

**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-000166

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

**Date:** 17-Jul-2008

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

**NCR #:** ZPMC-0153

### Type of problem:

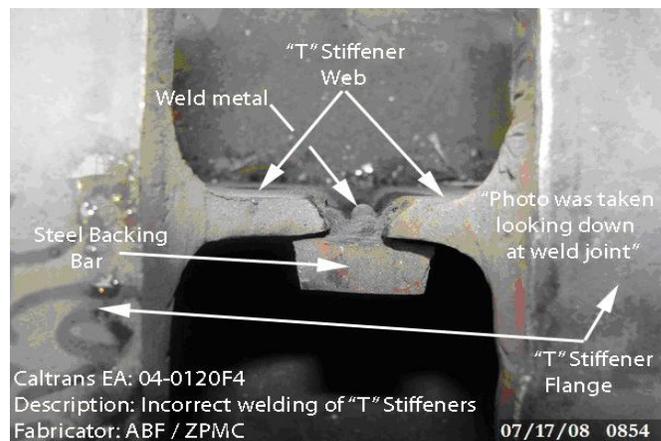
<b>Welding</b>	<b>Concrete</b>	<b>Other</b>	
<b>Welding</b>	<b>Curing</b>	<b>Procedural</b>	<b>Bridge No:</b> 34-0006
<b>Joint fit-up</b>	<b>Coating</b>	<b>Other</b>	<b>Component:</b> SEG 3AW
<b>Procedural</b>	<b>Procedural</b>	<b>Descriptor:</b>	OBG Segment Assembly Side Panel web splice SP069-0

**Reference Description:** Incorrect welding of T Stiffeners Splice Backing

### Description of Non-Conformance:

The Contractor performed welding that did not conform to approved working drawings and did not conform to workmanship requirements of the specifications. The Contractor performed welding with steel backing where it was not called out for in the approved weld detail. The Contractor performed welding that did not terminate in a manner to ensure sound welds. This was observed in the longitudinal T-stiffeners on side panel web splice SP069-001 of segment SEG 3AW.

Below are two digital photographs illustrating this discrepancy.



### Applicable reference:

Approved shop drawing Typical Weld Details, Sheet No. WD2, Weld Detail WD20AM

AWS D1.5, Sec. 3.12.1: "Welds shall be terminated at the end of a joint in a manner that will ensure sound welds."

**Who discovered the problem:** QA Inspector Greg Bertlesman

**Name of individual from Contractor notified:** ABFJV QC Inspector Peter Shaw

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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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**Time and method of notification:** 1100 Verbal notification.

**Name of Caltrans Engineer notified:** Ching Chao

**Time and method of notification:** Verbal notification at 10:00 on 07-18-2008

**QC Inspector's Name:** ZPMC QC Inspector C.M. Chen

**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 Abifhiram Velasco, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Velasco,Abifhiram	SMR
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<b>Reviewed By:</b>	Velasco,Abifhiram	SMR
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DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge  
666 Feng Bin Road Room 708, Changxing Island  
Shanghai 201913 PR China  
Tel: 021-56856666 ext 207061 Fax:

## NON-CONFORMANCE REPORT TRANSMITTAL

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

**Date:** 12-Aug-2008

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

**Dear:** Mr. Charles Kanapicki

**Job Name:** SAS Superstructure

**Attention:** Mr. Dave Williams Consultant

**Document No:** 05.03.06-000142

**Subject:** NCR No. ZPMC-0153

**Reference Description:** Incorrect welding of T Stiffeners Splice Backing

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:** 03

### Remarks:

The Contractor performed welding that did not conform to approved working drawings and did not conform to workmanship requirements of the specifications. The Contractor performed welding with steel backing where it was not called out for in the approved weld detail. The Contractor performed welding that did not terminate in a manner to ensure sound welds. This was observed in the longitudinal T-stiffeners on side panel web splice SP069-001 of segment SEG 3AW.

