

**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-000693

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

**Date:** 02-Mar-2010

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

**NCR #:** ZPMC-0660

### Type of problem:

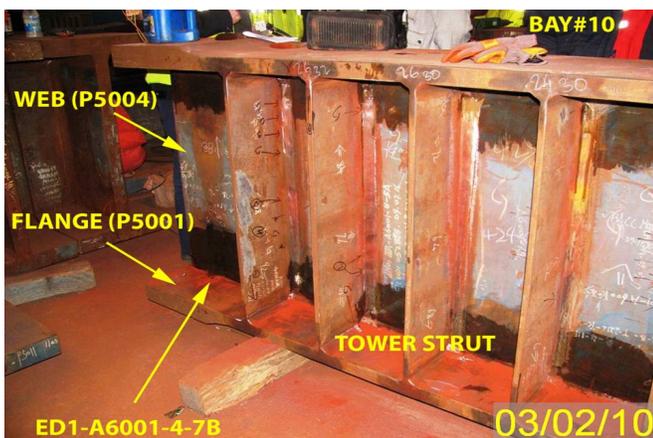
<b>Welding</b>	<b>Concrete</b>	<b>Other</b>	
<b>Welding</b>	<b>Curing</b>	<b>Procedural</b>	<b>Bridge No:</b> 34-0006
<b>Joint fit-up</b>	<b>Coating</b>	<b>Other</b>	<b>Component:</b> Tower Strut ED1-A6001-4
<b>Procedural</b>	<b>Procedural</b>	<b>Description:</b>	

**Reference Description:** Missed UT Indication by QC

### Description of Non-Conformance:

During random 10% verification Ultrasonic Testing (UT) of Tower Strut ED1-A6001-4, Caltrans (CT) Quality Assurance (QA) discovered one (1) Class "A" non-conforming longitudinal indication measuring approximately 15 mm in length.

- The weld is a complete joint penetration (CJP) joint, joining Web P5004 to Flange P5001 and is identified as ED1-A6001-4-7B.
- The discontinuity rating is +6, Class "A" reject.
- Depth of the discontinuity from face A is approximately 27 mm, and Y location was 130 mm.
- The material thickness is 32 mm.
- This member is located in fabrication Bay 10.
- The indication is in an area previously tested and accepted by ZPMC QC UT technicians.
- The Notice of Witness Inspection Number (NWIT) is 005259.



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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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**Applicable reference:**

Special Provisions Section 8.3; “Quality Control (QC) shall be the responsibility of the Contractor. As a minimum, the Contractor shall perform inspection and testing of each weld joint prior to welding, during welding, and after welding as specified in this section and to ensure that materials and workmanship conform to the requirements of the contract documents.”

AWS D1.5 Section 6.26.3.1; “Welds that are subject to UT in addition to visual inspection shall be acceptable if they meet the following requirements:...(1) Welds subject to tensile stress under any condition of loading shall conform to the requirements of Table 6.3...(2) Welds subject to compressive stress shall conform to the requirements of Table 6.4.”

AWS D1.5-02 Section 6; Table 6.3

**Who discovered the problem:** Naddi Sandeep Kumar

**Name of individual from Contractor notified:** Kong Xian Hui

**Time and method of notification:** 1500 hours, 03/02/10, Verbal

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

**Time and method of notification:** 0720 hours, 03/03/10, Verbal

**QC Inspector's Name:** Sun Tian Liang

**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 Skyler Guest, 15000422360, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Guest,Skyler	SMR
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<b>Reviewed By:</b>	Wahbeh,Mazen	SMR
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**DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge**  
 333 Burma Road  
 Oakland CA 94607  
 Tel: 510-808-4618 Fax:

**NON-CONFORMANCE REPORT TRANSMITTAL**

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

**Date:** 03-Mar-2010

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

**Dear:** Mr. Charles Kanapicki  
**Attention:** Mr. Thomas Nilsson Project/Fabrication Manager  
**Subject:** NCR No. ZPMC-0660

**Job Name:** SAS Superstructure  
**Document No:** 05.03.06-000649

**Reference Description:** Missed UT Indication/ Tower Struts/ ED1-A6001-4

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

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

**Material Location:** Tower **Lift:** N/A

**Remarks:**

- During random 10% verification Ultrasonic Testing (UT) of Tower Strut ED1-A6001-4, Caltrans (CT) Quality Assurance (QA) discovered one (1) Class "A" non-conforming longitudinal indication measuring approximately 15 mm in length.
- The weld is a complete joint penetration (CJP) joint, joining Web P5004 to Flange P5001 and is identified as ED1-A6001-4-7B.
- The discontinuity rating is +6, Class "A" reject.
- Depth of the discontinuity from face A is approximately 27 mm, and Y location was 130 mm.
- The material thickness is 32 mm.
- This member is located in fabrication Bay 10.
- The indication is in an area previously tested and accepted by ZPMC QC UT technicians.
- The Notice of Witness Inspection Number (NWIT) is 005259.

