

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

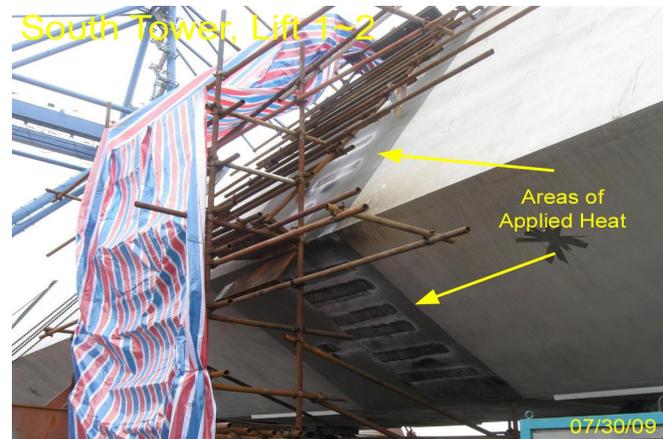
Quality Assurance and Source Inspection



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 #: 69.25B**QUALITY ASSURANCE -- NON-CONFORMANCE REPORT****Location:** Changxing Island, Shanghai, PRC**Report No:** NCR-000346**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 30-Jul-2009**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island**NCR #:** ZPMC-0320**Type of problem:****Welding****Concrete****Other****Welding****Curing****Procedural****Bridge No:** 34-0006**Joint fit-up****Coating****Other****Component:** East & South Towers**Procedural****Procedural****Description:** East & South Towers, Lifts 1 & 2**Reference Description:** Heat straightening without prior Engineer approval on East & South Towers**Description of Non-Conformance:**

QA observed that ZPMC personnel had performed heat straightening on East and South Towers in a manner not in accordance with the ZPMC Welding Quality Control Plan (WQCP). Heat straightening procedures not outlined in the WQCP require prior Engineer approval.

**Applicable reference:**

WQCP, Section 11, Mechanical and Heat Straightening Procedure

AWS D1.5-2002, section 3.7.3 - "Members distorted by welding shall be straightened by mechanical means or by carefully supervised application of a limited amount of localized heat as approved by the Engineer."

**Who discovered the problem:** William Clifford**Name of individual from Contractor notified:** Don Walton**Time and method of notification:** 7-30-09, 10:50; Verbal**Name of Caltrans Engineer notified:** Jim Reid**Time and method of notification:** 7-30-09, 11:00; Verbal

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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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**QC Inspector's Name:** Yu Zhi Lai

**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 Serge Sinevod, 134-8257-0045, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Sinevod,Serge	ASMR
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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:** 05-Aug-2009

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

**Dear:** Mr. Charles Kanapicki

**Job Name:** SAS Superstructure

**Attention:** Mr. Thomas Nilsson Project/Fabrication Manager

**Document No:** 05.03.06-000309

**Subject:** NCR No. ZPMC-0320

**Reference Description:** Heat straightening without prior Engineer approval on East & South Towers

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:** 01

### Remarks:

QA observed that ZPMC personnel had performed heat straightening on East and South Towers in a manner not in accordance with the ZPMC Welding Quality Control Plan (WQCP). Heat straightening procedures not outlined in the WQCP require prior Engineer approval.

WQCP, Section 11, Mechanical and Heat Straightening Procedure

AWS D1.5-2002, section 3.7.3 - "Members distorted by welding shall be straightened by mechanical means or by carefully supervised application of a limited amount of localized heat as approved by the Engineer."

### Action Required and/or Action Taken:

Propose a resolution that ensures that the identified non-conformance will not continue to occur and the steps taken by the welding Quality Control Manager to prevent future occurrences. In the event that the Contractor's intent is to modify the procedure, a revised procedure must be submitted for review and approval prior to being implemented.

**Transmitted by:** Ken Lee Transportation Engineer

**Attachments:** ZPMC-0320

**cc:** Rick Morrow, Gary Pursell, Mark Woods, Doug Coe

**File:** 05.03.06

## NCR PROPOSED RESOLUTION

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

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000309

**Subject:** NCR No. ZPMC-0320

**Dated:** 24-Aug-2009

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000320 Rev: 00

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### Contractor's Proposed Resolution:

**Reference Resolution:** A heat straightening report was generated, however, ZPMC has said that the out of tolerance condition did not warrant engineers approval as stated in the special provisions.

ZPMC has been notified of this NCR. A heat straightening report was generated, however, ZPMC has said that the out of tolerance condition did not warrant engineers approval as stated in the special provisions. ZPMC will submit the heat straightening report and inspection documents to close this NCR.

### Submitted by:

**Attachment(s):** ABF-NPR-000320R00

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### Caltrans' comments:

**Status:** REJ

**Date:** 01-Sep-2009

The proposed resolution is not acceptable. Non-Conformance ZPMC-0320 was issued for a combination of mechanical and heat straightening, which is not outlined in the WQCP. Straightening procedures not outlined in the WQCP require prior Engineer approval.