See attached NCR #ZPMC-0153 for details.

### Action Required and/or Action Taken:

Propose a resolution for the identified non-conformance with revised procedures to prevent future occurrences.

**Transmitted by:** Ching Chao

**Attachments:** ZPMC-0153

**cc:** Rick Morrow, Gary Pursell, Peter Siegenthaler, Stanley Ku, Brian Boal, Doug Coe, 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:** 05.03.06-000142  
**Subject:** NCR No. ZPMC-0153

**Dated:** 11-Sep-2008  
**Contract No.:** 04-0120F4  
04-SF-80-13.2 / 11  
**Job Name:** SAS Superstructure  
**Document No.:** ABF-NPR-000143R00

**Contractor's Proposed Resolution:**

**Reference Resolution:** ABF has instructed ZPMC to revise the Weld Detail if they anticipate this occurrence to repeat.

ZPMC used back-up bar to complete this joint due to the root gap being too large for a pin back-up bar weld. ZPMC then removed the backing bar and performed inspections as required for this weld joint. ABF has instructed ZPMC to revise the Weld Detail if they anticipate this occurrence to repeat.

**Submitted by:**

**Attachment(s):** ABF-NPR-000143R00

**Caltrans' comments:**

**Status:** AAP

**Date:** 01-Oct-2008

The response is acceptable, but the Non-conformance is not closed.

Please provide documentation of the weld inspections performed, and confirm that the associated shop drawings have been revised to show the as-built weld detail. The Department will review the Contractor's proposal to close Non-Conformance ZPMC-0153 at that time.

**Submitted by:** Wright, Doug

**Date:** 01-Oct-2008

**Attachment(s):**

## NCR PROPOSED RESOLUTION

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

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000142

**Subject:** NCR No. ZPMC-0153

**Dated:** 10-Dec-2008

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000143 Rev: 01

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**Contractor's Proposed Resolution:**

**Reference Resolution:** ZPMC requests closure of this NCR based on attached documentation.

Please see attached.

**Submitted by:**

**Attachment(s):** ABF-NPR-000143R01; docs to close this NCR

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**Caltrans' comments:**

**Status:** CLO

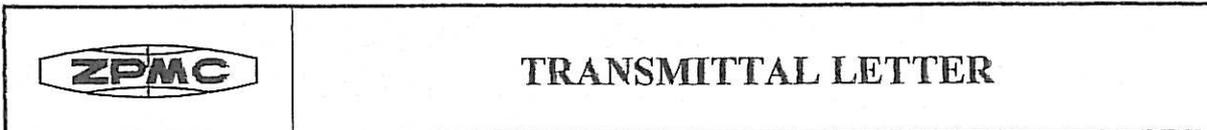
**Date:** 21-Dec-2008

The proposed resolution is acceptable. The welding repair report for the repair is included, and the welds in question have been accepted by VT and UT as shown in the attached documents. The Department concurs that Non-Conformance ZPMC-0153 is closed.

**Submitted by:** Wright, Doug

**Date:** 22-Dec-2008

**Attachment(s):**



PROJECT: SAN FRANCISCO OAKLAND BAY BRIDGE

DATE: 10/29/2008

TO: RUBY/ ABFJV QA DEPARTMENT

FROM: ZPMC QA DEPARTMENT

SUBJECT: NCR-000166 (ZPMC-153) FOR CLOSURE

SUBMITTED FOR YOUR APPROVAL.

ENCLOSED WITH THIS TRANSMITTAL IS ONE

- (1) COPY OF LETTER OF RESPONSE WITH NO.B-313 FOR CLOSURE.
- (2) COPY OF NCR WITH NUMBER NCR-000166(ZPMC-0153).
- (3) COPY OF WELDING REPAIR REPORT
- (4) COPY OF VT AND MT REPORTS FOR FINAL INSPECTION
- (5) COPY OF ZPMC INTERNAL NONCONFORMANCE REPORT

PLEASE SIGN THIS TRANSMITTAL AND RETURN TO ME.

