

**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-000772

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

**Date:** 22-Jun-2010

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

**NCR #:** ZPMC-0734

### 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> Crossbeam 9 Side and Bottom Panel
<b>Procedural</b>	<b>Procedural</b>	<b>Description:</b>	

**Reference Description:** ZPMC performed weld removal of two SPCM welds without prior Engineer's approval or an approved CWR

### Description of Non-Conformance:

During Quality Assurance (QA) random in-process observations of the fabrication of Cross Beam CB9, this QA Inspector discovered the following issue:

-ZPMC performed 3rd time excavation of Seismic Performance Critical Material (SPCM) welds identified as CB202A-009-018 & 006 without prior Engineer's approval or an approved Critical Weld Repair for this 3rd time repair.

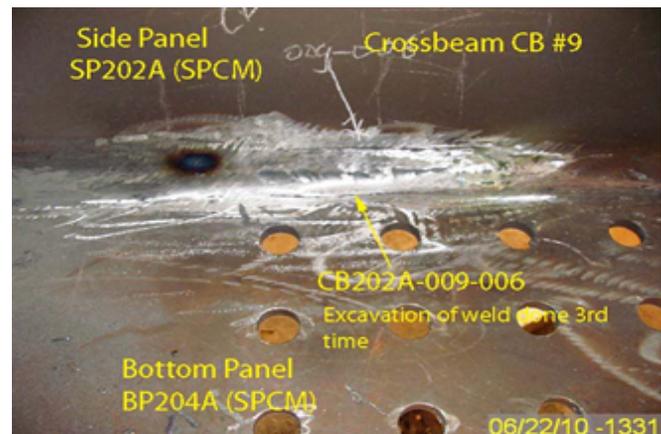
-The welds are Complete Joint Penetration (CJP) joining the SPCM bottom panels to the SPCM side panels.

-The affected panels are identified as bottom panels BP205A and BP204A, Side panels SP202A and SP205A. All are identified as SPCM.

-These welds were previously removed and re-welded on 06/08/10 and 06/14/10 for the purpose of aligning the bottom panel of the crossbeam to the FL3 bottom panel of Orthotropic Box Girder (OBG) Segment 8AE.

-Welds are being excavated and welded today (6/22/10) for the repair of the rejectable Ultrasonic Testing (UT) indications discovered by ZPMC QC UT technicians.

-Cross Beam 9 (CB9) is located in Bay 16.



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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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**Applicable reference:**

AWS D1.5 Section 12.17.4 Approval. All critical repairs to base metal and welds shall be approved by the Engineer prior to beginning the repair and shall be documented giving details of the type of discontinuity and extent of repair.

Special provisions- Section 8-3.01: In addition to the provisions in AWS D1.5, Section 3.7.4 and Section 12.17, third-time repairs of welds or base metal, regardless of NDT method, and all repairs of cracks require prior approval of the Engineer.

**Who discovered the problem:** Dhanasingh Sukanthan

**Name of individual from Contractor notified:** Yang Yu

**Time and method of notification:** 13:30 hours\_6/22/10\_Verbal

**Name of Caltrans Engineer notified:** Sean Eagen

**Time and method of notification:** 07:30 hours\_6/23/10\_Email

**QC Inspector's Name:** Wang Lu

**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 Jim Devey, (86) 150-0002-6784, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Tsang, Eric	SMR
<b>Reviewed By:</b>	Devey, Jim	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:** 24-Jun-2010

**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:** 05.03.06-000730

**Subject:** NCR No. ZPMC-0734

**Reference Description:** ZPMC performed weld removal of two SPCM welds without prior Engineer’s approval or an approved CWR

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:** Xbeam **Lift:** 08

**Remarks:**

- During Quality Assurance (QA) random in-process observations of the fabrication of Cross Beam CB9, this QA Inspector discovered the following issue:
- ZPMC performed 3rd time excavation of Seismic Performance Critical Material (SPCM) welds identified as CB202A-009-018 & 006 without prior Engineer’s approval or an approved Critical Weld Repair for this 3rd time repair.
  - The welds are Complete Joint Penetration (CJP) joining the SPCM bottom panels to the SPCM side panels.
  - The affected panels are identified as bottom panels BP205A and BP204A, Side panels SP202A and SP205A. All are identified as SPCM.
  - These welds were previously removed and re-welded on 06/08/10 and 06/14/10 for the purpose of aligning the bottom panel of the crossbeam to the FL3 bottom panel of Orthotropic Box Girder (OBG) Segment 8AE.
  - Welds are being excavated and welded today (6/22/10) for the repair of the rejectable Ultrasonic Testing (UT) indications discovered by ZPMC QC UT technicians.
  - Cross Beam 9 (CB9) is located in Bay 16.

