

**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, China

**Report No:** NCR-000871

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

**Date:** 25-Oct-2010

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

**NCR #:** ZPMC-0833

### 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> CB18 Stiffeners (Multiple locations)
<b>Procedural</b>	<b>Procedural</b>	<b>Description:</b>	

**Reference Description:** Excessive Root Gap on Fillet Welds

### Description of Non-Conformance:

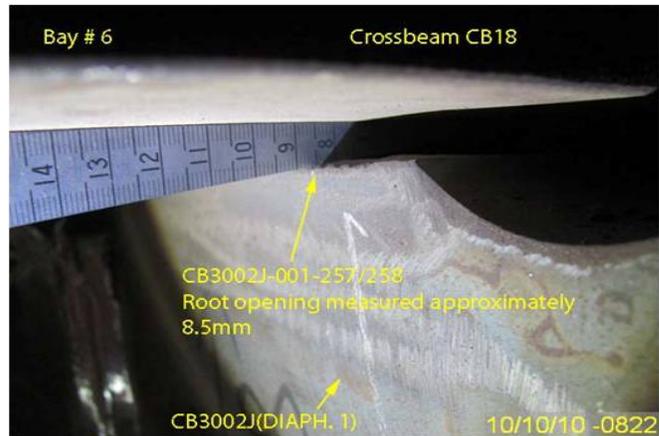
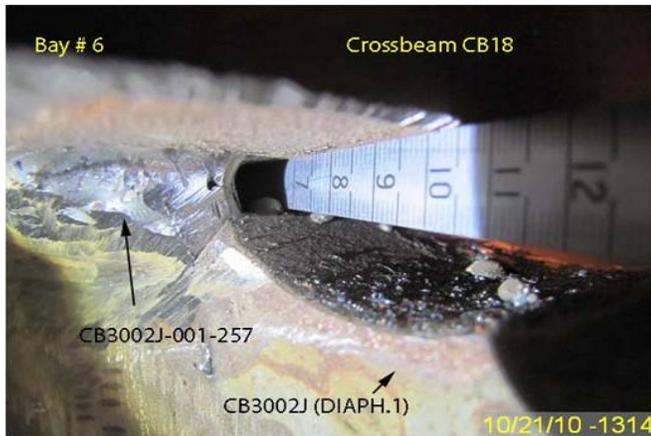
During the Caltrans Quality Assurance in-process observations of the fabrication of Crossbeam CB18, this Quality Assurance Inspector (QA) discovered the following issues:

- ZPMC personnel performed the Flux Cored Arc Welding process on fillet welds, which the root opening exceeded the maximum tolerance specified in the Welding Procedure Specification (WPS) and welding code.
- WPS # WPS-B-T-2134 and AWS D1.5 2002 specifies a root opening maximum of 5mm.
- The root openings on twenty six (26) welded joints were measured between 8.5mm and 10mm.
- The affected welds are identified as CB3002J-001- welds 253, 254, 257, 258, 261, 262, 075 and 076. CB3002J-002- welds 251, 252, 259, 260, 073 and 074. CB3002K-003- welds 251, 252, 255, 256, 167 and 168. CB3002K-004- Welds 251, 252, 255, 256, 073 and 074.
- These fillet welds join the Intermediate Web Panel-1 (CB3002E) Stiffener to the Longitudinal Diaphragm-1 Sub Assembly identified as CB3002J-001.
- This Crossbeam CB18 is located in Sub Assembly Bay #6.



# QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )



## Applicable reference:

Approved WPS # WPS-B-T-2134 specifies maximum root opening 0 to 5mm.

AWS D1.5 2002 section 3.3.1: "The part to be joined by fillet welds shall be brought into as close contact as practicable. The root opening shall not exceed 5mm."

