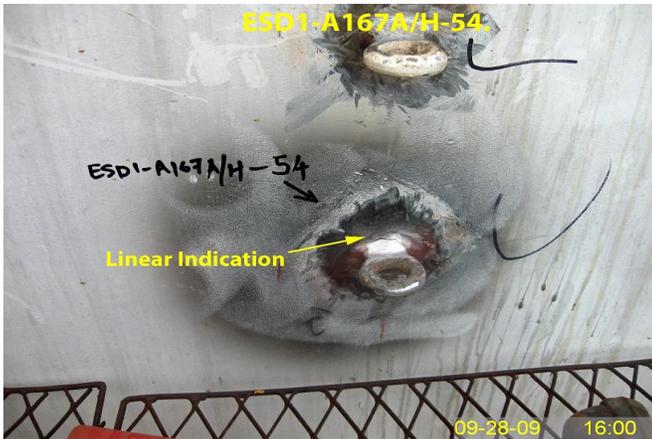
**Type of problem:**

<b>Welding</b>	<b>Concrete</b>	<b>Other</b>	
<b>Welding</b>	<b>Curing</b>	<b>Procedural</b>	<b>Bridge No:</b> 34-0006
<b>Joint fit-up</b>	<b>Coating</b>	<b>Other</b>	<b>Component:</b> East Tower
<b>Procedural</b>	<b>Procedural</b>	<b>Description:</b> East Tower, Lift 1	

**Reference Description:** Missed MT Indications on East Tower, Lift 1 Padeyes

**Description of Non-Conformance:**

During Magnetic Particle Testing (MT) of East Tower, Lift 1, padeyes; QA observed linear indications at weld joints NSD1-A167A/H-21, 54, 58. ZPMC QC provided the NDT Notification Sheet # 004309 informing Caltrans QA that they have completed their 10% NDT requirements.

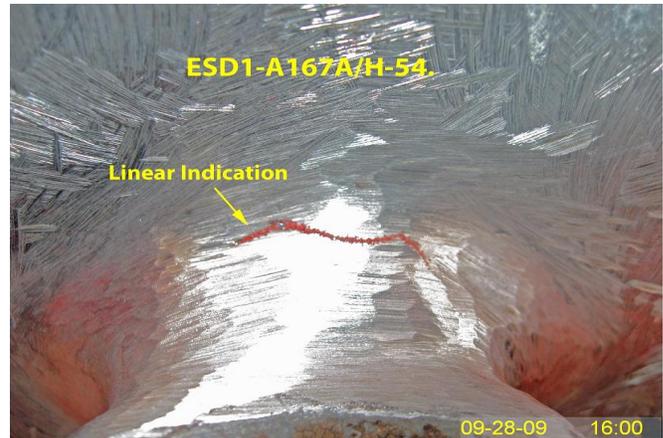


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# QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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### 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 D1.5-2002, Section 6.26.2 – “Welds that are subject to MT in addition to visual inspection shall have no cracks.”

**Who discovered the problem:** Amit Juvekar

**Name of individual from Contractor notified:** Steve Lawton

**Time and method of notification:** 9/28/2009, 16:45; Verbal

**Name of Caltrans Engineer notified:** Scott Kennedy

**Time and method of notification:** 9/29/2009, 12:00; Verbal

**QC Inspector's Name:** Li Xiu Yang

**Was QC Inspector aware of the problem:** Yes No

**Contractor's proposal to correct the problem:**

### 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 Serge Sinevod, 134-8257-0045, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Sinevod,Serge	ASMR
<b>Reviewed By:</b>	Wahbeh,Mazen	SMR

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**DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge**  
 333 Burma Road  
 Oakland CA 94607  
 Tel: Fax:

