

**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, P.R. China

**Report No:** NCR-000553

**Prime Contractor:** American Bridge/Fluor Enterprises, a JV

**Date:** 21-Dec-2009

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

**NCR #:** ZPMC-0526

### Type of problem:

**Welding**            **Concrete**            **Other**  
**Welding**            **Curing**                **Procedural**  
**Joint fit-up**        **Coating**              **Other**  
**Procedural**        **Procedural**          **Description:**

**Bridge No:** 34-0006

**Component:** 8BW Floor Beam FL2-2 to Bottom Panel

**Reference Description:** Segment 8BW, Linear Indication discovered with the MT after the contractor's NDT testing and acceptance

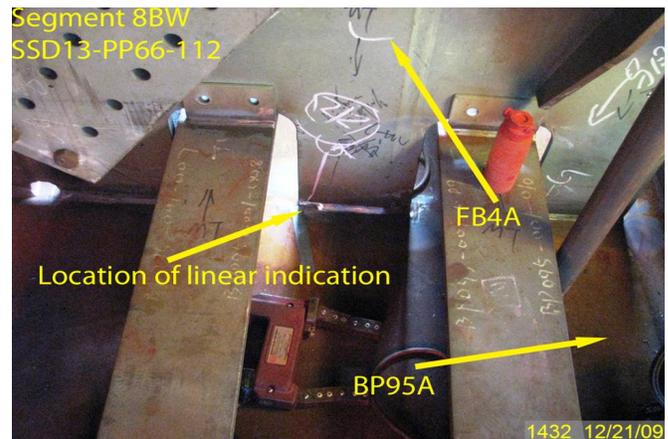
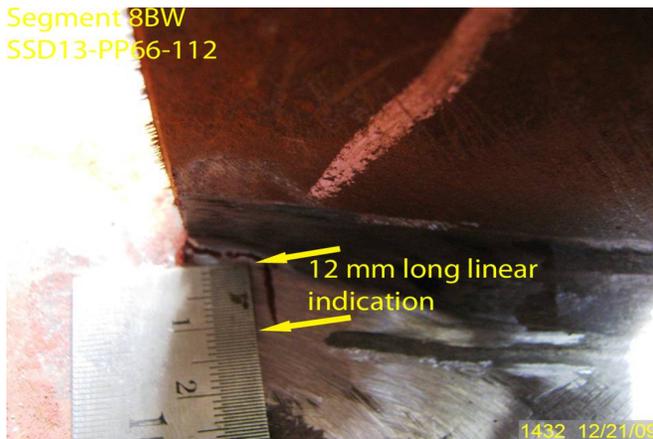
### Description of Non-Conformance:

During the Quality Assurance Magnetic Particle Testing (MT) review of welds located on OBG Segment 8BW, this Quality Assurance Inspector (QA) discovered the following issues:

-One (1) Transverse linear indication that measured to be a total of 15mm in length, in the fillet weld joining the FL2-2 floor beam (FB004-027) to bottom panel (BP95A-001) at panel point 66. The weld is designated as SSD13-PP66-112.

-The OBG Segment is located north of the blast shop.

The Notice of Witness Inspection Number (NWIT) is 004905. The indication is located inside the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel.



### 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

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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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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 cracks.

**Who discovered the problem:** Hiranah Patel

**Name of individual from Contractor notified:** Peter Shaw

**Time and method of notification:** 12/21/2009, 1700 hours, Verbal

**Name of Caltrans Engineer notified:** Bill Howe

**Time and method of notification:** 12/22/2009, 1800 hours, Verbal

**QC Inspector's Name:** Zhang Wei

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

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

N/A

**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 Mazen Wahbeh, +(86) 134.7247.7571, who represents the Office of Structural Materials for your project.

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**Inspected By:** Carreon,Albert

Lead Reviewer/Task Leader

**Reviewed By:** 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:** 25-Dec-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:** 05.03.06-000514

**Subject:** NCR No. ZPMC-0526

**Reference Description:** Segment 8BW, Linear Indication discovered with the MT after the contractor's NDT testing and acceptance

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:** OBG **Lift:** 08

**Remarks:**

During the Quality Assurance Magnetic Particle Testing (MT) review of welds located on OBG Segment 8BW, this Quality Assurance Inspector (QA) discovered the following issues:

- One (1) Transverse linear indication that measured to be a total of 15mm in length, in the fillet weld joining the FL2-2 floor beam (FB004-027) to bottom panel (BP95A-001) at panel point 66. The weld is designated as SSD13-PP66-112.
- The OBG Segment is located north of the blast shop.