ACKNOWLEDGEMENT:



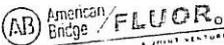
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PLAN HOLDER

RECEIVED 29 OCT 2008  
1307

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DATE



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COMPANY

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PHONE NO.

PLAN NUMBER: N/A  
#R787-QCP-102



No. B-313

## LETTER OF RESPONSE

**TO: American Bridge/Flour JV**

**DATE: 2008-10-29**

**REGARDING: NCR-000166 (ZPMC-0153)**

With this letter of response, ZPMC requests closure for Caltrans NCR-000166 (ZPMC-0153). We have instructed the workers that improve the technique for flame cutting and prevent this occurrence to repeat. In addition that the workers should confirm enough spare part of the stiffener for cutting the groove with the allowed root gap in the drawing.

On the other hand we should train the welder for workmanship to ensure sound welds. after removing the back-up bar we have performed inspection of VT and MT with the required of drawing and special prevision. The corresponding reports are attached with the response letter.

So ZPMC considers NCR-000193 can be closed and submits the application .

Please reference attached documentation for acceptance and closure the NCR-000166.

**ATTACHMENT:**

**NCR-000166 (ZPMC-0153)**

**Welding repair report**

**VT and MT reports for final inspection**

**ZPMC internal nonconformance report**

*Zhao Shuangbao*  
*2008.10.29*

*[Signature]*  
*ABF QCM*  
*10 DEC. 08*



# 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-098	
Item: incorrect welding of T stiffeners 名称描述: T 肋对接烧焊型式与图纸要求不符		Item Number: 件号: 底板 SP069	Drawing Number: 图号: 3AW
Location: assembly shop 位置: 后场拼装车间		Date: 日期: 2008-8-21	

**Description of Nonconformance:**  
不符合项状态描述:

The contractor performed welding that did not conform to approved working drawing and did not conform to workmanship requirements of the specifications. The contractor performed welding with steel backing where it was not called out for in the approved weld detail. The contractor performed welding that did not terminate in a manner to ensure sound welds. This was observed in the longitudinal T stiffeners on side panel web splice SP069-001 OF segment SEG 3AW.

ZPMC 在后场的焊接过程中没有按照图纸详图的要求进行烧焊, 该位置为 T 肋对接, 详图 WD20AM 显示应为反面气根的立焊, 而现在我们焊接过程中反面加装了钢衬垫, 并且上口成型很差, 部分区域没有焊材熔敷金属覆盖, 根本不能保证单边成型的完整。

Work By: Hui Gou Ling Prepared by: Wang W Reviewed by QCE: zhao shuangbao  
 施工方: 准备: 质量工程师批准: 2008.8.21

Drawing Error     Material Defect     Fabrication Error     Other  
 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 加强现场作业人员的监控与指导  
 Enhance supervision and guiding in-site;

Prepared by: zhang yan zhi                      Approved by QCA: \_\_\_\_\_  
 准备                      08.8.24                      质量经理批准

**Reason for Nonconformance:**  
 不符合原因: 施工队作业事未按图施工, 焊工焊接质量不到位。  
 Work Team didn't fabricate according to drawing, and weld skill wasn't adequately.

预防措施 加强现场作业人员的监控与指导, 加强焊工培训, 杜绝类似事件再次发生。  
 Enhance supervision and guiding in-site, and train welders to avoid this issue happen.

Approved by/批准: zhang yan zhi 08.8.24

**Technical Justification for Use-As-Is/Repair:**     Attachment                       Non-attachment  
 回用或返修的技术依据: 此份报告请保留附件                      无附件

处理: 焊道质量改善, 并加强对电焊工的技能培训  
 Repair weld according to B-WR331, and train welders to improve welder's skill to ensure sound welds.