Special Provisions Section 8.3; "Quality Control (QC) shall be the responsibility of the Contractor. As a minimum, the Contractor shall perform inspection and testing of each weld joint prior to welding, during welding, and after welding as specified in this section and to ensure that materials and workmanship conform to the requirements of the contract documents."

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AWS D1.5-02 Section 6; Table 6.3

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

Propose a resolution for the identified non-conformance that addresses the failure of Quality Control to identify the linear indications(UT). Provide documentation of the steps taken by the Quality Control Manager to prevent future occurrences.

In addition to the Quality Control failure, propose a resolution for the identified material/workmanship non-conformance documenting that the repaired weld is in compliance with the contract requirements.

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# NCT

( Continued Page 2 of 2 )

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**Transmitted by:** Ken Lee      Transportation Engineer

**Attachments:**    ZPMC-0660

**cc:**    Rick Morrow, Gary Pursell, Mark Woods, Scott Kennedy

**File:**    05.03.06

## NCR PROPOSED RESOLUTION

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

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000649

**Subject:** NCR No. ZPMC-0660

**Dated:** 17-Mar-2010

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000626 Rev: 00

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**Contractor's Proposed Resolution:**

**Reference Resolution:** ZPMC has repaired the indication and is providing both the repair report and NDT after to show that it is acceptable.

ZPMC has repaired the indication and is providing both the repair report and NDT after to show that it is acceptable. To limit future occurrences ZPMC and ABFJV, purchased the same equipment as the Department and has undergone training to reduce these incidents and improve technique. Since both these have occurred there has been a decrease in missed UT indications and this specific incident appears to be isolated. Based on this ZPMC requests closure of this NCR.

**Submitted by:** Ishibashi, Joshua

**Attachment(s):** ABF-NPR-000626R00;

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**Caltrans' comments:**

**Status:** CLO

**Date:** 17-Mar-2010

The proposed resolution is acceptable. The Department concurs that Non-conformance ZPMC-0660 is closed.

**Submitted by:** Lee, Ken

**Attachment(s):**

**Date:** 17-Mar-2010



No. T-132

## LETTER OF RESPONSE

**TO:** American Bridge/Flour JV

**DATE:** 2010-3-17

**REGARDING:** NCR-000693(ZPMC-0660)

ZPMC received NCR-000693(ZPMC-0660), it mentioned that CT inspector discovered one class A indication measuring approximately 15mm in length. The discontinuity rating is +6, a little lower than the standard.

We have arranged person to repair this position and now it has been green tagged. Here attached the Welding report and UT report to show this weld be acceptable.

Hope you can take a review and close the NCR.

**ATTACHMENT:**

NCR-000693 (ZPMC-0660)

T-WR3086

T787-UT-2662

*Zhao jia neng*  
*2010-3-17*



DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge  
333 Burma Road  
Oakland CA 94607  
Tel: 510-808-4618 Fax:

## NON-CONFORMANCE REPORT TRANSMITTAL

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

Date: 03-Mar-2010

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

Dear: Mr. Charles Kanapicki  
Attention: Mr. Thomas Nilsson Project/Fabrication Manager  
Subject: NCR No. ZPMC-0660

Job Name: SAS Superstructure  
Document No: 05.03.06-000649

Reference Description: Missed UT Indication/ Tower Struts/ ED1-A6001-4

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

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- Quality Control (QC) not performed in conformance with contract documents.
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- Non-Conformance Resolved.

Material Location: Tower

Lift: N/A

### Remarks:

During random 10% verification Ultrasonic Testing (UT) of Tower Strut ED1-A6001-4, Caltrans (CT) Quality Assurance (QA) discovered one (1) Class "A" non-conforming longitudinal indication measuring approximately 15 mm in length.