The Notice of Witness Inspection Number (NWT) is 004905. The indication is located inside the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel.

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

Submit a repair procedure for approval of the engineer. Provide training to the ZPMC MT technician that missed this indication and provide documentation of such training to the engineer. A response for the resolution of this issue is expected within 7 days.

**Transmitted by:** Bill Howe

**Attachments:** ZPMC-0526

**cc:** Rick Morrow, Gary Pursell, Peter Siegenthaler, Stanley Ku, Brian Boal, Jason Tom, Contract Files, Ching Chao

**File:** 05.03.06

## NCR PROPOSED RESOLUTION

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

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000514

**Subject:** NCR No. ZPMC-0526

**Dated:** 18-Jan-2010

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000498 Rev: 00

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### Contractor's Proposed Resolution:

**Reference Resolution:** As a means of preventing future occurrences, the ABF QCM has performed refresher MT training. See attached MT training agenda and attendance roster.

As it is necessary to respond to the NCR with a proposed plan of action, ABF is doing so without all of the repair documentation at this time. As a means of preventing future occurrences, the ABF QCM has performed refresher MT training. See attached MT training agenda and attendance roster. The ABF QCM has been discussing missed MT indications with the ZPMC QCM and related NDT supervisory personnel. The ZPMC level III is in the process of assessing personnel, techniques and equipment. Preliminary findings have resulted in ZPMC taking immediate action by performing 100% overchecks of the previously tested areas beginning the week of 18 January 09 as a means of preventing future NCR's for missed indications. ABF has purchased powder dispensers for all the ZPMC MT technicians as a means to help control the amount of powder applied during MT testing. ZPMC requests this NCR be placed in the Approved Action Pending status category until such time that all the repair documents have been assembled and submitted.

**Submitted by:** Lawton, Steve

**Attachment(s):** ABF-NPR-000498R00;

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### Caltrans' comments:

**Status:** AAP

**Date:** 25-Jan-2010

The preventative measures taken by the QCM and the proposed resolution for closing NCR submitted by the contractor are acceptable. The NCR will be closed upon completion of the repair and review of the repair documents by the Engineer when submitted by the contractor.

**Submitted by:** Chao, Ching

**Date:** 25-Jan-2010

**Attachment(s):**

# Tool Box Training Agenda

**Subject:** MT Techniques

**Reason for Training:** Several CT NCR's of indications missed during ZPMC NDT inspection.

## 1. Safety

- a. Safety Glasses
- b. Gloves (if required)
- c. Knee Pads
- d. Electrical shock

## 2. Tools

- a. Lighting
- b. MT Powder. Red for ambient, Yellow for High Temperature.
- c. Powder Bulb
- d. Powder Blower
- e. MT Yoke Adequate working condition
- f. Pie Gage

## 3. Inspection Techniques

- a. Lighting
- b. Position of body (distance of eyes to the weld surface)
- c. Application of Powder removal of Powder
- d. Continuous method
- e. Two directions
- f. Both sides of weld
- g. Clean and dry surface



教育培训纪录

培训编号: MT-22-Dec-09

培训内容:	MT Techniques
培训对象:	项目质检
授课人员:	Steve Lawton
培训类型:	内部培训
培训时间:	22-Dec-09 5:00 PM
计划培训地点:	ZPMC QC office

人员签到:

姓名	部门	姓名	部门
孙力杰 Sunlei	钢桥	狄坤伦 Di Kunlun	钢桥
孙广强 Sun Guangqiang	钢桥	蔡新鑫 Cai Xinxin	钢桥
徐海 Xu Hai	钢桥	傅春强 Fu Chunqiang	钢桥
卞源源 Bian Yuanyuan	钢桥	顾云武 Gu Yunwu	钢桥
许兵 Xu Bing	钢桥	金建廷 Jin Jianting	钢桥 MT
李振华 Li Zhenhua	钢桥	常方杰 Chang Fangjie	钢桥
李坤阳 Li Xunyang	QA	袁俊 Yuan Jun	钢桥
王威 Wang Wei	钢桥	刘章敏 Liu Zhangmin	
孙林 Sun Lin	钢桥 MT	徐华祥 Xu Huaxiang	钢桥
丁阿成 Ding A Cheng	钢桥 MT	周东超 Zhou Dongchao	钢桥
贺佳佳 He Jiajia	钢桥	赵成功 Zhao Cheng Gong	钢桥
黄瑞 Huang Rui	钢桥	孙广强 Sun Guangqiang	钢桥
李黎明 Li Liming	钢桥	徐辉 Xu Hui	钢桥
李昌涛 Li Changtao		刘宏斌 Liu Hongbin	

## NCR PROPOSED RESOLUTION

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

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000514

**Subject:** NCR No. ZPMC-0526

**Dated:** 28-Jan-2010

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000498 Rev: 01

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### Contractor's Proposed Resolution:

**Reference Resolution:** ZPMC has repaired the weld and is providing the CWR and associated NDT showing that the weld is acceptable.

ZPMC acknowledges that the indication was missed and issued an internal NCR to document this issue and make the Production and QC Departments aware of this issue. ZPMC has repaired the weld and is providing the CWR and associated NDT showing that the weld is acceptable. To reduce incidents of missed indication the ABF QCM has conducted refresher MT training with the ZPMC inspectors on December 23, 2009 and previously submitted documentation. In addition, ZPMC will begin performing 100% verification of tested areas on January 18, 2010 as a means of preventing future missed indications. ABFJV has purchased powder dispensers for all the ZPMC MT technicians as a means to help control the amount of powder applied during MT testing. Based on these actions ZPMC requests closure of this NCR.

**Submitted by:** Ishibashi, Joshua

**Attachment(s):** ABF-NPR-000498R01;

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### Caltrans' comments:

**Status:** CLO

**Date:** 02-Feb-2010

The documentation received is sufficient to close this NCR.

**Submitted by:** Howe, Bill

**Attachment(s):**

**Date:** 02-Feb-2010



No. B-592

## LETTER OF RESPONSE

**TO: American Bridge/Flour**

**DATE: 2010-1-27**

**REGARDING: NCR-00553 (ZPMC-0526)**

With this letter of response, ZPMC requests closure of CT NCR-00553 (ZPMC-0526), what mentioned that CT Inspector observed missed MT indications.

- ZPMC acknowledged this problem and has issued internal NCR. See attached NCR-B-336(ZPMC-526).
- CWR was issued reflecting to the linear indication. See attached B-CWR1011.
- After repair NDT was performed to warrant the weld's quality. See attached B787-MT-17018R1.

Based on the taken actions and attached documentations, ZPMC requests closure of this NCR.

**ATTACHMENT:**

NCR-00553 (ZPMC-0526)

NCR-B-336(ZPMC-526)

B-CWR1011

B787-MT-17018R1

A handwritten signature in black ink, appearing to be "Liu" followed by a stylized flourish.

1/27/10



# Nonconformance Report

## 不符合项报告

Project Name: S.F.O.B.B  
 项目名称: 美国加州海湾大桥  
 NCR Number:  
 NCR 编号: NCR-B-336(ZPMC-0526)

Item: Missed indication by MT  
 名称描述: 磁粉遗漏缺陷  
 Item Number:  
 件号: N/A  
 Drawing:  
 图号: N/A

Location: outside yard  
 位置: 外场  
 Date:  
 日期: 2009-12-30

### Description of Nonconformance:

不符合项状态描述:

During the Quality Assurance Magnetic Particle Testing(MT) review of welds located on OBG Segment 8BW, this Quality Assurance Inspector(QA) discovered the following issues:

-One Transverse liner indication that measured to be a total of 15mm in length, in the fillet weld joining the FL2-2 floor beam(FB004-027) to bottom panel(BP95A-001) at panel point 66. The weld is designated as SSD13-PP66-112.

-The OBG Segment is located north of the blast shop.

The Notice of Witness Inspection Number(NWIT) is 004905. The indication is located inside the area that has been previously tested and accepted by ZPMC Quality Control(QC) personnel.