Reviewed/批准: zheng bian hua 08-28/08

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: \_\_\_\_\_



DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge  
666 Feng Bin Road Room 708, Changxing Island  
Shanghai 201913 PR China  
Tel: 021-56856666 ext 207061 Fax:

## NON-CONFORMANCE REPORT TRANSMITTAL

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

Date: 12-Aug-2008

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

Dear: Mr. Charles Kanapicki  
Attention: Mr. Dave Williams Consultant

Job Name: SAS Superstructure

Subject: NCR No. ZPMC-0153

Document No: 05.03.06-000142

Reference Description: Incorrect welding of T Stiffeners Splice Backing

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: 03

### Remarks:

The Contractor performed welding that did not conform to approved working drawings and did not conform to workmanship requirements of the specifications. The Contractor performed welding with steel backing where it was not called out for in the approved weld detail. The Contractor performed welding that did not terminate in a manner to ensure sound welds. This was observed in the longitudinal T-stiffeners on side panel web splice SP069-001 of segment SEG 3AW.

See attached NCR #ZPMC-0153 for details.

### Action Required and/or Action Taken:

Propose a resolution for the identified non-conformance with revised procedures to prevent future occurrences.

Transmitted by: Ching Chao

Attachments: ZPMC-0153

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

File: 05.03:06

**DEPARTMENT OF TRANSPORTATION**  
 DIVISION OF ENGINEERING SERVICES  
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 (707) 649-5453  
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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-000166

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

**Date:** 17-Jul-2008

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

**NCR #:** ZPMC-0153

**Type of problem:**

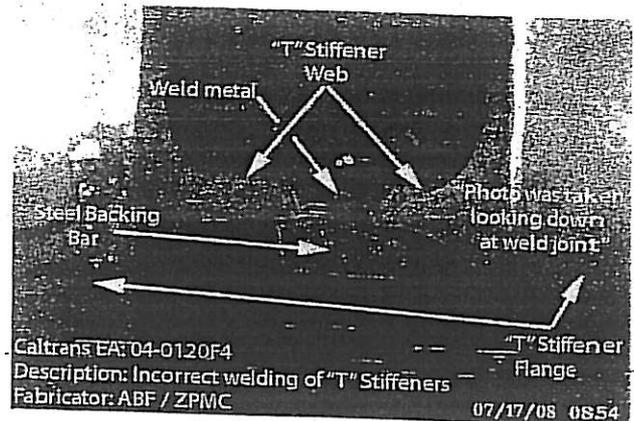
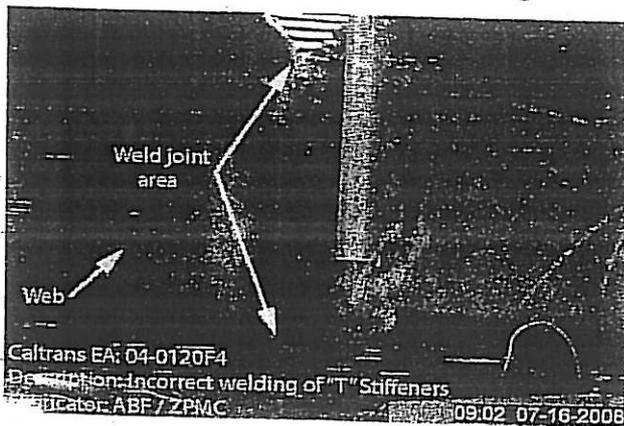
- Welding     Concrete     Other      
 Welding     Curing     Procedural     Bridge No: 34-0006  
 Joint fit-up     Coating     Other     Component: SEG 3AW  
 Procedural     Procedural     Descriptor: OBG Segment Assembly Side Panel web splice SP069-0

**Reference Description:** Incorrect welding of T Stiffeners Splice Backing

**Description of Non-Conformance:**

The Contractor performed welding that did not conform to approved working drawings and did not conform to workmanship requirements of the specifications. The Contractor performed welding with steel backing where it was not called out for in the approved weld detail. The Contractor performed welding that did not terminate in a manner to ensure sound welds. This was observed in the longitudinal T-stiffeners on side panel web splice SP069-001 of segment SEG 3AW.