Special Provisions 8-3 Welding; "The QC inspector shall inspect and approve each joint preparation, assembly practice, welding technique, joint fit-up and the performance of each welder, welding operator and tack welder to make certain that the applicable requirements of the code and the approved WPS are met. The QC inspector shall examine the work to make certain that it meets the requirements of section 3 and 6.26.

**Who discovered the problem:** D.Sukanthan

**Name of individual from Contractor notified:** Mr. Luo Lai Quan

**Time and method of notification:** 14:00 hours, 10-25-2010, Verbal

**Name of Caltrans Engineer notified:** Laraine Woo

**Time and method of notification:** 1600 hours, 10-25-10, Email

**QC Inspector's Name:** Mr. Huang Min

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

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

NA

## 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,(818) 292-0659, who represents the Office of Structural Materials for your project.

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**Inspected By:** Devey,Jim SMR

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**Reviewed By:** Wahbeh,Mazen SMR



**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:** 26-Oct-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:** 05.03.06-000829

**Subject:** NCR No. ZPMC-0833

**Reference Description:** Excessive Root Gap on Fillet 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:** Xbeam **Lift:**

**Remarks:**

During the Caltrans Quality Assurance in-process observations of the fabrication of Crossbeam CB18, Caltrans Quality Assurance Inspector (QA) discovered the following issues:

- ZPMC personnel performed the Flux Cored Arc Welding process on fillet welds, which the root opening exceeded the maximum tolerance specified in the Welding Procedure Specification (WPS) and welding code.
- WPS # WPS-B-T-2134 and AWS D1.5 2002 specifies a root opening maximum of 5mm.
- The root openings on twenty six (26) welded joints were measured between 8.5mm and 10mm.
- The affected welds are identified as CB3002J-001- welds 253, 254, 257, 258, 261, 262, 075 and 076. CB3002J-002- welds 251, 252, 259, 260, 073 and 074. CB3002K-003- welds 251, 252, 255, 256, 167 and 168. CB3002K-004- Welds 251, 252, 255, 256, 073 and 074.
- These fillet welds join the Intermediate Web Panel-1 (CB3002E) Stiffener to the Longitudinal Diaphragm-1 Sub Assembly identified as CB3002J-001.
- This Crossbeam CB18 is located in Sub Assembly Bay #6.

**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:** Laraine Woo Transportation Engineer

**Attachments:** ZPMC-0833

**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:** Siegenthaler, Peter  
Resident Engineer

**Ref:** 05.03.06-000829

**Subject:** NCR No. ZPMC-0833

**Dated:** 22-Dec-2010

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000884 Rev: 00

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**Contractor's Proposed Resolution:**

**Reference Resolution:**

ZPMC-0833  
Please see ZPMC's response

**Submitted by:** Ishibashi, Joshua

**Attachment(s):** ABF-NPR-000884R00;

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**Caltrans' comments:**

**Status:** CLO

**Date:** 23-Dec-2010

The proposed resolution is acceptable. This NCR is considered closed.

**Submitted by:** Woo, Laraine

**Attachment(s):**

**Date:** 23-Dec-2010



No. B-946

## LETTER OF RESPONSE

**TO: American Bridge/Flour**

**DATE: 2010-12-22**

**REGARDING: NCR-000871(ZPMC-0833)**

Rectification was performed as the approved TC-RFI response. Partional fillets were changed to CJP where the root gap was over 5mm. The other locations were fixed with the installation of fit lags. ZPMC is providing the NDT record and revised weld maps for the CJPs and the fillet welds used to weld the fit lugs. Based on this, ZPMC is requesting closure of this NCR.