Please submit the heat straightening report and acceptable inspection documents for all affected welds. The Department will review the Contractor's proposal to close Non-Conformance ZPMC-0320 at that time.

**Submitted by:** Wright, Doug

**Date:** 01-Sep-2009

**Attachment(s):**

## NCR PROPOSED RESOLUTION

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

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000309

**Subject:** NCR No. ZPMC-0320

**Dated:** 25-Nov-2009

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000320 Rev: 01

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### Contractor's Proposed Resolution:

**Reference Resolution:** ZPMC is providing the HSR1 detailing the procedure used during heat straightening and NDT documentation showing that the welds potentially affected by the heat straightening are acceptable.

ZPMC did not issue a HSR in this case because the members did not exceed the out of flatness tolerance for notification of the Engineer. ZPMC is providing the HSR1 detailing the procedure used during heat straightening and NDT documentation showing that the welds potentially affected by the heat straightening are acceptable. Based on these documents ZPMC requests closure of this NCR.

### Submitted by:

**Attachment(s):** ABF-NPR-000320R01;

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### Caltrans' comments:

**Status:** REJ

**Date:** 10-Dec-2009

ZPMC's statement that the Engineer's prior approval is not needed for the deformation that does not exceed the out of flatness tolerance is incorrect. The Engineer's prior approval is not required only when the deformation is within the tolerance and the method of the heat straightening is in the WQCP. The NCR was issued because the method of the heat straightening was not in the WQCP. ABFJV's request for closure of this NCR is denied and NCR ZPMC-0320 is still in effect.

**Submitted by:** Lee, Ken

**Date:** 10-Dec-2009

**Attachment(s):**



No. T-091

## LETTER OF RESPONSE

**TO:** American Bridge/Flour JV

**DATE:** 2009-11-24

**REGARDING:** NCR-000346 (ZPMC-0320)

ZPMC received NCR-000346 (ZPMC-0320), it mentioned that ZPMC personnel had performed heat straightening on East and South Towers in a manner not in accordance with the ZPMC welding quality control plan (WQCP).

ZPMC issued out the HSR1 for those heat-straightening, since the deformation did not exceed the out-of-flatness tolerance 3/1000 which needn't engineer's approval. Please see the attached document. But ZPMC have been aware of the importance of the adjacent seam welds, the UT&MT tests were arranged to warrant welds quality. The reports showed the welds were conformed the requirement after heat straightening.

So ZPMC hope Caltrans could take a review and consider close the NCR with the attached document.

**ATTACHMENT:**

NCR-000346 (ZPMC-0320)

HSR1(T)-9936

HSR1(T)-9938

WQCP--11.1.3

East tower: T787-MT-6901

T787-MT-6902

T787-UT-2438

T787-UT-2437

East tower: T787-MT-6904

T787-UT-2439

  
2009-11-24



**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:** 05-Aug-2009  
  
**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-0320

**Job Name:** SAS Superstructure  
**Document No:** 05.03.06-000309

**Reference Description:** Heat straightening without prior Engineer approval on East & South Towers

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:** 01

**Remarks:**

QA observed that ZPMC personnel had performed heat straightening on East and South Towers in a manner not in accordance with the ZPMC Welding Quality Control Plan (WQCP). Heat straightening procedures not outlined in the WQCP require prior Engineer approval.  
 WQCP, Section 11, Mechanical and Heat Straightening Procedure  
 AWS D1.5-2002, section 3.7.3 - "Members distorted by welding shall be straightened by mechanical means or by carefully supervised application of a limited amount of localized heat as approved by the Engineer."

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

Propose a resolution that ensures that the identified non-conformance will not continue to occur and the steps taken by the welding Quality Control Manager to prevent future occurrences. In the event that the Contractor's intent is to modify the procedure, a revised procedure must be submitted for review and approval prior to being implemented.

**Transmitted by:** Ken Lee Transportation Engineer

**Attachments:** ZPMC-0320

**cc:** Rick Morrow, Gary Pursell, Mark Woods, Doug Coe

**File:** 05.03.06

02.02;15.04

Received  
 NCT-000309 05 Aug 09

**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-000346

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

**Date:** 30-Jul-2009

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

**NCR #:** ZPMC-0320

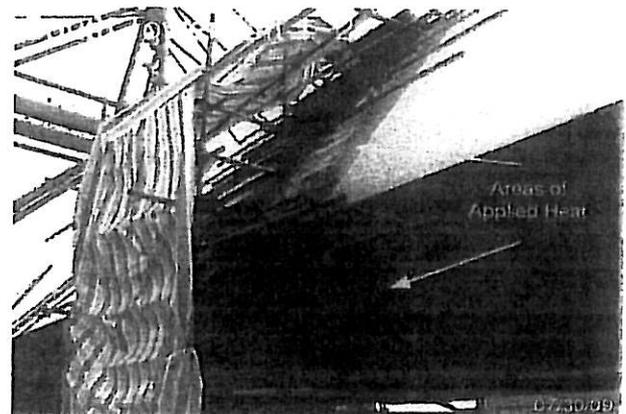
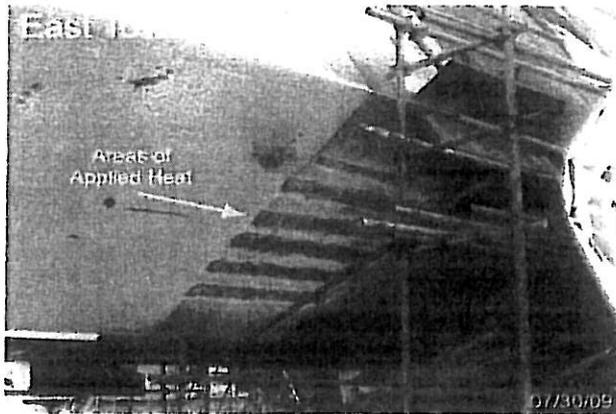
**Type of problem:**