加州检验员在对箱梁 8BW 进行 MT 检验时发现以下情况:

-在隔板 FL2-2(FB004-027)与底板 (BP95A-001) 的角焊缝处发现有 15mm 长的横向线性缺陷, 焊缝为 SSD13-PP66-112。

-该箱梁位于冲砂车间北面

预约单编号为 4905, 该缺陷位于内侧位置, ZPMC 之前检验确认过。

Work By: L. Lim Prepared by: \_\_\_\_\_ Reviewed by QCE: Thao Shuang  
 施工方: 2010/01/20 准备: \_\_\_\_\_ 质量工程师批准:  
 Drawing Error  Material Defect  Fabrication Error  Other/2.30.  
 图纸错误 材料缺陷 制作错误 其他原因

Disposition:  Use as is  Repair  Reject  
 处理措施: 回用 返修 拒收

### Recommendation:

建议:

确认缺陷并出具报告

Confirm the defect and issue repair report.

Prepared by: L. Lim Approved by QCA: \_\_\_\_\_  
 准备 2010/01/20 质量经理批准

Reason for Nonconformance:

不符合原因:

线材弯曲没有检测出.

Discover linear defect.

Prevention of Re-occurrence:

预防措施:

仔细检查, 加强技术提高.

Inspect carefully and improve technology.

Approved by/批准:

*[Signature]* 2010/1/12

Technical Justification for Use-As-Is/Repair:

Attachment

Non-attachment

回用或返修的技术依据:

附件

无附件

Reviewed /批准: \_\_\_\_\_

Verification:

Acceptable

Unacceptable

确认:

可接受

不可接受

Verified by QCI/质检确认: \_\_\_\_\_ Reviewed by QCA/质检主任审核: \_\_\_\_\_

#R787-QCP-1300



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:** 25-Dec-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:** 05.03.06-000514

**Subject:** NCR No. ZPMC-0526

**Reference Description:** Segment 8BW, Linear Indication discovered with the MT after the contractor's NDT testing and acceptance

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:** OBG

**Lift:** 08

### Remarks:

During the Quality Assurance Magnetic Particle Testing (MT) review of welds located on OBG Segment 8BW, this Quality Assurance Inspector (QA) discovered the following issues:

-One (1) Transverse linear indication that measured to be a total of 15mm in length, in the fillet weld joining the FL2-2 floor beam (FB004-027) to bottom panel (BP95A-001) at panel point 66. The weld is designated as SSD13-PP66-112.

-The OBG Segment is located north of the blast shop.

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### Action Required and/or Action Taken:

Submit a repair procedure for approval of the engineer. Provide training to the ZPMC MT technician that missed this indication and provide documentation of such training to the engineer. A response for the resolution of this issue is expected within 7 days.

**Transmitted by:** Bill Howe

**Attachments:** ZPMC-0526

**cc:** Rick Morrow, Gary Pursell, Peter Siegenthaler, Stanley Ku, Brian Boal, Jason Tom, Contract Files, Ching Chao  
**File:** 05.03.06

**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, P.R. China

**Report No:** NCR-000553

**Prime Contractor:** American Bridge/Fluor Enterprises, a JV

**Date:** 21-Dec-2009

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

**NCR #:** ZPMC-0526

**Type of problem:**

Welding  Concrete  Other

Welding  Curing  Procedural

Joint fit-up  Coating  Other

Procedural  Procedural  Description:

**Bridge No:** 34-0006

**Component:** 8BW Floor Beam FL2-2 to Bottom Panel

**Reference Description:** Segment 8BW, Linear Indication discovered with the MT after the contractor's NDT testing and acceptance