**NON-CONFORMANCE REPORT TRANSMITTAL**

**To:** AMERICAN BRIDGE/FLUOR, A JV  
 375 BURMA ROAD  
 OAKLAND CA 95607

**Date:** 29-Sep-2009

**Contract No:** 04-0120F4  
 04-SF-80-13.2 / 13.9

**Dear:** Mr. Charles Kanapicki  
**Job Name:** SAS Superstructure

**Attention:** Mr. Thomas Nilsson Project/Fabrication Manager  
**Document No:** 05.03.06-000397

**Subject:** NCR No. ZPMC-0408

**Reference Description:** Missed Indications (MT) / East Shaft Lift 1 / Padeye Welds

The attached Non-Conformance Report describes an occurrence where the contractor did not comply with a requirement of the contract document as indicated below:

- Material or Workmanship not in conformance with contract documents.
- Quality Control (QC) not performed in conformance with contract documents.
- Recurring QC issue that constitutes a systematic problem in quality control.
- Non-Conformance Resolved.

**Material Location:** Tower **Lift:** 01

**Remarks:**

During Magnetic Particle Testing (MT) of East Tower, Lift 1, padeyes; QA observed linear indications at weld joints NSD1-A167A/H-21, 54, 58. ZPMC QC provided the NDT Notification Sheet # 004309 informing Caltrans QA that they have completed their 10% NDT requirements.

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 D1.5-2002, Section 6.26.2 – “Welds that are subject to MT in addition to visual inspection shall have no cracks.”

**Action Required and/or Action Taken:**

Propose a resolution for this systematic non-conformance that addresses the failure of Quality Control to identify the linear indications during magnetic particle testing of the welds. Provide documentation of the steps/actions taken by the Quality Control Manager to prevent future occurrences.

In addition to the Quality Control non-conformance, address the material/workmanship for the identified non-conformance including documentation that the deficiencies have been brought into compliance with the contract requirements. Additionally address the probable causes for the indications and the actions that will be taken to limit future occurrences.

Recent failures by Quality Control to identify linear indications (MT) have resulted in the issuance of NCR ZPMC-0358, ZPMC-0359, ZPMC-0371, ZPMC-0372, ZPMC-0373, ZPMC-0375, ZPMC-0376, ZPMC-0377, ZPMC-383, ZPMC-0384, ZPMC 0386, ZPMC-0387, ZPMC-0388, ZPMC-0389, ZPMC-0390 and ZPMC-0401 related to Tower.

**Transmitted by:** Scott Kennedy Sr. Bridge Engineer

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# NCT

( Continued Page 2 of 2 )

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**Attachments:** ZPMC-0408

**cc:** Rick Morrow, Gary Pursell, Mark Woods, Doug Coe

**File:** 05.03.06

## NCR PROPOSED RESOLUTION

**To:** CALTRANS - SAS Superstructure  
333 Burma Road  
Oakland CA 94607

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000397

**Subject:** NCR No. ZPMC-0408

**Dated:** 16-Oct-2009

**Contract No.:** 04-0120F4  
04-SF-80-13.2 / 13.9

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000394 Rev: 00

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### Contractor's Proposed Resolution:

**Reference Resolution:** ABF JV QCM has implemented training with ZPMC to improve the quality of inspections. ABF JV will provide documentation showing attendance by ZPMC QC inspectors and the subject of training.

ABF JV QCM has implemented training with ZPMC to improve the quality of inspections. ABF JV will provide documentation showing attendance by ZPMC QC inspectors and the subject of training. Topics to be covered during the instruction are: inspection of equipment prior to use, proper conditions for inspection, proper technique for MT, and UT. In addition, ABF JV has committed to perform overchecks in both the Tower and OBG. This will serve two purposes, first to monitor if the training is effective at reducing the number of missed indications and second to ensure missed indications are prevented.

Documentation of repairs and subsequent NDT specific to this report will be transmitted through Daily Welding Reports and will be available in the documentation data base. Based on this course of action, ZPMC is requesting that this proposed resolution be approved with action pending. Once training records are available to be transmitted, ZPMC will request closure of this NCR.

### Submitted by:

**Attachment(s):** ABF-NPR-000394R00

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### Caltrans' comments:

**Status:** REJ

**Date:** 18-Oct-2009

Even though the course of action is acceptable, the department will not consider closure of this NCR (ZPMC-0408) until all the repair documents and training documents are submitted and reviewed.