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

Propose a resolution for the identified non-conformance with revised procedures to prevent future occurrences. A response for the resolution of this issue is expected within 7 days.

**Transmitted by:** Sean Eagen Transportation Engineer

**Attachments:** ZPMC-0734

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

## NCR PROPOSED RESOLUTION

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

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000730

**Subject:** NCR No. ZPMC-0734

**Dated:** 08-Jul-2010

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000723 Rev: 00

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**Contractor's Proposed Resolution:**

**Reference Resolution:** See ZPMC's attached response.

See ZPMC's attached response.

**Submitted by:** Ishibashi, Joshua

**Attachment(s):** ABF-NPR-000723R00;

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**Caltrans' comments:**

**Status:** CLO

**Date:** 13-Jul-2010

This corrective action and preventive measures taken by the Contractor are acceptable. The Department concurs that Non-Conformance ZPMC-0734 is closed.

**Submitted by:** Woo, Laraine

**Date:** 13-Jul-2010

**Attachment(s):**



No. B-817

## LETTER OF RESPONSE

**TO: American Bridge/Flour**

**DATE: 2010-7-8**

**REGARDING: NCR-000772(ZPMC-0734)**

ZPMC has written an internal NCR to address the requirement of CWR prior to start the welding repair. ABFJV QCM has met with ZPMC's QA manager to discuss this issue and has emphasized the requirement to the quality department. Refresh training has been performed to all the CWIs. ZPMC is providing the CWR & NDT records show the welds in question are acceptable. Based on this, ZPMC is requesting closure of this NCR.

**ATTACHMENT:**

N CR-000772(ZPMC-0734)

B-CWR1639

B787-MT-24689

B787-UT-13733

*Log w*  
*7/8/10*



**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:

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Office of Structural Materials

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## Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.25B**QUALITY ASSURANCE -- NON-CONFORMANCE REPORT****Location:** Changxing Island, Shanghai, P.R. China**Report No:** NCR-000772**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 22-Jun-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island**NCR #:** ZPMC-0734**Type of problem:**Welding  Concrete  Other Welding  Curing  Procedural Joint fit-up  Coating  Other Procedural  Procedural  Description:**Bridge No:** 34-0006**Component:** Crossbeam 9 Side and Bottom Panel**Reference Description:** ZPMC performed weld removal of two SPCM welds without prior Engineer's approval or an approved CWR**Description of Non-Conformance:**

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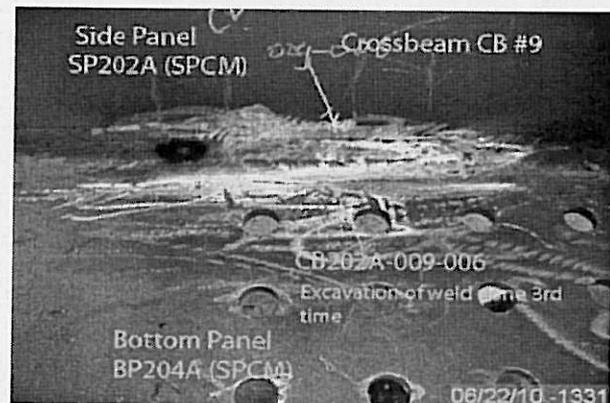
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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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**QC Inspector's Name:** Wang Lu

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

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N/A

**Comments:**

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**Inspected By:** Tsang, Eric

SMR

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**Reviewed By:** Devey, Jim

SMR



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.:	SEG44 CB9	报告编号 Report No.:	B-CWR1639
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	底板 Bottom plate	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:

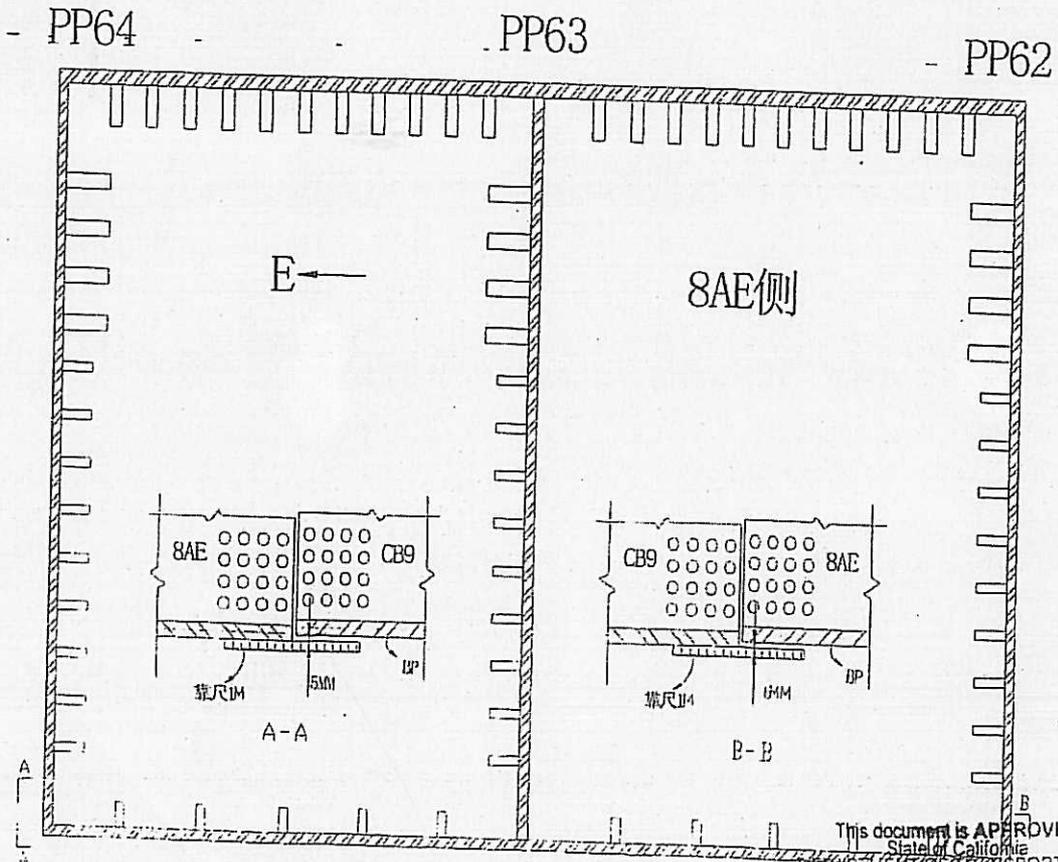
经检查发现,8AE+CB9两拐角处(PP62,PP64)经B-WR13530返修后,底板仍存在错边,具体位置及数据见下图,再次碳刨后,发现局部间隙达到7-8MM,涉及焊缝:CB202A-009-018/006

After inspection: the misalignment was found at 8AE and CB9 at PP62,PP64 after repair according to B-WR13530, the detail position and data sees the following draft, the gap was 7-8 mm after gouging, relevant weld ID: CB202A-009-018/006

检验员 (Inspector): LIJIA 日期(Date): 2010-06-14

焊缝返修位置示意图:

Draft of Welding Discontinuity:



This document is APPROVED  
State of California  
DEPARTMENT OF TRANSPORTATION  
Pursuant to Section 5-1-92 of the  
Standard Specifications  
Date: 6/17/10

产生原因:

Cause:

1. 焊接变形和制作误差;
  2. 工人操作失误, 导致母材损伤.
1. Weld distortion and fabricate error;
  2. Worker operated error caused base metal gouged.