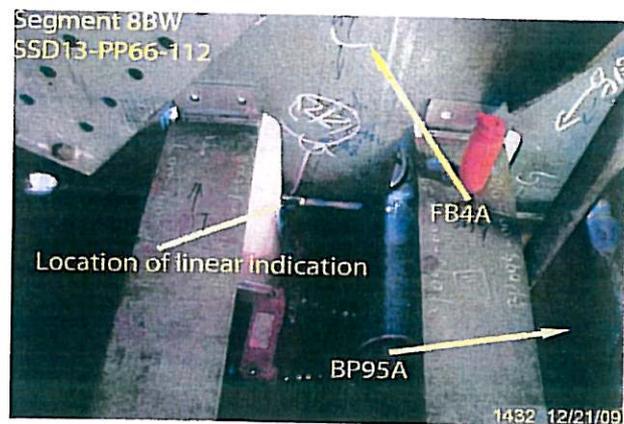
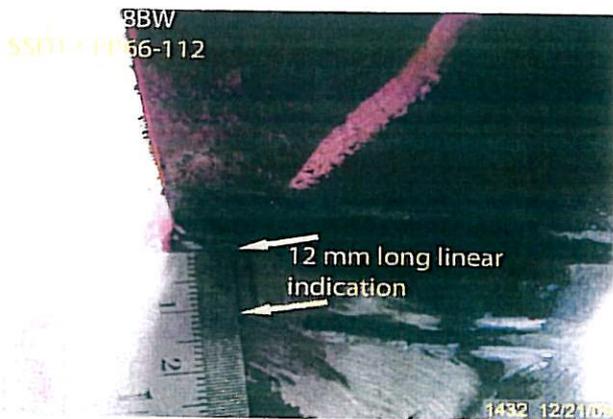
**Description of Non-Conformance:**

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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

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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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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 cracks.

**Who discovered the problem:** Hiranah Patel

**Name of individual from Contractor notified:** Peter Shaw

**Time and method of notification:** 12/21/2009, 1700 hours, Verbal

**Name of Caltrans Engineer notified:** Bill Howe

**Time and method of notification:** 12/22/2009, 1800 hours, Verbal

**QC Inspector's Name:** Zhang Wei

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

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

N/A

**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 Mazen Wahbeh, +(86) 134.7247.7571, who represents the Office of Structural Materials for your project.

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**Inspected By:** Carreon,Albert

Lead Reviewer/Task Leader

**Reviewed By:** Wahbeh,Mazen

SMR

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关键焊缝返修报告  
Critical Welding Repair Report (CWR)

版本  
Rev. No.:

0

项目名称 Project Name:	美国海湾大桥 SFOBB	部件图号 Drawing No.:	SSD13	报告编号 Report No.:	B-CWR1011
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	8BW FLOOR BEAM SPLICE	NDT 报告编号 NDT Report No.:	B787-MT-17018
项目编号 Project No.:	ZP06-787				

焊缝缺陷描述:

Description of Welding Discontinuity:

在对SSD13-PP066-112检测时, 发现1处纵向裂纹。L1=5mm

Welder ID No. (焊工编号): 055564

Position:(位置): 2F

One longitudinal crack was found by use of MT on SSD13-PP066-112.

This document is APPROVED  
State of California  
DEPARTMENT OF TRANSPORTATION  
Pursuant to Section 5-1.02 of the  
Standard Specifications  
Initial *SJE* Date: *12/24/09*

检验员 (Inspector) : Sun Gongchang

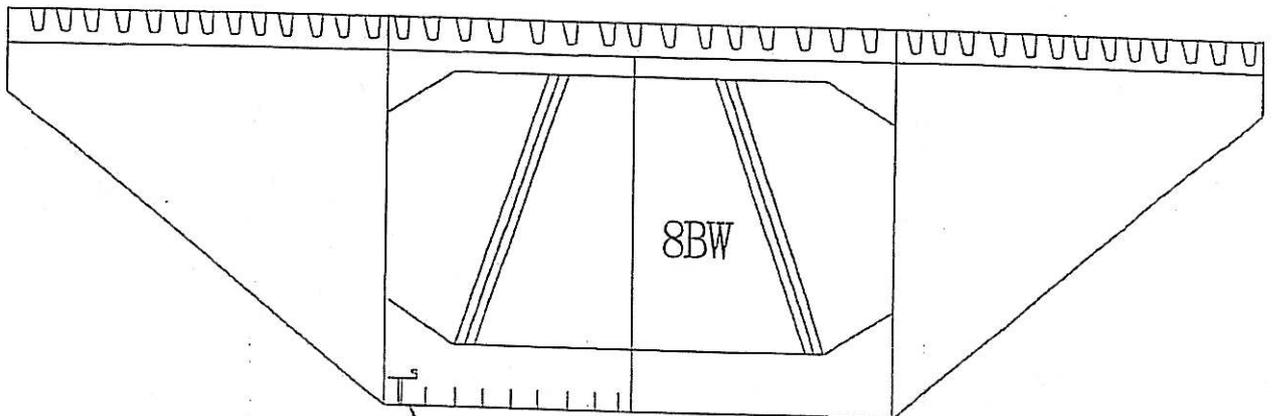
日期 (Date) : 2009-12-22

*Sun Gongchang*

*J. H. H. H.*

焊缝返修位置示意图:

Draft of Welding Discontinuity:



WELD NUMBER: SSD13-PP066-112

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):

Li Zhigang

日期 (Date):

09.10.22

处理意见

Disposition:

1. 这次返修时, QC和Leader CWI到现场对打磨, 焊接进行指导和监控工作以保证返修按照处理意见进行;
2. 整个返修的过程, QC和Leader CWI应该有批准CWR的复印件;
3. 去除热影响区域上在各个方向上不小于25mm范围内的油漆;
4. 将杂物以及MT检测遗留的残留物清理干净。然后采用打磨的方法去除裂纹, 打磨前预热至65° C。对于单个裂纹返修, 打磨返修范围为沿缺陷焊缝每一端加50mm;
5. 如果打磨时母材损伤, 则在返修前将损伤区域打磨干净; 如果打磨时或打磨后根部间隙大于5mm, 则在继续返修前另需递交文件给工程师予以审核批准, 并按照被批准的方法将角焊缝改成CJP焊缝;
6. 焊接前按照新的焊接返修工艺准备焊缝接头形式;
7. 返修前, VT和MT检测确认返修区域没有裂纹及其他缺陷存在, 同时靠近裂纹的母材也要做MT, 保证没有裂纹延伸到母材。如果在母材上发现裂纹, 则另外需CWR, 且只有当这份另出的CWR批准后才能继续返修;
8. 将杂物以及MT检测遗留的残留物清理干净。按照WPS进行预热和焊接, 预热温度为160° C-230° C;
9. 焊接后WPS要求进行后热, 后热温度为230° C-315° C, 后热时间至少1个小时;
10. 后热后将焊缝逐渐冷却到周围环境温度, 并控制冷却速率不超过50° C每小时;
11. 后热后将修补区域打磨与母材或相邻焊缝平齐;
12. 在焊缝冷却至环境温度至少经过48小时以后进行NDT检查;
13. 返修后根据图纸进行MT检测, 并按照合同10-1.59 "钢结构" 中的 "检测和试验" 要求进行附加MT检测。对于CJP焊缝, NDT为VT, MT和UT。

This document is APPROVED  
 State of California  
 DEPARTMENT OF TRANSPORTATION  
 Pursuant to Section 5-1.02 of the  
 Standard Specifications  
 Initial SJE Date: 12/24/09

1. QC and a Lead CWI shall be present, direct and supervise all grinding and welding operations during this repair to ensure the repair is per the disposition requirements
2. QC and a Lead CWI shall have an approved copy of the CWR in hand prior to the repair.
3. Remove paint  $\geq 25$ mm in all direction of HAZ prior to MT.
4. Clean the excavation area of all loose debris including MT powder. Preheat to 65° C before removing cracks by grinding, repair area shall extend a minimum of 50mm beyond each end of single crack repairs.
5. If base metal is damaged by grinding, the damaged area shall be ground clean prior to performing weld repair. If gap  $> 5$ mm is found during or after grinding, comply with the notification on changing fillet weld to CJP which is submitted for Engineer's review and approval form.
6. Prepare excavation in accordance with the New Repair Procedure prior to welding.
7. Before this repair, Verify with VT and MT repair areas are defects free, and also MT shall be performed on the base metal laying abroad cracks to ensure that no cracks were propagated to the base metal. Separate CWR approval is needed if cracks are found in the base metal, and only after this new CWR's approval can continue the repair.
8. Clean excavation area of all loose debris including MT powder after excavation. Preheat and weld according to repair WPS, the preheat shall between 160° C-230° C.
9. Perform post weld heating according to repair WPS, the postheat shall between 230° C-315° C and for one hour minimum.
10. Allow the weld to cool to ambient temperature gradually. Control cooling rate after PWHT to no more than 50° C per hour.
11. Grind the repaired area flush with base metal or the adjacent weld after post weld heating.
12. Wait 48 hours at least after the repair area has cooled to ambient temperature before performing NDT.
13. Perform MT inspection to all repair area according to Contract Drawings along with all additional NDT required by the applicable notes Special Provision Section 10-1.59 'Steel Structure', subsection 'inspection testing'. NDT include VT, MT and UT if it is a CJP weld.