Welding  Concrete  Other   
 Welding  Curing  Procedural  **Bridge No:** 34-0006  
 Joint fit-up  Coating  Other  **Component:** East & South Towers  
 Procedural  Procedural  **Description:** East & South Towers, Lifts 1 & 2

**Reference Description:** Heat straightening without prior Engineer approval on East & South Towers

**Description of Non-Conformance:**

QA observed that ZPMC personnel had performed heat straightening on East and South Towers in a manner not in accordance with the ZPMC Welding Quality Control Plan (WQCP). Heat straightening procedures not outlined in the WQCP require prior Engineer approval.



**Applicable reference:**

WQCP, Section 11, Mechanical and Heat Straightening Procedure

AWS D1.5-2002, section 3.7.3 - "Members distorted by welding shall be straightened by mechanical means or by carefully supervised application of a limited amount of localized heat as approved by the Engineer."

**Who discovered the problem:** William Clifford

**Name of individual from Contractor notified:** Don Walton

**Time and method of notification:** 7-30-09, 10:50; Verbal

**Name of Caltrans Engineer notified:** Jim Reid

**Time and method of notification:** 7-30-09, 11:00; Verbal

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## QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

( Continued Page 2 of 2 )

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QC Inspector's Name: Yu Zhi Lai

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 Serge Sinevod, 134-8257-0045, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Sinevod,Serge	ASMR
<b>Reviewed By:</b>	Wahbeh,Mazen	SMR

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# 火工校正记录

## Heat Straightening Record (HSR1)

报告号 Record #

HSR1(T)-9936

版本号 Revision #

0

日期 Date

2009.7.25

美国海湾大桥 San Francisco Oakland Bay Bridge

CALTRANS #04-0120F4

工程编号 JOB#: ZP06-787

装配 Assembly:

N/A

质检代表/Quality Control Representative

部装 Sub-Assembly:

东塔 east tower

梁段 Girder:

The 1st lift

质检经理/Quality Assurance Manager~Approval

塔段 Tower:

A面板 skin A

焊缝号 Weld No:

N/A

焊缝地图号 Weld Map No:

N/A

### 情况描述 Description of Condition

Cause原因

Welding distortion 焊接变形

Type of Defect缺陷类型

Welding distortion 焊接变形

Inspection Method检查方法

Visual 目检

### 处置方法 Disposition

缺陷去除方法(Defect Removal Method):

Flame Straightening by natural gas

后续NDE(Post-Removal NDE):

After finishing heat straightening, the weld of the heat area shall perform NDT according to the approved shop drawing

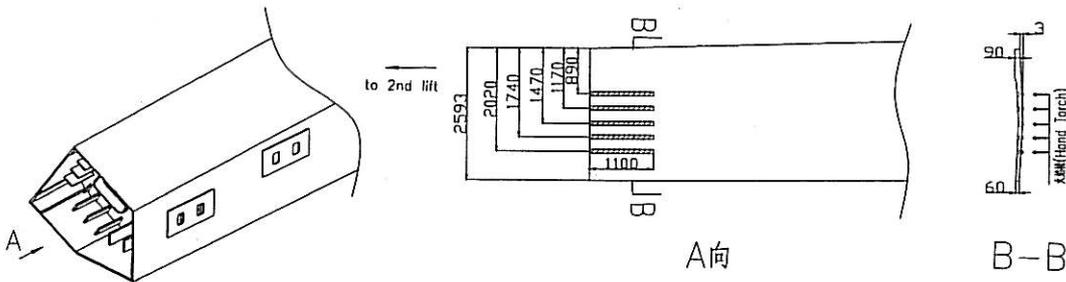
纠正措施(Corrective Action(s)):

workers will perform weld sequence to evenly distribute welds in joint, closely monitor distortion during weld process to help prevent deformation.