**ATTACHMENT:**

NCR-000871(ZPMC-0833)

DJV-SK-532

B787-MT-33481

B787-UT-17517

WELD MAP OF CB3002J & CB3002K

*By [Signature]*  
*12/22/2010*

DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICESOffice of Structural Materials  
Quality Assurance and Source InspectionBay Area Branch  
690 Walnut Ave.St. 150  
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(707) 649-5493Contract #: 04-0120F4  
Cty: SF/ALA Rtc: 80 PM: 13.2/13.9  
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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

Location: Changxing Island, Shanghai, China

Report No: NCR-000871

Prime Contractor: American Bridge/Fluor Enterprises, a JV

Date: 25-Oct-2010

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

NCR #: ZPMC-0833

## Type of problem:

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

Bridge No: 34-0006

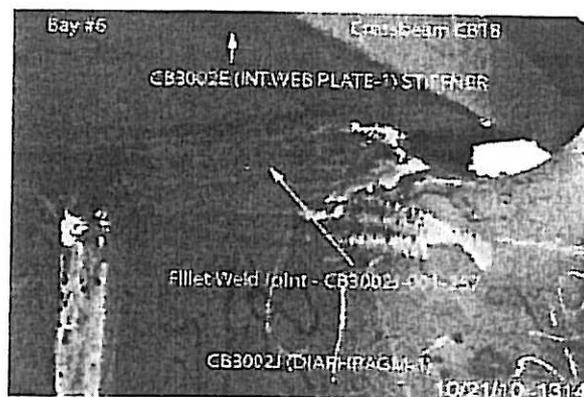
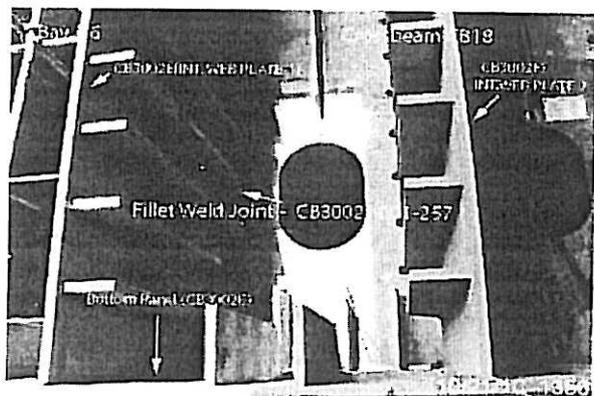
Component: CB18 Stiffeners (Multiple locations)

Reference Description: Excessive Root Gap on Fillet Welds

## Description of Non-Conformance:

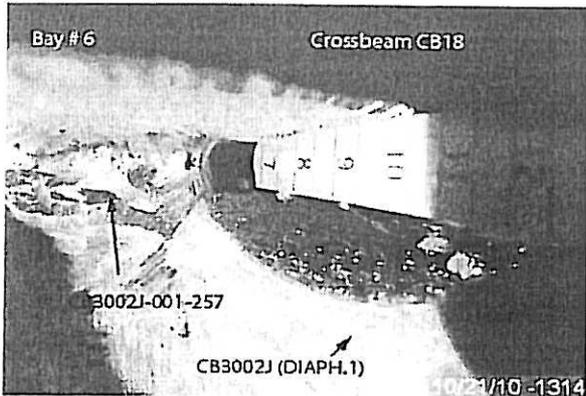
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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 2)



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QC Inspector's Name: Mr. Huang Min

Was QC Inspector aware of the problem:  Yes  No

Contractor's proposal to correct the problem:

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### Comments:

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Inspected By:	Devey, Jim	SMR
Reviewed By:	Wahbeh, Mazen	SMR







REPORT OF MAGNETIC PARTICLE EXAMINATION

磁粉检测报告

REPORT NO. 报告编号 B787-MT-33481		DATE日期 2010.12.06	PAGE OF页码 2/2	Revision No: 0
PROJECT NO. 工程编号: ZP06-787		CONTRACTOR: 用户: CALTRANS		
DRAWING NO. 图号: CB3002J/CB3002K stiffener		CALTRANS CONTRACT NO.: 加州工程编号 04-0050F4		
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 KOREA	MODEL NO. 样式编号 MP-A2L	SERIAL NO. 连续编号 MP1694	
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	<input checked="" type="checkbox"/> WELDING 焊接件 <input type="checkbox"/> CASTING 铸件 <input type="checkbox"/> FORGING 锻造	Material & thickness 母材, 厚度	A709M-345T2-X  25/14/35mm	
WELDING PROCESS 焊接方法	SMAW	TYPE OF JOINT 焊缝类型	CORNER 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			
CB3002K-004-324						*
CB3002K-004-325						*
CB3002K-004-326						*
CB3002K-004-327						*
CB3002K-004-328						*
CB3002K-004-329						*