Below are two digital photographs illustrating this discrepancy.



**Applicable reference:**

Approved shop drawing Typical Weld Details, Sheet No. WD2, Weld Detail WD20AM  
 AWS D1.5, Sec. 3.12.1: "Welds shall be terminated at the end of a joint in a manner that will ensure sound welds."

**Who discovered the problem:** QA Inspector Greg Bertlesman

**Name of individual from Contractor notified:** ABFJV QC Inspector Peter Shaw

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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

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( Continued Page 2 of 2 )

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**Time and method of notification:** 1100 Verbal notification.

**Name of Caltrans Engineer notified:** Ching Chao

**Time and method of notification:** Verbal notification at 10:00 on 07-18-2008

**QC Inspector's Name:** ZPMC QC Inspector C.M. Chen

**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 Abifhiram Velasco, who represents the Office of Structural Materials for your project.

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**Inspected By:** Velasco,Abifhiram

SMR

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**Reviewed By:** Velasco,Abifhiram

SMR



# 焊缝返修报告

版本 Rev. No.

## Welding Repair Report

0

项目名称 Project Name	美国海湾大桥 SFOBB	部件图号 Drawing No	SEG13A	报告编号 Report No.	B-WR535
合同号 Contract No.:	04-0120F4	部件名称 Items Name	PLATE PANEL SPLICE	NDT报告编号 Report No.of NDT	
项目编号 Project No.:	ZP06-787				

### 焊缝缺陷描述:

#### Description of welding discontinuity:

检查发现西线3A节段底板单元SP45B、SP57B、SP69B上T型钢对接缝间隙为10-12mm。焊缝编号分别为SP045-001-051\052\053\054\055\056\057, SP057-001-064, SP069-001-056.

The butt gap of T rib of the 3AW segment bottom SP45B, SP57B and SP69B is 10-12 mm. The weld no. is SP045-001-051/052/053/054/055/056/057, SP057-001-064, SP069-001-056.

检验员 (Inspector):

*Shen Fuyou*

Shen Fuyou

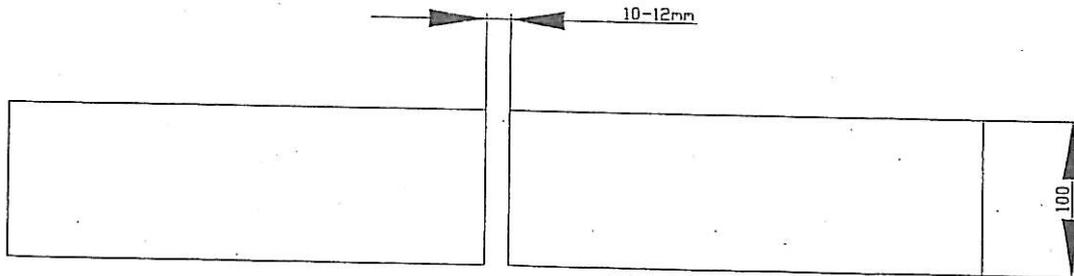
日期(Date):

*08.07.05*

08.07.05

### 焊缝返修位置示意图:

#### Draft of welding discontinuity:



产生原因:

Caused:

余量修割时冷作工误操作造成T型钢对接缝间隙超标

The operator performed mistakenly when cutting the tolerance, leading to the butt gap between T-ribs over the requirement.