实施次数(Number of application): 1~3

最高温度(Maximum temperature): &lt;650°C

### 简图 Sketch



枝火区域:此板最大变形量约3mm

Flame straightening area: the max deformation is about 3mm

纵向:最大枝火长度约1100mm,宽度50~100mm

transverse: the max length is about 1100mm, the width is 50~100mm

\*\*\*To be signed when Closing HSR~Verify compliance and all necessary reports are ready to attach\*\*\*

检验员 Inspector:	<i>Xu Le Feng</i>	签字 Signature:	<i>[Signature]</i>
CWI #	07031411	Closing Date:	2009. 8. 05
II 级探伤 NDE Certification:	Level II		
质检经理 QC Manager	<i>[Signature]</i>	审核日期 Review Date:	8/5/09

Note: All repair work shall be performed in accordance with applicable CALTRANS approved procedures, contract specifications and AWS D1.5 2002.

#R787--QCP-1101

陈洪萍

Approved by *[Signature]* 7/25/09



# 火工校正记录

## Heat Straightening Record (HSR1)

报告号 Record #

HSR1(T)-9938

版本号 Revision #

0

日期 Date

2009.7.25

美国海湾大桥 San Francisco Oakland Bay Bridge

CALTRANS #04-0120F4

工程编号 JOB#: ZP06-787

装配 Assembly:	N/A	质检代表/Quality Control Representative
部装 Sub-Assembly:	南塔 south tower	<i>[Signature]</i> 2009.7.25
梁段 Girder:	The 1st lift	质检经理/Quality Assurance Manager~Approval
塔段 Tower:	B、C、D、E面板 skin B、C、D、E	<i>[Signature]</i>
焊缝号 Weld No:	N/A	
焊缝地图号 Weld Map No:	N/A	

### 情况描述 Description of Condition

Cause原因 Welding distortion 焊接变形

Type of Defect缺陷类型 Welding distortion 焊接变形

Inspection Method检查方法 Visual 目检

### 处置方法 Disposition

缺陷去除方法(Defect Removal Method): Flame Straightening by natural gas

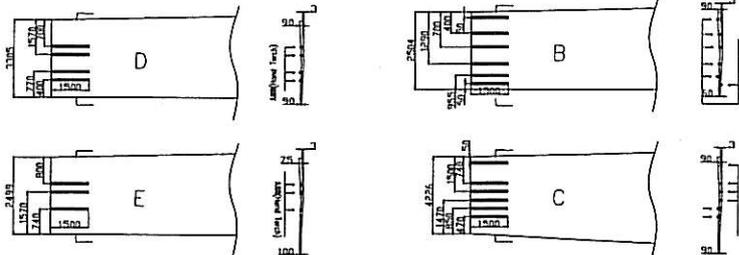
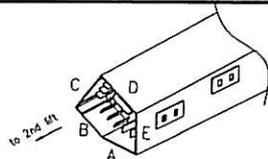
后续NDE(Post-Removal NDE): After finishing heat straightening, the weld of the heat area shall perform NDT according to the approved shop drawing

纠正措施(Corrective Action(s)): workers will perform weld sequence to evenly distribute welds in joint, closely monitor distortion during weld process to help prevent deformation.

实施次数(Number of application): 1~3

最高温度(Maximum temperature): &lt;650°C

### 简图 Sketch



烧火区域: 在最大变形量的3mm  
 Flame straightening area: the max deformation is about 3mm  
 烧灼: 最大烧灼长度1500mm, 宽度50~100mm  
 transverse: the max length is about 1500mm, the width is 50~100mm

\*\*\*To be signed when Closing HSR-Verify compliance and all necessary reports are ready to attach\*\*\*

检验员 Inspector:	<i>Ziu Yang</i>	签字 Signature:	<i>[Signature]</i>
CWI #	08021721	Closing Date:	2009.08.03
II 级探伤 NDE Certification:	Level II		
质检经理 QC Manager	<i>[Signature]</i>	审核日期 Review Date:	8/3/09

Note: All repair work shall be performed in accordance with applicable CALTRANS approved procedures, contract specifications and AWS D1.5 2002.

#R787--QCP-1101

胡震

Approved by *[Signature]* 7/25/09

	WELDING QUALITY CONTROL PLAN	SECTION 11 PAGE: 1 OF 16
	San Francisco Oakland Bay Bridge Project	REV. 0 July 2007

## MECHANICAL AND HEAT STRAIGHTENING PROCEDURE

### 11.0 HEAT STRAIGHTENING CONTROL

This procedure has been established to minimize distortion, weld shrinkage and control the deformation of the dimensions where it is detrimental to the performance of the member or the structure. This procedure describes the standard procedures for straightening members distorted by welding that do not require prior Engineer approval.

#### 11.1 General Requirements

11.1.1 This procedure has been established to ensure dimension control of the part and structures by the use of heat straightening techniques to achieve the tolerances of the AWS D1.5M/D1.5-2002 Bridge Welding Code and the Contract Specifications.

11.1.2 For material equal to or less than 16 mm in thickness, heat straightening shall not be performed on members with out-of-flatness tolerances greater than 6/1000 without prior approval of the Engineer.

11.1.3 For material greater than 16 mm in thickness, heat straightening shall not be performed on members with out-of-flatness tolerances greater than 3/1000 without prior approval of the Engineer.

11.1.4 QC inspectors shall monitor the heat-straightening process using the Heat Straightening Report (Exhibit 1) to document the results.