\* CB3002J-001-320, CB3002J-001-321, CB3002J-001-322, CB3002J-001-323, CB3002J-001-324, CB3002J-001-325 were MT inspection and ACC, which is the result of required 10% MT.  
 \* CB3002J-001-320, CB3002J-001-321, CB3002J-001-322, CB3002J-001-323, CB3002J-001-324, CB3002J-001-325 焊缝经MT检测合格, 累积检测长度已经达到了此批要求的10%检测长度。

BLANK						

EXAMINED BY 主探 Tan Chaowei <i>Tan Chaowei</i> LEVEL-II SIGN 签名 / DATE日期 2010.12.06	REVIEWED BY 审核 Sun Gongchang <i>Sun Gongchang</i> LEVEL-II SIGN 签名 / DATE日期 2010.12.06
质量经理 / QCM <i>[Signature]</i>	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-17517      DATE 2010.11.26      PAGE 1 OF 2      Revision No: 0

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

ITEMS NAME: STRUT      DRAWING NO.: CB3002J/K      CALTRANS CONTRACT NO.: 04-0120F4  
 部件名称      图号      加州工程编号

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

WELDING PROCESS 焊接方法 FCAW      JOINT TYPE 焊缝类型 CORNER-JOINT      CALIBRATION DUE DATE 仪器校正有效期 Dec. 28<sup>ST</sup>, 2010

EQUIPMENT 设备      MANUFACTURER 制造商 AMERICA      MODEL NO. 样式编号 EPOCH 4B      SERIAL NO. 序列编号 081610708