工艺:

Technical Engineer:

Xu Donghai

审核:

Approved By:

Liu Ruihua

日期:

Date:

09.10.22



# 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.:	SSD13	报告编号 Report No.:	B-CWR1011
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	BBW FLOOR BEAM SPLICE	NDT 报告编号 NDT Report No.:	B787-MT-17018
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.

This document is APPROVED  
State of California  
DEPARTMENT OF TRANSPORTATION  
Pursuant to Section 5-1.02 of the  
Standard Specifications  
Initial: SJE Date: 12/24/09

车间负责人 (Foreman):

Li Zhigang

日期 (Date):

09.10.22

参照的 WPS 编号 Repair WPS No.:	WPS-345-SMAW-2G(2F)-FCM -Repair	工艺员 Technologist:	Xu Dayhai 09.10.22
返修 (碳刨) 前预热温度 Preheat Temperature Before Gouging:	NA	返修的缺陷 Description of Discontinuity:	CR
焊前处理检查 Inspection Before Welding:	Acc	焊前预热温度 Preheat Temperature Before Welding:	160°C
最大碳刨深度 Max. Depth of Gouge:	NA	碳刨总长 Total Length of Gouge:	NA
焊工 Welder:	084013	焊接类型 Welding Type:	SMAW
焊接电流 Current:	147	焊接位置 Position:	2G
		焊接电压 Voltage:	21.7
		焊接速度 Speed:	102

返修后检查

## Inspection After Repair:

外观检查 VT Result:	Acc	检验员 Inspector:	Li Yanhua 07/20/01	日期 Date:	10.01.06
NDT 复检 NDT Result:	Acc	探伤员 NDT Person:	Sun Yongchang	日期 Date:	10.01.21

见证:

Witness/Review:

备注:

Remark:

#R787-QCP-900



# REPORT OF MAGNETIC PARTICLE EXAMINATION

## 磁粉检测报告

REPORT NO. 报告编号 B787-MT-17018      DATE日期 2009.12.22      PAGE OF页码 1/1      Revision No: 0

PROJECT NO. 工程编号: ZP06-787      CONTRACTOR: 用户: CALTRANS

DRAWING NO. 图号: SSD13      CALTRANS CONTRACT NO.: 加州工程编号 04-0120F4

REFERENCING CODE 参考规范编码: AWS D1.5-2002      ACCEPTANCE STANDARD 接受标准: AWS D1.5-2002      PROCEDURE NO. 程序编号: ZPQC-MT-01      CALIBRATION DUE DATE 仪器校正有效期: Dec. 28<sup>ST</sup>, 2009

EQUIPMENT 设备: MT YOKE      MANUFACTURER 制造商: PARKER      MODEL NO. 样式编号: B310S      SERIAL NO. 连续编号: 5395 5617 5620

MAGNETIZING METHOD 磁化方法: Continuous magnetic yoke 磁轭式连续法      CURRENT 电流: AC

PARTICLE TYPE 磁粉类型: Dry magnet powder 干磁粉      YOKE SPACING 磁轭间距: 70~150mm

MATERIAL TO BE EXAMINED 检测材料:  WELDING 焊接件  
 CASTING 铸件  
 FORGING 锻造      Material & thickness 母材, 厚度: A709M-345T2-X

WELDING PROCESS 焊接方法: FCAW      TYPE OF JOINT 焊缝类型: T-JOINT

WELD I.D. 焊缝编号	DISCONTINUITY不连续性			ACCEPT 接受	REJECT 拒收	REMARKS 备注
	INDICATION 指示	TYPE 类型	LENGTH IN mm 长度			
SSD13-PP066-112	1	longitudinal crack	5		REJ.	Y=0

BLANK

EXAMINED BY主探: Sun Gongchang 09.12.22

REVIEWED BY审核: Sun He 09.12.22

LEVEL - II SIGN 签名 / DATE日期: Lu Zhenhua 12/22/09

LEVEL-II SIGN / DATE日期: [Signature]