11.1.5 As approved by this procedure mechanical means may be used to achieve the required flatness.

11.1.6 Plates will be heat straightened if the distortion tolerance is exceeded after welding. The heating temperature shall not exceed 650°C (1200°F) and shall be allowed to cool in still air. Restraining forces may be used, as provided in the approved Heat Straightening Procedure, when approved by the Engineer.

#### 11.2 Procedure

##### 11.2.1 Flattening

11.2.1.1 Control of mill plates before and after cutting.

This document is APPROVED  
 State of California  
 DEPARTMENT OF TRANSPORTATION  
 Pursuant to Section 5-1.02 of the  
 Standard Specifications  
 Initial PH Date: 10/19/2007



# REPORT OF MAGNETIC PARTICLE EXAMINATION

## 磁粉检测报告

REPORT NO. 报告编号 T787-MT-6901      DATE日期 2009.09.20      PAGE OF页码 1/1      Revision No: 0

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

DRAWING NO. 图号: ESD1-A165E/J TOWER(E) 1ST LIFTING SKIN A&E      CALTRANS CONTRACT NO.: 加州工程编号 04-0120F4

REFERENCING CODE 参考规范编码 AWS D1.5-2002	ACCEPTANCE STANDARD 接受标准 AWS D1.5-2002	PROCEDURE NO. 程序编号 ZPQC-MT-01	CALIBRATION DUE DATE 仪器校正有效期 Dec. 28 <sup>ST</sup> , 2009
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EQUIPMENT 设备 MT YOKE	MANUFACTURER 制造商 PARKER	MODEL NO. 样式编号 B310S	SERIAL NO. 连续编号 5620 5395 5617
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MAGNETIZING METHOD 磁化方法	Continuous magnetic yoke 磁轭式连续法	CURRENT 电流	AC
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PARTICLE TYPE 磁粉类型	Dry magnet powder 干磁粉	YOKE SPACING 磁轭间距	70~150mm
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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-Z 90/100mm
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WELDING PROCESS 焊接方法	FCAW/SAW	TYPE OF JOINT 焊缝类型	CORNER-JOINT
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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			
ESD1-A165E/J-264A/B				ACC.		100%MT

BLANK

EXAMINED BY 主探 Wang Wei Wang Wei 2009.9.20 LEVEL-II SIGN 签名 / DATE日期	REVIEWED BY 审核 2009.9.20 LEVEL-II SIGN / DATE日期
质量经理 / QCM Lu Tianhua 2009.9.20 签字 SIGN / 日期 DATE	用户 CUSTOMER 签字 SIGN / 日期 DATE





# REPORT OF ULTRASONIC EXAMINATION

## UT探伤报告

REPORT NO. 报告编号 T787-UT-2438      DATE 2009.09.18      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.: ESD1-A167B/H ESD1-A165E/J      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 6.4)      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  
 SAW FCAW      CORNER JOINT      Dec. 28<sup>ST</sup>, 2009

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-345T2-Z      90/60mm

### 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	60°	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
ESD1-A165E/J-268A/B		70				34									ACC.	100%
		60				34									ACC.	100%
		0	C			20									ACC.	100%
BLANK																

EXAMINED BY 主探 <i>Kuo Kai Hong</i> 09.09.18 LEVEL - II SIGN / DATE	REVIEWED BY 审核 <i>Zhang</i> 09.09.18 LEVEL - II SIGN / DATE
质量经理 / QCM <i>Lu Tianhua</i> 2009.9.18 签字 SIGN / 日期 DATE	用户 CUSTOMER _____ 签字 SIGN / 日期 DATE



# REPORT OF ULTRASONIC EXAMINATION

## UT探伤报告

REPORT NO. 报告编号 T787-UT-2437      DATE 2009.09.18      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.: ESD1-A165E/J      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 6.4)      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  
 SAW FCAW      CORNER JOINT      Dec. 28<sup>ST</sup>, 2009

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-345T2-Z      90/100mm

### 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	60°	2.5MHz	18×18mm
Changchao	0°	2.5MHz	20mm	Changchao	45°	2.5MHz	18×18mm

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		
ESD1-A165E/J-264A/B		70				34								ACC.	100%
		60				34								ACC.	100%
		45				32								ACC.	100%
		0	C			20								ACC.	100%
BLANK															

EXAMINED BY 主探 *Wine Hai peng* - 09.09.18

REVIEWED BY 审核 *Zou Jun* 09.09.18

LEVEL - II SIGN / DATE

LEVEL - II SIGN / DATE

质量经理 / QCM *Lu Tianhua* 2009.9.18

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 T787-UT-2439      DATE 2009.08.21      PAGE 1 OF 2      Revision No: 0

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

ITEMS NAME: TOWER (S) FIRST LIFTING      DRAWING NO.: SSD1-A164E/J  
 部件名称      图号      CALTRANS CONTRACT NO.: 04-0120F4  
 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 6.4)      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  
 SAW FCAW      CORNER JOINT      Dec. 28<sup>ST</sup>, 2009