**Submitted by:** Lee, Ken

**Date:** 18-Oct-2009

**Attachment(s):**

## NCR PROPOSED RESOLUTION

**To:** CALTRANS - SAS Superstructure  
333 Burma Road  
Oakland CA 94607

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000397

**Subject:** NCR No. ZPMC-0408

**Dated:** 05-Nov-2009

**Contract No.:** 04-0120F4  
04-SF-80-13.2 / 13.9

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000394 **Rev:** 01

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### Contractor's Proposed Resolution:

**Reference Resolution:** ZPMC has provided the approved CWR and NDT results showing successful repair of the indications. ZPMC requests closure of this NCR.

ZPMC has provided the approved CWR and NDT results showing successful repair of the indications. ZPMC requests closure of this NCR.

### Submitted by:

**Attachment(s):** ABF-NPR-000394R01;

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### Caltrans' comments:

**Status:** CLO

**Date:** 05-Nov-2009

The proposed resolution is acceptable based on the documentations submitted. The Department concurs that this non-conformance (ZPMC-408) is closed.

**Submitted by:** Lee, Ken

**Date:** 05-Nov-2009

**Attachment(s):**



No. T-071

## LETTER OF RESPONSE

**TO: American Bridge/Flour JV**

**DATE: 2009-11-04**

**REGARDING: NCR-000434(ZPMC-0408)**

ZPMC received the NCR-000434(ZPMC-0408). It mentioned that during MT of East tower , lift 1; QA observed liner indications at weld joints NSD1-A167A/H-21,54,58.

Firstly, the CT guy wrote down the wrong weld number which are not the NSD1-A167A/H-21,54,58. The real number are ESD1-A167A/H-21,54,58.

Secondly, According to the contract we ZPMC did 10% of the padeyes .But the when the CT guy Amit Juvekar to do the inspection is not the 10% percent as we did. When he found the cracks at the other padeyes, our ZPMC at the first time issued the CWR and did the repair work then did the MT work about there three welds to make sure no problem about the weld.

Thirdly, When we finish the repair work we also give a new notification to let the CT people to check again about the repair weld to make sure no problem.

So ZPMC hope CT close these NCR.

**ATTACHMENT:**

**NCR-000434(ZPMC-0408)**

**CWR:T-CWR314**

**REPORT OF MAGNTIC PARTICLE EXAMINATION:T787-MT-6488**

*Li Xinyang*

*09. 11. 4*



DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge  
 333 Burma Road  
 Oakland CA 94607  
 Tel: Fax:

**NON-CONFORMANCE REPORT TRANSMITTAL**

**To:** AMERICAN BRIDGE/FLUOR, A JV  
 375 BURMA ROAD  
 OAKLAND CA 95607

**Date:** 29-Sep-2009

**Contract No:** 04-0120F4  
 04-SF-80-13.2 / 13.9

**Dear:** Mr. Charles Kanapicki  
**Job Name:** SAS Superstructure

**Attention:** Mr. Thomas Nilsson Project/Fabrication Manager  
**Document No:** 05.03.06-000397

**Subject:** NCR No. ZPMC-0408

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**Material Location:** Tower **Lift:** 01

**Remarks:**

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**Action Required and/or Action Taken:**

Propose a resolution for this systematic non-conformance that addresses the failure of Quality Control to identify the linear indications during magnetic particle testing of the welds. Provide documentation of the steps/actions taken by the Quality Control Manager to prevent future occurrences.