车间负责人(Foreman): *Li Dong Liang*  
LI Dong Liang

*2008-7-6*  
日期(Date):2008-7-6

处理意见

Disposition:

1. 根据批准的焊接工艺规程WPS准备坡口形式;
2. 做100%VT和MT检测确保缺陷被去除;
3. 在坡口对侧加钢衬垫, 具体参见AWS D1.5.3.13;
4. 根据批准的焊接工艺规程WPS进行预热及焊接;
5. 焊后去除钢衬垫, 将焊缝打磨至与母材平齐;
6. 根据图纸要求进行检测。

1. Prepare excavation with relevant WPS.
2. VT and MT to verify repair area is free of all defects.
3. Add steel backing at the back of groove according to AWS D1.5.3.13;
4. Preheat and weld according to the relevant WPS.
5. Gouge off the steel backing and grind the weld flush with base metal after welding;
6. Perform NDT inspection of the weld according to the working drawings.

工艺: *Ni...*  
Technical engineer

审核: *Huliang*  
Approved by

日期 *2008-7-6*  
Date



# 焊缝返修报告

版本 Rev. No.

## Welding Repair Report

0

项目名称 Project Name	美国海湾大桥 SFOBB	部件图号 Drawing No.	SEG13A	报告编号 Report No.	B-WR535
合同号 Contract No.:	04-0120F4	部件名称 Items Name	PLATE PANEL SPLICE	NDT报告编号 Report No.of NDT	
项目编号 Project No.:	ZP06-787				

纠正措施:

Correction action to prevent re occurrence:

1. 对施工队批评指导
  2. 余量线划出时建议检验员确认后再进行修割
  3. 加强现场监控
- 1, Criticize and supervise the fabrication team.
  - 2, Perform cutting after the tolerance line is confirmed by the inspector.
  - 3, Enhance the monitoring on site.

车间负责人(Foreman): LI Dong Liang

日期(Date): 2008-7-6

参照的WPS编号 Repair WPS No.	WPS-B-P-2213-B-U2a-1 WPS-B-T-2233-B-U2a-F-1	工艺员 technologist	Ma Jiefeng
返修(碳刨)前预热温度 Preheat temperature before gouging	NA	返修的缺陷 Description of discontinuity	NA
焊前处理检查 Inspection before welding	Acc	焊前预热温度 Preheat temperature before welding	870
最大碳刨深度 Max. depth of gouging	NA	碳刨总长 Total length of gouging	NA
焊工 welder	Li Jun 05/348	焊接类型 welding type	SMAW
焊接电流 Current	175	焊接电压 Voltage	24
		焊接位置 position.	3G
		焊接速度 Speed	105mm/min

返修后检查  
Inspection After repairing:

外观检查 VT result	Acc	检验员 Inspector	B.L. Zhang 0712-37511	日期 Date	July. 6. 2008
NDT复检 NDT-result	Acc	探伤员 NDT person	Ma Jiefeng	日期 Date	2008-10-11

见证:  
Witness/Review:备注:  
Remark:

#R787-QCP-900

B-V180081



周数	4-9
日期	2008-10-11

Visual Weld Inspection Report 焊缝目视检查报告	Girder/梁: Tower/塔:	OBG Plate Panel Splice
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Caltrans Contract No. 合同编号	加州	04-0120F4
Project No.: 称	项目名称	San Francisco Oakland Bay Bridge 美国海湾大桥

Project No.: 号:	项目编号	ZP06-787
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Weld No. 编号	Welder I.D.# 焊工识别号	Location 位置	Welding consumables 焊接材料	Undercut 咬边	Porosity 气孔	Overlap 焊瘤	Crater 弧坑	Arc strike 电弧擦伤	Spatter 飞溅	Crack 裂纹	Accept or Reject 接受或拒收	Repair 返修	Accept after repair 返修后接受或拒收
SP045-001-051	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA
SP045-001-052	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA
SP045-001-053	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA
SP045-001-054	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA
SP045-001-055	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA
SP045-001-056	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA
SP045-001-057	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA
SP057-001-064	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA
SP069-001-056	051348	3G	71H(Ø1.4)	✓	✓	✓	✓	✓	✓	✓	ACC	NA	NA

After root weld.  
 After CWR or WRR No.: B-WR535  
 After cover pass  
 After HSR No.:  Others

#R787-QCP-603

"✓" is no defects. "X" is defects. "NA" is not applicable.