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-345T2-Z      60/90/75/100mm

### 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	60°	2.5MHz	18×18mm
Changchao	0°	2.5MHz	20mm	Changchao	45°	2.5MHz	18×18mm

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
SSD1-A164E/J-246A/B		70				34									ACC.	100%
		60				34									ACC.	100%
		0	C			20									ACC.	100%
SSD1-A164E/J-245A/B		70				34									ACC.	100%
		45				34									ACC.	100%
		0	C			20									ACC.	100%
SSD1-A164E/J-244A/B		70				34									ACC.	100%
		45				34									ACC.	100%

EXAMINED BY 主探 <i>Lu T. Kanhua</i> 08.08.21 LEVEL - II SIGN / DATE 质量经理 / QCM 签字 SIGN / 日期 DATE	REVIEWED BY 审核 <i>Zshu</i> 08.21 LEVEL - II SIGN / DATE 用户 CUSTOMER 签字 SIGN / 日期 DATE
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# REPORT OF ULTRASONIC EXAMINATION

## UT探伤报告

REPORT NO. 报告编号 T787-UT-2439      DATE 2009.08.21      PAGE 2 OF 2      Revision No: 0

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
		0	C			20									ACC.	100%
SSD1-A164E/J-243A/B		70				34									ACC.	100%
		60				34									ACC.	100%
		0	C			20									ACC.	100%
SSD1-A164E/J-242A/B		70				34									ACC.	100%
		60				34									ACC.	100%
		45				32									ACC.	100%
		0	C			20									ACC.	100%

AFTER HSR(B0-9938)

BLANK

EXAMINED BY 主探  
*Xue Hai rong* 2009.8.21  
LEVEL - II SIGN / DATE

REVIEWED BY 审核  
*Zhou* 2009.8.21  
LEVEL - II SIGN / DATE

质量经理 / QCM  
*Lu Tianhua* 2009.8.21  
签字 SIGN / 日期 DATE

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

## NCR PROPOSED RESOLUTION

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

**Attention:** Pursell, Gary  
Resident Engineer

**Ref:** 05.03.06-000309

**Subject:** NCR No. ZPMC-0320

**Dated:** 17-Dec-2009

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

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000320 **Rev:** 02

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### Contractor's Proposed Resolution:

**Reference Resolution:** To clarify, ZPMC was performing heat straightening in accordance with the procedure on page 7 of Section 11 of the WQCP to correct angular distortion of the skin plate.

To clarify, ZPMC was performing heat straightening in accordance with the procedure on page 7 of Section 11 of the WQCP to correct angular distortion of the skin plate. Although this procedure is typically used before assembly the procedure is still valid when the shaft is assembled and there is angular deflection in the skin plate. Based on this ZPMC requests closure of this NCR.

**Submitted by:** Ishibashi, Joshua

**Attachment(s):** ABF-NPR-000320R02;

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### Caltrans' comments:

**Status:** REJ

**Date:** 23-Dec-2009

The Department disagrees that the procedure described in Section 11.2.6.4 of the WQCP (page 7 of Section 11 per the attachment) is still valid when the shaft is assembled. Section 11.2.7 of the WQCP approved on 10/26/07 specifies that the techniques and procedures to be applied to correct distortion of the tower section after welding that are different than ones that ZPMC used. It should also be pointed out that ZPMC submitted HRS(T)-210 and 211 for Heat Straightening of South Shaft Lifts 1 and 2 utilizing the method observed in NCR ZPMC-0320.

This NPR remains rejected. Please address all items specified in the Department's NCR transmittal letter.

**Submitted by:** Lee, Ken

**Attachment(s):**

**Date:** 23-Dec-2009

	WELDING QUALITY CONTROL PLAN	SECTION 11
	San Francisco Oakland Bay Bridge Project	PAGE: 6 OF 17 REV. 0 July 2007

**MECHANICAL AND HEAT STRAIGHTENING PROCEDURE**

*DELETE*

Figure 3

~~11.2.6.3.2 If the straightness is not within the requirements, heat straightening method as follows:  
 Step 1: Excavate by gouging to remove the convex welds as shown in Figure a:  
 Step 2: Heat straightening at the area which the welds are removed as shown in figure b:  
 Step 3: Weld according to the relative WPS as shown in figure c:~~