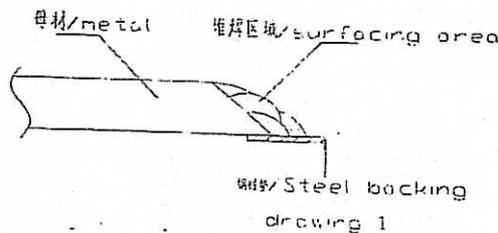
车间负责人 (Foreman):

日期 (Date):

处理意见

Disposition:

1. QC和CWI在整个修补过程中都应在场并指导以确保返修按照处理意见以及AWS D1.5要求进行;
2. 准备一个正确的接头形式, 具体参见返修的WPS. 并按照图一所示加钢衬垫;
3. 在NDT检测前口头通知QA. 对返修区域作100%VT检查;
4. 如果发现缺陷, 通过打磨的方法去除所有缺陷以确认缺陷完全被清除, 并重复第三步以确认缺陷完全被清除;
5. 根据批准的焊接返修工艺规程 (WPS) 进行预热及焊接, 使其间隙满足要求;
6. 焊后去除钢衬垫并将焊接区域打磨至与母材平齐;
7. 在NDT检测前口头通知QA. 对返修区域作NDT检查(UT,MT和VT);



1. QC and CWI should be present to witness the repair, direct and supervise all repair operations during this repair to ensure the repair is per the disposition requirements, and the AWS D1.5 code requirements.
2. Prepare the joint according to the approved WPS and add steel backing according to the attached drawing 1.
3. Notify QA verbally prior to NDT. Perform 100%VT of the repair area.
4. Remove all defects by grinding to ensure all defects are completely removed if defects exist, and repeat "step 3" to assure complete removal of all defects if necessary.
5. Preheat and weld according to the approved WPS to ensure the gap meet requirement.
6. Remove steel backing after welding and grind the weld flush.
7. Notify QA verbally prior NDT. Perform relevant NDT (UT, MT and VT) to the repair area.

工艺:

Technical Engineer:

审核:

Approved By:

日期:

Date:

This document is APPROVED  
 State of California  
 DEPARTMENT OF TRANSPORTATION  
 Pursuant to Section 5-102 of the  
 Standard Specifications  
 Initial *[Signature]* Date 6/22/10

#R787-QCP-701



# 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.:	SEG44 CB9	报告编号 Report No.:	B-CWR1639
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	底板 Bottom plate	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. 加强焊接过程中的监控, 减少误差;
  2. 培训和教育操作工, 提高操作水平.
1. Enhance supervision in process of welding to reduce error;
  2. Train and educate operator to improve operation skill.

车间负责人 (Foreman):

日期 (Date):

参照的WPS编号 Repair WPS No.:	WPS-345-SMAW-1 G(1F)-FCM-Repair	工艺员 Technologist:	
返修(碳刨)前预热温度 Preheat Temperature Before Gouging:	85°C	返修的缺陷 Description of Discontinuity:	夹杂
焊前处理检查 Inspection Before Welding:	VT-Acc	焊前预热温度 Preheat Temperature Before Welding:	175°C
最大碳刨深度 Max. Depth of Gouge:	NA	碳刨总长 Total Length of Gouge:	NA
焊工 Welder:	037840	焊接类型 Welding Type:	SMAW
焊接电流 Current:	165	焊接电压 Voltage:	26.5
		焊接位置 Position:	2G. XF
		焊接速度 Speed:	117

返修后检查  
Inspection After Repair:

外观检查 VT Result:	Acc	检验员 Inspector:	[Signature]	日期 Date:	2010-7-24
NDT复检 NDT Result:	UT Acc	探伤员 NDT Person:	[Signature]	日期 Date:	2010-7-24
见证: Witness/Review:			[Signature]		2010-7-24

备注:  
Remark:

#R787-QCP-701

This document is APPROVED  
State of California  
DEPARTMENT OF TRANSPORTATION  
Section 5-1.02 of the  
Standard Specifications  
Date 6/22/10



# REPORT OF MAGNETIC PARTICLE EXAMINATION

## 磁粉检测报告

REPORT NO. 报告编号 B787-MT-24689      DATE日期 2010.07.04      PAGE OF页码 1/1      Revision No: 0