# REPORT OF ULTRASONIC EXAMINATION

## UT探伤报告

REPORT NO. 报告编号 B787-UT-2577      DATE 2008.10.11      PAGE 1 OF 2      Revision No: 0

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

ITEMS NAME: OBG PLATE PANEL      DRAWING NO.: SP45B+SP57B      CALTRANS CONTRACT NO.: 04-0120F4  
 部件名称 SPLICE      图号 +SP69B      加州工程编号

REFERENCING CODE 参考规范      ACCEPTANCE STANDARD 接受标准      PROCEDURE NO. 程序编号  
 AWS D1.5-2002      AWS D1.5-2002(Table 6.3)      ZPQC-UT-01

WELDING PROCESS 焊接方法      JOINT TYPE 焊缝类型      CALIBRATION DUE DATE 仪器校正有效期  
 FCAW      BUTT      Dec. 28<sup>ST</sup>, 2008

EQUIPMENT 设备      MANUFACTURER 制造商      MODEL NO. 样式编号      SERIAL NO. 序列编号  
 UT SCOPE      PANAMETRICS      EPOCH-4B      071565311,061488510,  
 061495811, 070152011,

LIBRATION BLOCK 试块      COUPLANT 耦合剂      MATERIAL/THICKNESS 材料厚度  
 AWS IIW BLOCK TYPE II      C.M.C      GR50      8 mm

### TRANSDUCER 探头

MANUFACTURER 制造商	ANGLE 角度	FREQUENCY 频率	SIZE 尺寸	MANUFACTURER 制造商	ANGLE 角度	FREQUENCY 频率	SIZE 尺寸
Changchao	70 °	2.5 MHz	18x18 mm				
Changchao	0 °	2.5 MHz	20 mm	Reference Level 参考灵敏度			20dB

Base metal inspected per AWS D1.5-2002 Section 6.19.5      0 ° UT OK.

WELD IDENTIFICATION 焊缝部件编号	INDICATION NO. 指示号	PROBE ANGLE 探测角度	FROM FACE 检测面	LEG (次数)	DECIBELS 分贝				DISCONTINUITY 不连续性					Discontinuity Evaluation 缺陷估计	Remark 备注	
					Indication Level	Reference Level	Attenuation Factor	Indication Rating	LOCATION OF DISCONTINUITY 不连续位置(mm)							
									a	b	c	d	Length 长度			Sound Path 声程
SP045-001-051		70				33									ACC.	B-WR535
SP045-001-052		70				33									ACC.	B-WR535
SP045-001-053		70				33									ACC.	B-WR535
SP045-001-054		70				33									ACC.	B-WR535
SP045-001-055		70				33									ACC.	B-WR535
SP045-001-056		70				33									ACC.	B-WR535
SP045-001-057		70				33									ACC.	B-WR535

EXAMINED BY 主探      REVIEWED BY 审核:  
 Ma Jizhong 2008.10.11      Xuellaizong 2008.10.11  
 LEVEL - II SIGN      DATE      LEVEL - II SIGN      DATE

质量经理 / QCM      用户 CUSTOMER  
 签字 SIGN / 日期 DATE 2008.10.15      签字 SIGN / 日期 DATE





焊接工艺规程 B\*  
WELDING PROCEDURE SPECIFICATION

编号 No.  
WPS-B-T-2233-B-U2a-F-1  
有效期 Period of validity  
FCM :2007.1~2010.1  
NON-FCM :2007.1~2012.1