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**Transmitted by:** Scott Kennedy Sr. Bridge Engineer

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NCT

( Continued Page 2 of 2 )

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Attachments: ZPMC-0408

cc: Rick Morrow, Gary Pursell, Mark Woods, Doug Coe

File: 05.03.06

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Cty: SF/ALA Rte: 80 PM: 13.2/13.9  
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**QUALITY ASSURANCE -- NON-CONFORMANCE REPORT**

Location: Changxing Island, Shanghai, PRC

Report No: NCR-000434

Prime Contractor: American Bridge/Fluor Enterprises, a JV

Date: 28-Sep-2009

Submitting Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

NCR #: ZPMC-0408

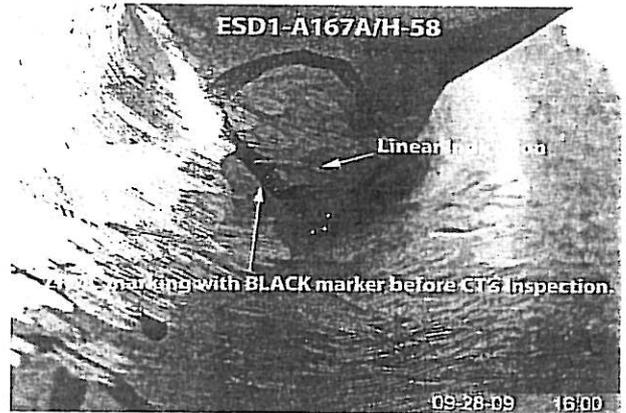
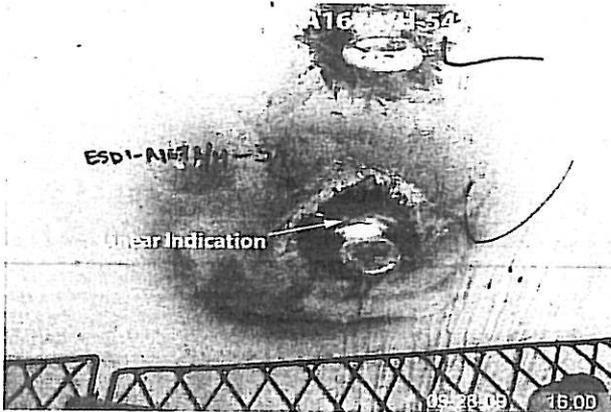
Type of problem:

- Welding  Concrete  Other
- Welding  Curing  Procedural  Bridge No: 34-0006
- Joint fit-up  Coating  Other  Component: East Tower
- Procedural  Procedural  Description: East Tower, Lift 1

Reference Description: Missed MT Indications on East Tower, Lift 1 Padeyes

Description of Non-Conformance:

During Magnetic Particle Testing (MT) of East Tower, Lift 1, padeyes; QA observed linear indications at weld joints NSD1-A167A/H-21, 54, 58. ZPMC QC provided the NDT Notification Sheet # 004309 informing Caltrans QA that they have completed their 10% NDT requirements.



## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )



### Applicable reference:

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Who discovered the problem: Amit Juvekar

Name of individual from Contractor notified: Steve Lawton

Time and method of notification: 9/28/2009, 16:45; Verbal

Name of Caltrans Engineer notified: Scott Kennedy

Time and method of notification: 9/29/2009, 12:00; Verbal

QC Inspector's Name: Li Xiu Yang

Was QC Inspector aware of the problem:  Yes  No

Contractor's proposal to correct the problem:

### 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 Serge Sinevod, 134-8257-0045, who represents the Office of Structural Materials for your project.

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Inspected By:	Sinevod,Serge	ASMR
Reviewed By:	Wahbeh,Mazen	SMR

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# 关键焊缝返修报告

版本  
Rev. No.:

## Critical Welding Repair Report (CWR)

0

项目名称 Project Name:	美国海湾大桥 SFOBB	部件图号 Drawing No.:	ESD1-A167A/H	报告编号 Report No.:	T-CWR314
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	东塔一吊AB面吊环 First lifting Tower (E) Skin AB lifting	NDT 报告编号 NDT Report No.:	NA
项目编号 Project No.:	ZP06-787				

### 焊缝缺陷描述:

#### Description of welding discontinuity:

东塔一吊A面1个吊环B面2个吊环MT后发现裂纹:

A面: ESD1-A167A/H-21

B面: ESD1-A167A/H-58 54

Cracks were found at first lifting Skin A and Skin B, relevant weld No.:

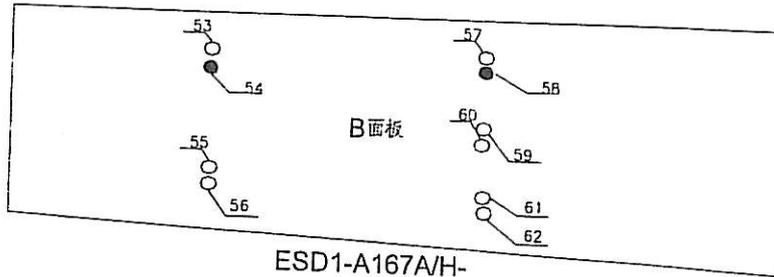
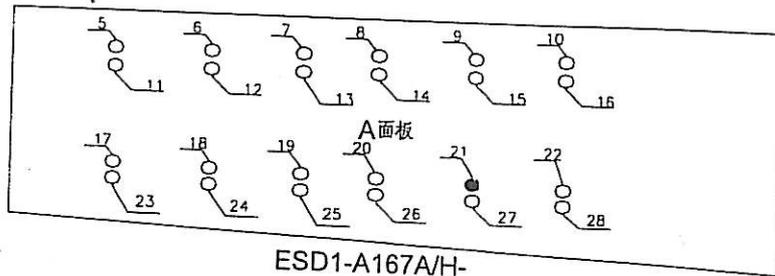
Skin A: ESD1-A167A/H-21;

Skin B: ESD1-A167A/H-58 54

检验员 (Inspector): He Gen 日期 (Date): 2009.09.30

### 焊缝返修位置示意图:

#### Draft of Welding Discontinuity:



注: 阴影部位为返修区域。Remark: repair area in shadow.

中国振华重工有限公司  
ZPMC  
地址: 天津经济技术开发区  
电话: 022-59500000  
传真: 022-59500001  
邮编: 300457

产生原因:

Cause:

1. 火焰加热时, 水汽没有完全的去掉或者这个区域预热不够;

1. Moisture wasn't completely removed during drying operation (preheating) or the area wasn't preheated sufficiently.

车间负责人 (Foreman): *Lishiquan* 日期 (Date):

*09.10.01*

处理意见

Disposition :

1. QC shall monitor and direct the welder and the grinder doing the repair operation.
2. Preheat before gouging; the temperature shall be at least 65°C.
3. Gouge the weld to remove identified defects.
4. Joint details shall refer to the approved WPS repair.
5. Grind the gouged areas to a smooth and shiny surface.
6. Verify with VT and MT to ensure no defects remain in the weld joint prior to welding.
7. QC shall monitor all welding passes being deposited.
8. QC shall ensure all slag has been removed prior the deposition of next pass.
9. Preheat and maintain interpass temperature control in accordance with the WPS.
10. Blend the weld repaired areas into the adjacent weld or base metal by grinding.
11. Perform VT, MT and other NDT inspection to the repaired areas.

- 1、在返修过程中, QC 应该监控和指导焊工和打磨工;
- 2、碳刨之前必须先进行预热, 温度不低于 65° C;
- 3、碳刨去除缺陷;
- 4、缺陷被完全消除后, 必须准备一个正确的接头型式, 具体接头型式请参见对应的修补焊接工艺规程(WPS);
- 5、将碳刨面打磨光滑;
- 6、在准备好焊接接头焊接前, 用 VT 和 MT 检测缺陷被完全清除;
- 7、在返修过程中, QC 确认焊道清理干净;
- 8、在进入下到焊缝前, QC 应该保证所有的缺陷已经去除,
- 9、根据 WPS 控制预热和焊道的温度;
- 10、打磨返修区域与临近焊缝和母材其平;
11. VT,MT和其它NDT检测焊缝。

工艺:

Technical Engineer: *Li Jun*

审核:

Approved By: *Lishiquan*

日期:

Date: *09.10.01*

#R787-QCP-900



# 关键焊缝返修报告

版本  
Rev. No.:

0

## Critical Welding Repair Report (CWR)

项目名称 Project Name:	美国海湾大桥 SFOBB	部件图号 Drawing No.:	ESD1-A100A11	报告编号 Report No.:	T-CWR314
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	东塔一吊AB面吊环 First lifting Tower (E) Skin AB lifting	NDT 报告编号 NDT Report No.:	NA
项目编号 Project No.:	ZP06-787				

纠正措施:

Corrective Action to Prevent Re-occurrence:

1. 返修前, QC确认有效的预热, 以将水汽全部去除。

1. QC shall verify sufficient preheat has been applied, to remove moisture, prior to welding.

车间负责人 (Foreman):

Li Shiguan

日期 (Date):

09.10.01

参照的WPS编号 Repair WPS No.:	WPS-345-FCAW-2 G(2F)-Repair WPS-345-FCAW-3 G(3F)-Repair WPS-345-SMAW-2 G(2F)-Repair WPS-345-SMAW-3 G(3F)-Repair	工艺员 Technologist:	Li Jun 09.10.01
返修(碳刨)前预热温度 Preheat Temperature Before Gouging:	86°C	返修的缺陷 Description of Discontinuity:	裂纹
焊前处理检查 Inspection Before Welding:	ALL	焊前预热温度 Preheat Temperature Before Welding:	186°C
最大碳刨深度 Max. Depth of Gouge:	/	碳刨总长 Total Length of Gouge:	/
焊工 Welder:	040733	焊接类型 Welding Type:	SMAW
焊接电流 Current:	170/55	焊接电压 Voltage:	23.8/24.1
		焊接位置 Position:	3G/4G
		焊接速度 Speed:	110/100

返修后检查  
Inspection After Repair:

外观检查 VT Result:	VTAC	检验员 Inspector:	ye yong jun	日期 Date:	09.11.25
NDT复检 NDT Result:	MTAC	探伤员 NDT Person:	caibinlin	日期 Date:	09.11.25

见证:

Witness/Review:

备注:

Remark:

#R787-QCP-900



**DEPARTMENT OF TRANSPORTATION**

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: xx.25A**QUALITY ASSURANCE -- NON-CONFORMANCE RESOLUTION****Location:** Changxing Island, Shanghai, PRC**Report No:** NCS-000320**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 09-Nov-2009**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0408**Type of problem:**

<b>Welding</b>	<b>Concrete</b>	<b>Other</b>	
<b>Welding</b>	<b>Curing</b>	<b>Procedural</b>	<b>Bridge No:</b> 34-0006
<b>Joint fit-up</b>	<b>Coating</b>	<b>Other</b>	<b>Component:</b>
<b>Procedural</b>	<b>Procedural</b>	<b>Descriptor:</b>	

**Date the Non-Conformance Report was written:** 28-Sep-2009**Description of Non-Conformance:**

During Magnetic Particle Testing (MT) of East Tower, Lift 1, padeyes; QA observed linear indications at weld joints NSD1-A167A/H-21, 54, 58. ZPMC QC provided the NDT Notification Sheet # 004309 informing Caltrans QA that they have completed their 10% NDT requirements.

**Contractor's proposal to correct the problem:**

Repair affected welds and submit NDT documentataion indicating sound welds.

**Corrective action taken:**

NDT documentation indicating sound welds has been submitted and the welds were subsequently verified by QA. To resolve the recurring failure for QC to detect MT indications, ABFJV QCM has implemented training with ZPMC to improve quality of inspectors. Topics include: inspection of equipment prior to use, proper conditions for inspection, proper technique for MT & UT. In addition, ABFJV is performing weld over-checks.

This will serve two purposes, first to monitor if the training is effective at reducing the number of missed indications and second, to ensure missed indications are prevented.

**Did corrective action require Engineer's approval?** Yes No**If so, name of Engineer providing approval:****Date:****Is Engineer's approval attached?** Yes No**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 Serge Sinevod, 134-8257-0045, who represents the Office of Structural Materials for your project.

**Inspected By:** Sinevod, Serge

Quality Assurance Inspector

**Reviewed By:** Wahbeh, Mazen

QA Reviewer