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In addition to the Quality Control failure, propose a resolution for the identified material/workmanship non-conformance documenting that the repaired weld is in compliance with the contract requirements.

02.02.15.04  
NCT 05.03.06-000649.NCT

Received  
NCT-000649 03 Mar 10 Page 1 of 2

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NCT

( Continued Page 2 of 2 )

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Transmitted by: Ken Lee      Transportation Engineer

Attachments:    ZPMC-0660

cc:    Rick Morrow, Gary Pursell, Mark Woods, Scott Kennedy

File: 05.03.06

**DEPARTMENT OF TRANSPORTATION**  
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 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-000693

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

**Date:** 02-Mar-2010

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

**NCR #:** ZPMC-0660

**Type of problem:**

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

**Bridge No:** 34-0006

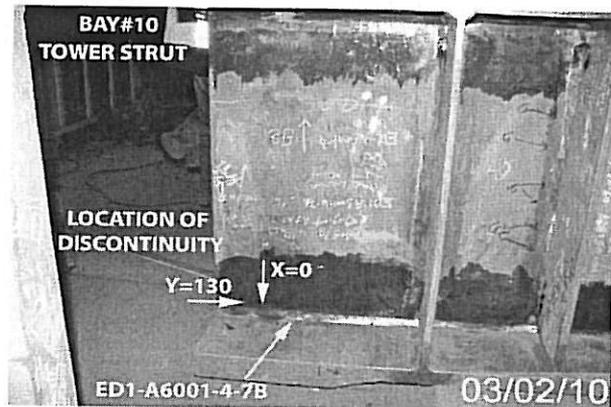
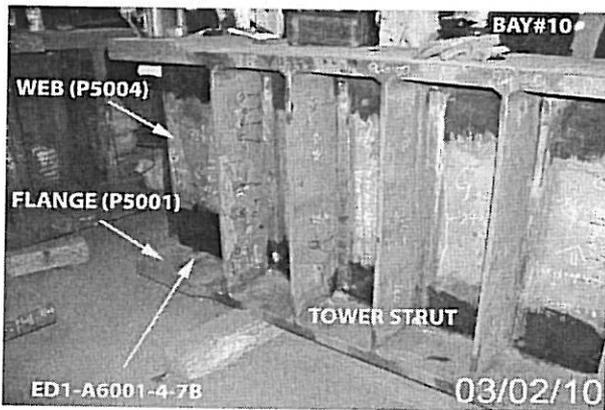
**Component:** Tower Strut ED1-A6001-4

**Reference Description:** Missed UT Indication by QC

**Description of Non-Conformance:**

During random 10% verification Ultrasonic Testing (UT) of Tower Strut ED1-A6001-4, Caltrans (CT) Quality Assurance (QA) discovered one (1) Class "A" non-conforming longitudinal indication measuring approximately 15 mm in length.

- The weld is a complete joint penetration (CJP) joint, joining Web P5004 to Flange P5001 and is identified as ED1-A6001-4-7B.
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- Depth of the discontinuity from face A is approximately 27 mm, and Y location was 130 mm.
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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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**Applicable reference:**

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AWS D1.5-02 Section 6; Table 6.3

**Who discovered the problem:** Naddi Sandeep Kumar  
**Name of individual from Contractor notified:** Kong Xian Hui  
**Time and method of notification:** 1500 hours, 03/02/10, Verbal  
**Name of Caltrans Engineer notified:** Scott Kennedy  
**Time and method of notification:** 0720 hours, 03/03/10, Verbal  
**QC Inspector's Name:** Sun Tian Liang  
**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 Skyler Guest, 15000422360, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Guest, Skyler	SMR
<b>Reviewed By:</b>	Wahbeh, Mazen	SMR

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LD 3.10



# 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	ED1-A6001-4	报告编号 Report No.	T-WR3086
合同号 Contract No.:	04-0120F4	部件名称 Items Name	FIRST LIFTING TO WER(E)	NDT报告编号 Report No.of NDT	T787-UT-2662
项目编号 Project No.:	ZP06-787				

缺陷描述:

Description of welding discontinuity:

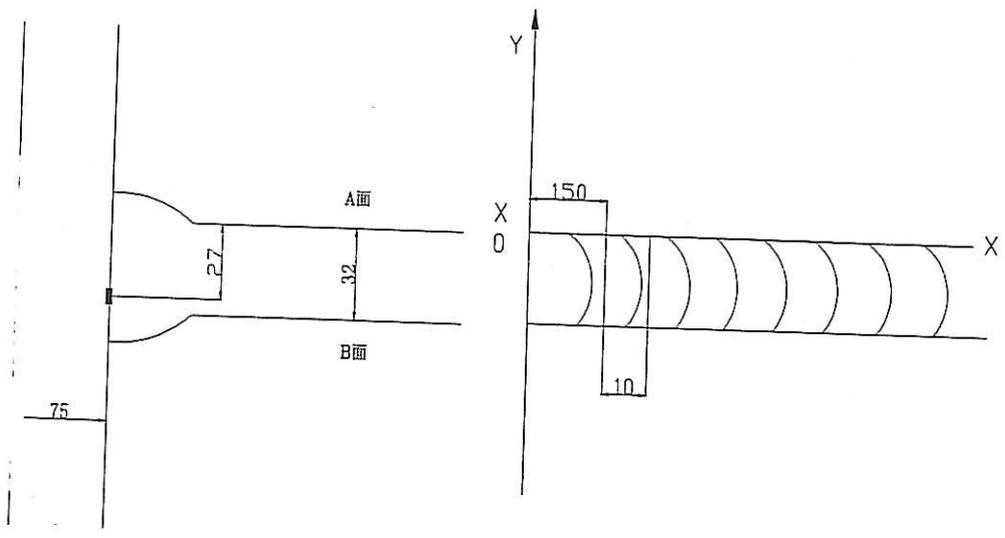
Rejected indication found by ultrasonic inspection is less than the maximum allowance aggregate length.

(UT探伤发现的缺陷总长度小于最大允许长度) ED1-A6001-4-7A/B

检验员 (Inspector): Xu Rongqiang 日期(Date): 10.03.08

焊缝返修位置示意图

Draft of welding discontinuity:



WELD NUMBER: ED1-A6001-4-7A/B

产生原因:

**Caused:**

- 1、 碳刨后,焊接接头没有有效打磨;
  - 2、 起弧和收弧没有交错布置,以将焊渣减少到最少;
  - 3、 焊道间没有有效的清理.
- 1.The weld joint was not ground sufficiently after arc-gouging.
  2. The arc starts and stops were not staggered to minimize slag entrapment.
  3. Interpass cleaning was not performed properly.

车间负责人(Foreman): *Lishiquan* 日期(Date): *3.9*.

处理意见

**Disposition :**

1. Grind repair area smoothly, VT to verify repair area is free of all defects.
2. QC will monitor and direct welder and grinder doing repair;
3. QC shall monitor all welding passes being deposited;
4. QC shall ensure all slag has been removed prior the deposition of next pass;
5. Preheat and maintain interpass temperature control in accordance with the WPS ;
6. Perform VT, MT and UT accordance with the drawing & contract requirements

- 1、 对需要返修的地方进行打磨,用 VT 检测缺陷被完全清除;
- 2、 在返修过程中, QC 要监控和指导焊工和打磨工
- 3、 焊道的处理过程中, QC 将监控所有的焊道处理工作;
- 4、 在进入下道工序前, QC 保证所有的夹渣全部去除了;
- 5、 修补区域的预热温度和道间温度请见批准后的相应的 WPS;
- 6、 按照合同要求检测焊缝。

工艺: *Lichunping*  
Technical engineer

审核:  
Approved by

日期 *3.9*  
Date *3/10*



# 焊缝返修报告

## Welding Repair Report

版本 Rev. No.

0

项目名称 Project Name	美国海湾大桥 SFOBB	部件图号 Drawing No	ED1-A6001-4	报告编号 Report No.	T-WR3086
合同号 Contract No.:	04-0120F4	部件名称 Items Name	FIRST LIFTING TO WER(E)	NDT报告编号 Report No. of NDT	T787-UT-2662
项目编号 Project No.:	ZP06-787				

纠正措施:

**Correction action to prevent re occurrence:**

- 1、碳刨后的接头位置打磨圆滑过渡，保证每道焊缝的接头可以交错布置；
  - 2、认真仔细检查每道焊缝和加强焊道的清理；
  3. 焊缝中所有的焊渣全部去除后，表面的缺陷全部打磨干净。
1. The joint shall be ground to a smooth transition to ensure that arc starts and stops are in a staggered Arrangement.
  2. QC shall inspect the weld passes more carefully and enforcing interpass cleaning.
  3. All weld slag shall be removed and surface defects ground during interpass cleaning.