CALIBRATION BLOCK 试块 AWS IIW BLOCK TYPE II      COUPLANT 耦合剂 C.M.C      MATERIAL/THICKNESS 材料厚度 A709M-345T2-X 40/50/14mm

### TRANSDUCER 探头

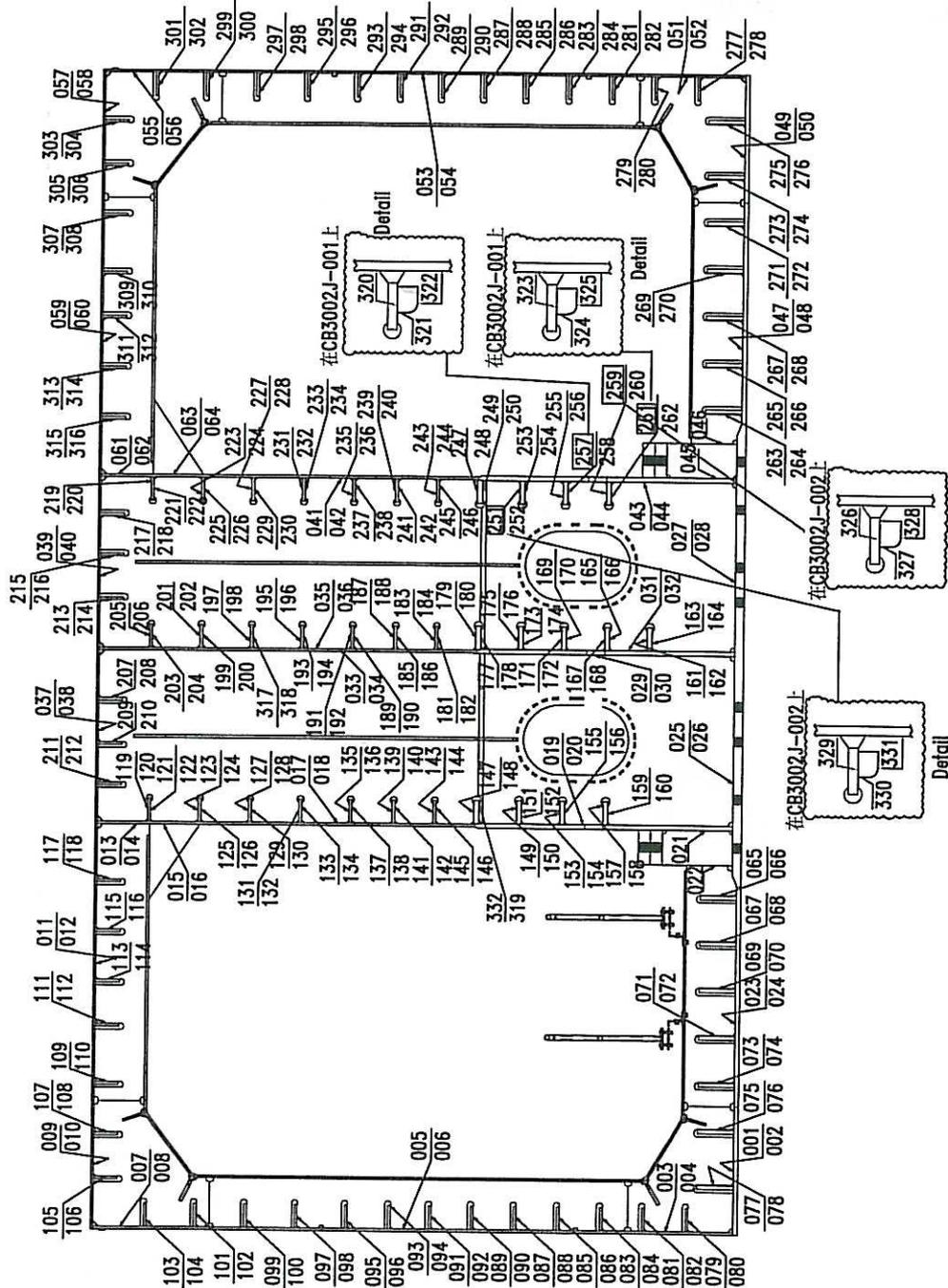
MANUFACTURER 制造商	ANGLE 角度	FREQUENCY 频率	SIZE 尺寸	MANUFACTURER 制造商	ANGLE 角度	FREQUENCY 频率	SIZE 尺寸
AMERICA	70°	2.25MHz	0.75in×0.625in				
Reference Level 参考灵敏度						20dB	

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
CB3002J-001-077		70				38									ACC.	100%
CB3002J-001-075		70				38									ACC.	100%
CB3002J-002-077		70				38									ACC.	100%
CB3002J-002-075		70				38									ACC.	100%
CB3002K-003-077		70				38									ACC.	100%
CB3002K-003-075		70				38									ACC.	100%
CB3002K-004-073		70				38									ACC.	100%
CB3002K-004-077		70				38									ACC.	100%

EXAMINED BY 主探 *Dai Fengsheng*      REVIEWED BY 审核 *Xu Kanggang*  
 LEVEL - II SIGN / DATE *2010.11.26*      LEVEL - II SIGN / DATE *2010.11.26*  
 质量经理 / QCM *Ding Anhua*  
 签字 SIGN / 日期 DATE *2010.11.26*      签字 SIGN / 日期 DATE





注意：如有遗漏或重复的标注焊缝，请QC人员通知工艺进行补标或删减

焊缝编号说明：CB3002J 000 000

- 焊缝序号
- 零件生产流水号
- 零件车间图框号

2016.12.22

注意:

1.原角焊缝,253/254,257/258,261/262,077/078,075/076在CB3002J-001由CJP焊缝号253,257,261,077,075替换;  
 2.原角焊缝251/252,259/260,077/078,075/076,073/074在CB3002J-002由CJP焊缝号251,259,077,075,073替换;

3.原角焊缝,107/108,151/152,155/156,207/208,209/210,211/212,在CB3002J-001由CJP焊缝号107,151,155,207,209,211替换;  
 4.原角焊缝303/304,305/306,207/208,209/210,211/212在CB3002J-002由CJP焊缝号303,305,207,209,211替换;

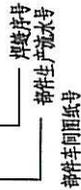
5.原角焊缝,257/258,261/262在CB3002J-001增加补板后由CJP焊缝号320,321,322,323,324,325替换;(补板见详图)  
 6.原角焊缝251/252,259/260在CB3002J-002增加补板后由CJP焊缝号329,330,331,326,327,328替换;(补板见详图)

日期:2010/12/22

日期:2010/11/9

日期:2010/11/17

焊缝编号说明: CB3002J 000 000



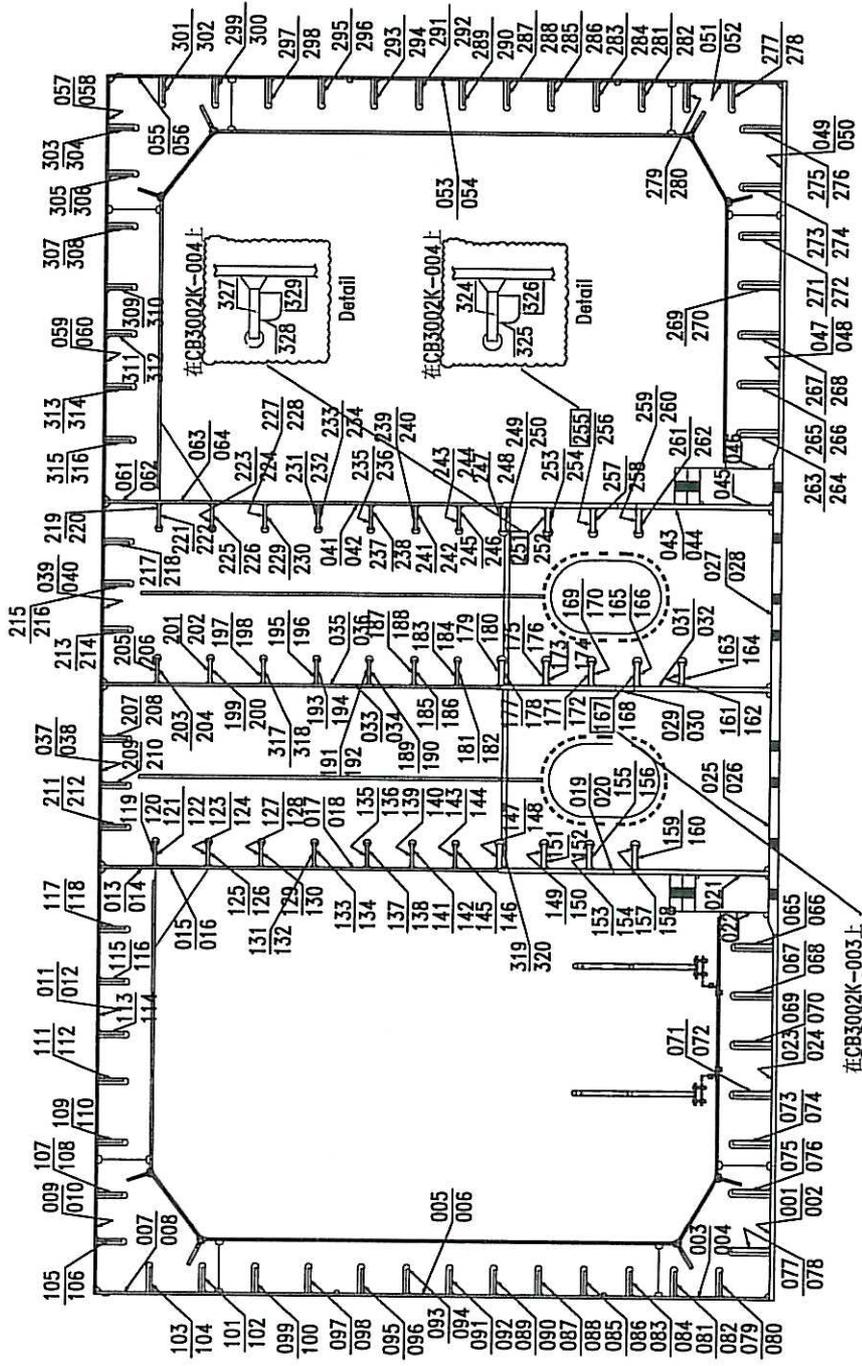
注意: 如有遗漏或重复的标注焊缝, 请QC人员通知工艺进行补标或删除



ZPMC WELDING MAP

DATE: 2010/12/22  
DRAWING NO: CB3002J

日期: 2010.12.22



注意: 如有遗漏或重复的标注焊缝, 请QC人员通知工艺  
进行补标或删减

焊缝编号: CB3002K 000 000  
 零件生产流水号  
 零件方向图符号

2010.12.22

修改时间:2010/10/27

注意:

1.原角焊缝,251/252,255/256,167/168,077/078,075/076在CB3002K-003由CJP焊缝号251,255,167,077,075替换;  
2.原角焊缝251/252,255/256,077/078,073/074在CB3002k-004由CJP焊缝号251,255,077,073替换;

修改时间:2010/11/9

3.原角焊缝,303/304,207/208,209/210,211/212在CB3002K-003由CJP焊缝号303,207,209,211替换;  
4.原角焊缝117/118,113/114,303/304,305/306,311/312在CB3002k-004由CJP焊缝号117,113,303,305,311替换;

修改时间:2010/11/17

5.原角焊缝,167/168在CB3002K-003增加补板后由CJP焊缝号330,331,332替换;(补板见详图)  
6.原角焊缝251/252,255/256在CB3002k-004增加补板后由CJP焊缝号327,328,329,324,325,326替换;(补板见详图)

焊缝编号说明: CB3002K 000 000



注意: 如有遗漏或重复的标注焊缝, 请QC人员通知工艺进行补标或删除



WELDING MAP

BRANCH

CHECKED

DESIGN DRAWING NO.

PAGE/TOTAL

CB3002K 2/2

周伟 2010.12.2

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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, China**Report No:** NCS-000844**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 22-Dec-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0833**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:** 25-Oct-2010**Description of Non-Conformance:**

During the Caltrans Quality Assurance in-process observations of the fabrication of Crossbeam CB18, this Quality Assurance Inspector (QA) discovered the following issues:

- ZPMC personnel performed the Flux Cored Arc Welding process on fillet welds, which the root opening exceeded the maximum tolerance specified in the Welding Procedure Specification (WPS) and welding code.
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- These fillet welds join the Intermediate Web Panel-1 (CB3002E) Stiffener to the Longitudinal Diaphragm-1 Sub Assembly identified as CB3002J-001.
- This Crossbeam CB18 is located in Sub Assembly Bay #6.

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

Contractor proposes to change the fillet weld to CJP. NDT will be performed after welding. Contractor will provide a revised weld map, and NDT report to prove the weld is acceptable.

**Corrective action taken:**

Contractor repaired the welds, and NDT was performed. The NDT weld result is acceptable. The revised weld map have been submitted.

**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 Wahbeh, Mazen 818-292-0659, who represents the Office of Structural Materials for your project.

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

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