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

DRAWING NO.      CB9      CALTRANS CONTRACT NO.:      04-0120F4  
 图号:      CORNER ASSEMBLY      加州工程编号

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

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

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

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

MATERIAL TO BE EXAMINED      √ WELDING 焊接件      Material & thickness      A709M-345F2-X  
 检测材料       CASTING 铸件      母材,厚度      12/14mm  
     FORGING 锻造

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

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			
CB202A-009-018				ACC.		100%MT
CB202A-009-006				ACC.		100%MT

AFTER B-CWR1639

BLANK

EXAMINED BY主探 Fu Zhiqiang <i>Fu Zhiqiang</i> LEVEL - II SIGN 签名      DATE日期 10.07.04 质量经理 / QCM	REVIEWED BY 审核 <i>Wang Mei</i> LEVEL-II SIGN      /      DATE日期 10.07.04 用户CUSTOMER
签字 SIGN / 日期 DATE	签字 SIGN / 日期 DATE



# REPORT OF ULTRASONIC EXAMINATION

## UT探伤报告

REPORT NO. 报告编号 B787-UT-13733      DATE 2010.07.04      PAGE 1 OF 1      Revision No: 0

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

ITEMS NAME: CROSS BEAM      DRAWING NO.: CB202A      CALTRANS CONTRACT NO.: 04-0120F4  
 部件名称      图号      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  
 SMAW      T-JOINT      Dec. 28<sup>ST</sup>, 2010

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,

CALIBRATION BLOCK 试块      COUPLANT 耦合剂      MATERIAL/THICKNESS 材料厚度  
 AWS IIV BLOCK TYPE II      C.M.C      A709M-345F2-X      12/14mm

### 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°	2.5MHz	18×18mm				
Changchao	0°	2.5MHz	20mm	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	Depth from Surface 距表面深度	From'X 距X	From'Y 距Y		
CB202A-009-018		70												ACC.	100%
CB202A-009-006		70												ACC.	100%

AFTER B-CWR1639

BLANK


EXAMINED BY 主探 Tang xing shan 2010.07.04      REVIEWED BY 审核 Xu Yong gang 2010.07.04

LEVEL - II SIGN / DATE      LEVEL - II SIGN / DATE

质量经理 / QCM      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-000725**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 13-Jul-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0734**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:** 22-Jun-2010**Description of Non-Conformance:**

During Quality Assurance (QA) random in-process observations of the fabrication of Cross Beam CB9, this QA Inspector discovered the following issue:

-ZPMC performed 3rd time excavation of Seismic Performance Critical Material (SPCM) welds identified as CB202A-009-018 & 006 without prior Engineer's approval or an approved Critical Weld Repair for this 3rd time repair.

-The welds are Complete Joint Penetration (CJP) joining the SPCM bottom panels to the SPCM side panels.

-The affected panels are identified as bottom panels BP205A and BP204A, Side panels SP202A and SP205A. All are identified as SPCM.

-These welds were previously removed and re-welded on 06/08/10 and 06/14/10 for the purpose of aligning the bottom panel of the crossbeam to the FL3 bottom panel of Orthotropic Box Girder (OBG) Segment 8AE.

-Welds are being excavated and welded today (6/22/10) for the repair of the rejectable Ultrasonic Testing (UT) indications discovered by ZPMC QC UT technicians.

-Cross Beam 9 (CB9) is located in Bay 16.

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

Submit CWR for approval detailing methods used during repair work and reiterate the importance of following Contract requirements when performing repair work to QC.

**Corrective action taken:**

The Department accepted CWR detailing methods used to perform repair work, and the Contractor has supplied NDT reports verifying the repairs in question conform with Contract weld quality requirements. An internal NCR was also issued by the Contractor in regards to this issue.

**Did corrective action require Engineer's approval?** Yes No**If so, name of Engineer providing approval:****Date:****Is Engineer's approval attached?**

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## QUALITY ASSURANCE -- NON-CONFORMANCE RESOLUTION

( Continued Page 2 of 2 )

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

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<b>Inspected By:</b>	Simonis,Jim	Quality Assurance Inspector
<b>Reviewed By:</b>	Wahbeh,Mazen	QA Reviewer

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