车间负责人(Foreman): *Li Shiguan*日期(Date): *3.9*

参照的WPS编号 Repair WPS No.	WPS-485-SMAW-1G(1F)- FCM-Repair-1 WPS-485-SMAW-2G(2F)- FCM-Repair-1 ✓ WPS-485-SMAW-1G(1F)- FCM-Repair-1 WPS-485-SMAW-3G(3F)- FCM-Repair-1	工艺员 technologist	<i>Lichumping</i>  <i>10.3.9.</i>
返修(碳刨)前预热温度 Preheat temperature before gouging	<i>65°C</i>	返修的缺陷 Description of discontinuity	<i>夹渣</i>
焊前处理检查 Inspection before welding	<i>VT-MI-ACC</i>	焊前预热温度 Preheat temperature before welding	<i>180°C</i>
最大碳刨深度 Max. depth of gouging	<i>10 mm</i>	碳刨总长 Total length of gouging	<i>120 mm</i>
焊工 welder	<i>053049</i>	焊接类型 welding type	<i>SMAW</i>
焊接电流 Current	<i>184A</i>	焊接电压 Voltage	<i>27.7V</i>
		焊接位置 position	<i>2G</i>
		焊接速度 Speed	<i>110 m<sup>m</sup>/min</i>

返修后检查

**Inspection After repairing:**

外观检查 VT result	<i>VT-ACC</i>	检验员 Inspector	<i>Liu Yang</i>	日期 Date	<i>2010.3.10.</i>
NDT复检 NDT result	<i>Acc</i>	探伤员 NDT person	<i>Xu Yonggang</i>	日期 Date	<i>2010.3.11</i>

见证:

Witness/Review:

备注:

Remark:



# REPORT OF ULTRASONIC EXAMINATION

## UT探伤报告

REPORT NO. 报告编号 T787-UT-2662      DATE 2010.03.08      PAGE 1 OF 1      Revision No: 0

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

ITEMS NAME: FIRST LIFTING TOWER(E)      DRAWING NO.: ED1-A6001-7      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      A709SL-GR485/GR345      75/32mm

### 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		
ED1-A6001-4-7A/B	1	70	A	1	46	34	4	+8	10	72	27	0	150	REJ.	100%
		0	C			20								ACC.	100%
BLANK															

EXAMINED BY 主探 <i>W. Kong</i> 10/3/08 LEVEL - II SIGN / DATE	REVIEWED BY 审核 <i>Dr. Greg Gray</i> 10/3/08 LEVEL - II SIGN / DATE
质量经理 / QCM _____ 签字 SIGN / 日期 DATE	用户 CUSTOMER _____ 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-000564**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 23-Mar-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0660**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:** 02-Mar-2010**Description of Non-Conformance:**

During random 10% verification Ultrasonic Testing (UT) of Tower Strut ED1-A6001-4, Caltrans (CT) Quality Assurance (QA) discovered one (1) Class "A" non-conforming longitudinal indication measuring approximately 15 mm in length.

-The weld is a complete joint penetration (CJP) joint, joining Web P5004 to Flange P5001 and is identified as ED1-A6001-4-7B.

-The discontinuity rating is +6, Class "A" reject.

-Depth of the discontinuity from face A is approximately 27 mm, and Y location was 130 mm.

-The material thickness is 32 mm.

-This member is located in fabrication Bay 10.

-The indication is in an area previously tested and accepted by ZPMC QC UT technicians.

-The Notice of Witness Inspection Number (NWIT) is 005259.

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

Repair weld and verify with NDT.

**Corrective action taken:**

Weld was repaired and verified with NDT. QA VT, MT, and UT was performed on 3/13/2010 (NWIT 5335) and the weld was green tagged (Tag #11727).

**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 Skyler Guest, 15000422360, who represents the Office of

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## QUALITY ASSURANCE -- NON-CONFORMANCE RESOLUTION

( Continued Page 2 of 2 )

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Structural Materials for your project.

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**Inspected By:** Guest,Skylar

Quality Assurance Inspector

**Reviewed By:** Wahbeh,Mazen

QA Reviewer

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