母材技术条件 (Material specification) ASTM A.709M Gr.345F2  
 焊接方法 (Welding process) 药芯焊丝 CO2 气体保护焊(FCAW)  
 手工或机械 (Manual or machine or semi-auto) 半自动(Semi-auto)  
 焊接位置 (Position of welding) 立焊(3G)  
 填充金属技术条件 (Filler metal specification) AWS A5.20  
 填充金属级别 (Filler metal classification) E71T-1  
 填充金属牌号 (Filler metal brand) Supercored 71H (Φ1.4)  
 焊剂 (Flux) N/A  
 保护气体 (Shielding gas) 100%CO2 流率 (Flow rate) 18~25L/min  
 单焊道或多焊道 (Single or multiple pass) 多道(Multiple Pass)  
 单弧或多弧 (Single or multiple arc) 单弧( Single arc)  
 焊接电流 (Welding current) 直流(DC) 极性 (Polarity) 反接(EP)  
 焊丝伸出长度 (Electrode extension) 20mm  
 焊接方向 (Welding progression) 向上立焊 (Vertical-up direction)  
 根部处理 (Root treatment) 钢衬垫(Steel Backing)  
 最低预热和道间温度 (Preheat and interpass temperature Min)  
非断裂危险(NON-FCM) 10°C [T≤20mm] 20°C [20mm<T≤40mm] 65°C [40mm<T≤60mm] 110°C [60mm<T]  
断裂危险(FCM) 40°C [T≤20mm] 65°C [20mm<T≤40mm] 100°C [40mm<T≤60mm] 140°C [60mm<T]  
 最高预热和道间温度 (Preheat and interpass temperature Max) 230°C  
 后热温度(Postheat temperature) N/A  
 热输入 (线能量) (Heat input) 最小(Min) 1.94KJ/mm 最大(Max) 3.05KJ/mm

焊接工艺  
(Welding procedure)

This document is: APPROVED  
State of California  
DEPARTMENT OF TRANSPORTATION  
Pursuant Section 5-1.02 of the  
Standard Specifications  
Initial SLC Date: 12/10/07

焊道序号 Pass No.	焊条(丝)规格 Electrode Size (mm)	焊接电流 Welding Current		焊接速度 Travel Speed (mm/min)	接头详图 Joint Detail
		安培 Amp(s)	伏 特 Volts		
1~n	1.4	182.6~223.2	23.9~27.5	101.6~124.2	T=3~∞mm R=5(+6, -2) α=30° (+10°, -5°) R=10(+6, -2) α=30° (+10°, -5°) R=6(+6, -2) α=45° (+10°, -5°)
选定适用的电流、电压后在 WPS 焊接参数选用表中查到焊接速度范围。 Refer to WPS parameters table to determine operating parameter to stay within the heat input limit.					

该工艺可以因制造工序、装配、焊道尺寸等而变化, 但应在 AASHTO/AWS D1.5 第 5 章给出的变量限值之内。  
(This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variable given in section 5.)

修订号(Revision No.) 0

工艺评定记录编号(PQR No.) HP2006118

批准(Authorized by) [Signature]

日期(Date) 2007.11.21

\* 本 WPS 符合 AASHTO/AWS D1.5 2002, 用于桥梁结构。

(This WPS is conformable with the current edition of AASHTO/AWS D1.5 2002, used for BRIDGE structure.)

**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, PRC**Report No:** NCS-000159**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 03-Jan-2009**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0153**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:** 17-Jul-2008**Description of Non-Conformance:**

The Contractor performed welding that did not conform to approved working drawings and did not conform to workmanship requirements of the specifications. The Contractor performed welding with steel backing where it was not called out for in the approved weld detail. The Contractor performed welding that did not terminate in a manner to ensure sound welds. This was observed in the longitudinal T-stiffeners on side panel web splice SP069-001 of segment SEG 3AW.

Below are two digital photographs illustrating this discrepancy.

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

Ref: NCR-000166 (ZPMC-0153)

**Corrective action taken:**

Weld has been repaired per WWR B-WR535. Repair is acceptable as indicated by NDT results.

**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 Eric Tsang, +(86) 150.0042.2372, who represents the Office of Structural Materials for your project.

**Inspected By:** Tsang, Eric

Quality Assurance Inspector

**Reviewed By:** Wahbeh, Mazen

QA Reviewer