签字 SIGN / 日期 DATE  
(FORM# ZPQC-MT01)

用户 CUSTOMER: \_\_\_\_\_  
签字 SIGN / 日期 DATE: \_\_\_\_\_





# REPORT OF MAGNETIC PARTICLE EXAMINATION

## 磁粉检测报告

REPORT NO. 报告编号 B787-MT-17018R1      DATE日期 2010.01.24      PAGE OF页码 1/1      Revision No: 0

PROJECT NO. 工程编号: ZP06-787      CONTRACTOR: 用户: CALTRANS

DRAWING NO. 图号: SSD13      CALTRANS CONTRACT NO.: 加州工程编号 04-0120F4  
8BW FLOOR BEAM SPLICE

REFERENCING CODE 参考规范编码: AWS D1.5-2002      ACCEPTANCE STANDARD 接受标准: AWS D1.5-2002      PROCEDURE NO. 程序编号: ZPQC-MT-01      CALIBRATION DUE DATE 仪器校正有效期: Dec. 28<sup>ST</sup>, 2010

EQUIPMENT 设备: MT YOKE      MANUFACTURER 制造商: PARKER      MODEL NO. 样式编号: B310S      SERIAL NO. 连续编号: 5395 5617 5620

MAGNETIZING METHOD 磁化方法: Continuous magnetic yoke 磁轭式连续法      CURRENT 电流: AC

PARTICLE TYPE 磁粉类型: Dry magnet powder 干磁粉      YOKE SPACING 磁轭间距: 70~150mm

MATERIAL TO BE EXAMINED 检测材料:  WELDING 焊接件      Material & thickness 母材,厚度: A709M-345T2-X  
 CASTING 铸件      30/20mm  
 FORGING 锻造

WELDING PROCESS 焊接方法: SMAW      TYPE OF JOINT 焊缝类型: T-JOINT

WELD I.D. 焊缝编号	DISCONTINUITY 不连续性			ACCEPT 接受	REJECT 拒收	REMARKS 备注
	INDICATION 指示	TYPE 类型	LENGTH IN mm 长度			
SSD13-PP066-112	1R1			ACC.		

AFTER B-CWR1011

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EXAMINED BY 主探 Sun Gongchang <i>Sun Gongchang</i> 2010.01.24	REVIEWED BY 审核 <i>SU Wei</i> 2010.01.24
LEVEL - II SIGN 签名 / DATE 日期 质量经理 / QCM	LEVEL-II SIGN / DATE 日期 用户 CUSTOMER
签字 SIGN / 日期 DATE	签字 SIGN / 日期 DATE

**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 #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: xx.25A**QUALITY ASSURANCE -- NON-CONFORMANCE RESOLUTION****Location:** Changxing Island, Shanghai, P.R. China**Report No:** NCS-000500**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 03-Feb-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0526**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:** 21-Dec-2009**Description of Non-Conformance:**

During the Quality Assurance Magnetic Particle Testing (MT) review of welds located on OBG Segment 8BW, this Quality Assurance Inspector (QA) discovered the following issues:

-One (1) Transverse linear indication that measured to be a total of 15mm in length, in the fillet weld joining the FL2-2 floor beam (FB004-027) to bottom panel (BP95A-001) at panel point 66. The weld is designated as SSD13-PP66-112.

-The OBG Segment is located north of the blast shop.

The Notice of Witness Inspection Number (NWIT) is 004905. The indication is located inside the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel.

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

Repair indication and perform required NDT to verify the weld is in conformance with Contract specifications.

**Corrective action taken:**

The Contractor submitted records of a CWR along with the follow-up NDT reports verifying the repairs were made and the weld is in conformance with Contract specifications. The QCM has provided additional training to NDT technicians and purchased new equipment. An internal NCR was also issued.

**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 Jim Simonis 152. 1675.3703, who represents the Office of Structural Materials for your project.

**Inspected By:** Simonis, Jim

Quality Assurance Inspector

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# QUALITY ASSURANCE -- NON-CONFORMANCE RESOLUTION

( Continued Page 2 of 2 )

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**Reviewed By:** Wahbeh,Mazen

QA Reviewer