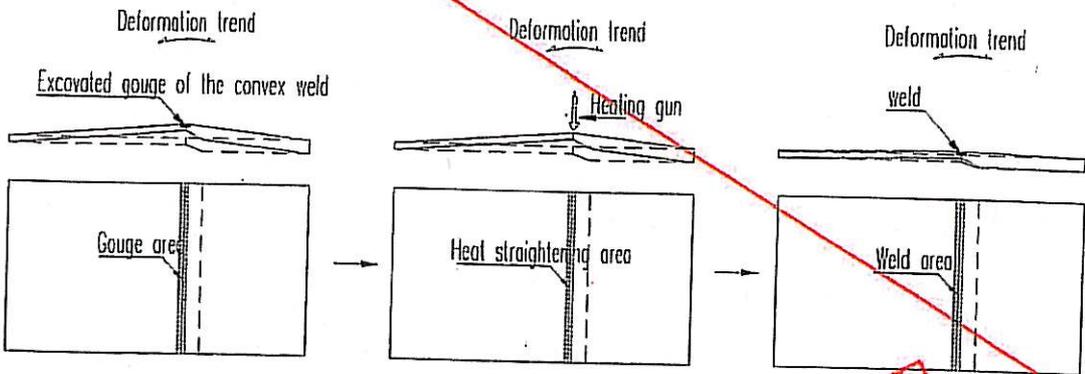


Figure a

Figure b

Figure c

Figure 4

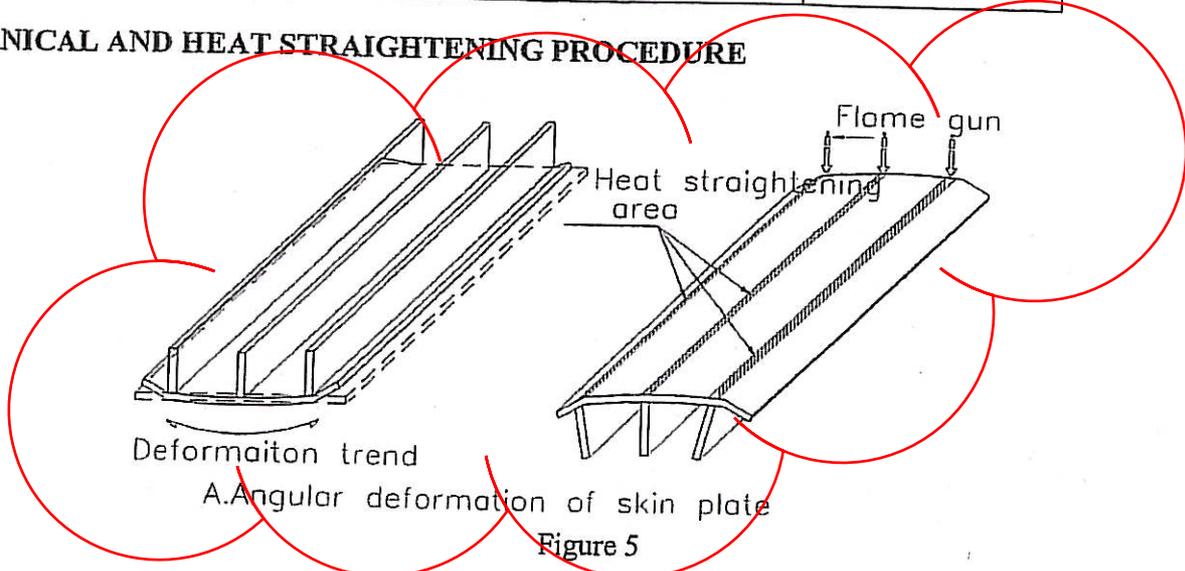
11.2.6.4 Heat straightening after longitudinal stiffener welded:

11.2.6.4.1 Since the weld of the stiffener is in one side of the skin plate, the deformation will occur because of the shrinkage, heat straightening on the skin plate as shown in Figure 5:

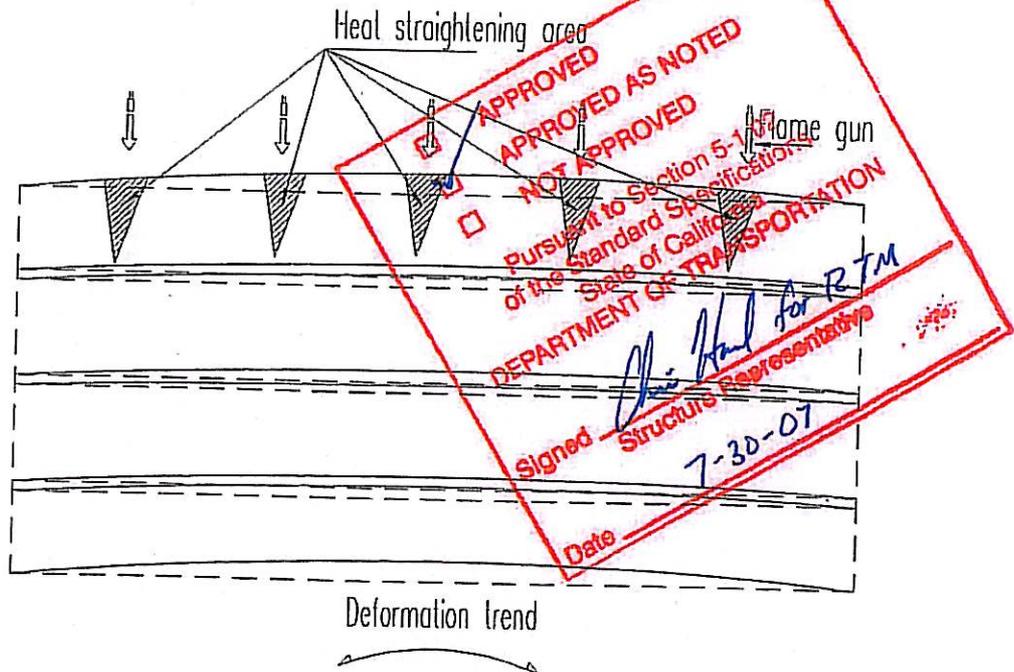
APPROVED AS NOTED  
 NOT APPROVED  
 Pursuant to Section 102  
 of the Standard Specifications  
 of the State of California  
 DEPARTMENT OF TRANSPORTATION  
 Signed *Chris Howard for RTM*  
 Structure Representative  
 Date 7-30-07

	WELDING QUALITY CONTROL PLAN	SECTION 11
	San Francisco Oakland Bay Bridge Project	PAGE: 7 OF 17 REV. 0 July 2007

**MECHANICAL AND HEAT STRAIGHTENING PROCEDURE**



11.2.6.4.2 Since the stiffeners are installed on the skin plate asymmetrically, the skin plate will be deformed after welding. Heat straightening at the convex areas shall be as shown in Figure 6:



APPROVED

APPROVED AS NOTED

NOT APPROVED

pursuant to Section 5-1 of the Standard Specification of the State of California

DEPARTMENT OF TRANSPORTATION

Signed *[Signature]* for R.T.M.

Structure Representative

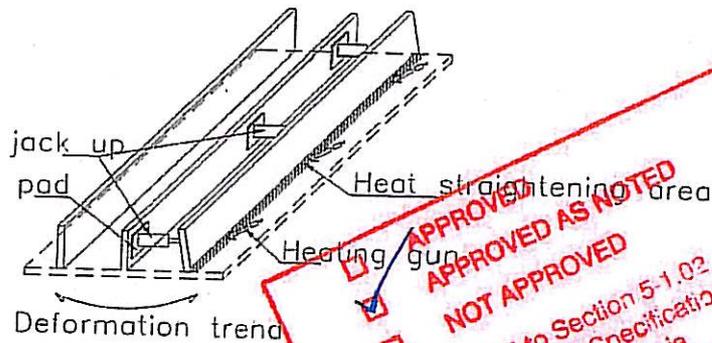
Date 7-30-07

	WELDING QUALITY CONTROL PLAN	SECTION 11
	San Francisco Oakland Bay Bridge Project	PAGE: 8 OF 17 REV. 0 July 2007

### MECHANICAL AND HEAT STRAIGHTENING PROCEDURE

11.2.6.5 If after welding, the perpendicularity of the longitudinal stiffener exceeds the tolerances of AWS D1.5 - Section 3.5.1.7, 1/100 or 6mm, whichever is greater, then the component will be heat straightened. Heat straightening for the longitudinal stiffener plates:

Method 1: Heat straightening at the backside of tilt according to the actual condition. During the heat straightening, <sup>\*</sup>additional force may be applied by the use of jacking. The base metal should be protected by pad or other means to prevent jacking damage. Figure 7:



APPROVED AS NOTED

NOT APPROVED

Pursuant to Section 5-1.02  
of the Standard Specifications  
State of California  
DEPARTMENT OF TRANSPORTATION

Chris H... for RTM

7-30-07

Sigs... Structure Representative

DELETE

~~Method 2. If the perpendicularity is not within the requirements by method 1, take method 2 as shown in Figure 8.~~

~~Step 1: Excavate by gouging to remove the backside welds of the tilt stiffener as followed figure a.~~

~~Step 2: Heat straightening of the backside welds as shown in figure b:~~

~~Step 3: Weld according to the relative WPS as shown in figure c.~~

<sup>\*</sup> **Note:** Additional forces shall be applied before heating and not increased by external means during heating or cooling. The additional forces shall not produce a kink (local buckling of the compression element) during the heating phase. The additional forces shall also not result in stresses that are greater than the yield stress of the heated element at the elevated temperature.

## NCR PROPOSED RESOLUTION

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

**Dated:** 21-Jan-2010

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

**Attention:** Pursell, Gary  
Resident Engineer

**Job Name:** SAS Superstructure

**Document No.:** ABF-NPR-000320 Rev: 03

**Ref:** 05.03.06-000309

**Subject:** NCR No. ZPMC-0320

---

### Contractor's Proposed Resolution:

**Reference Resolution:** In future cases when procedures not outlined in the WQCP are used ZPMC will request Engineer approval. Based on this and previously submitted documents ZPMC requests closure of this NCR.

In future cases when procedures not outlined in the WQCP are used ZPMC will request Engineer approval. Based on this and previously submitted documents ZPMC requests closure of this NCR.

**Submitted by:** Ishibashi, Joshua

**Attachment(s):** ABF-NPR-000320R03

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### Caltrans' comments:

**Status:** CLO

**Date:** 21-Jan-2010

The proposed resolution is acceptable. The Department concurs that Non-conformance ZPMC-0320 is closed.

**Submitted by:** Lee, Ken

**Date:** 21-Jan-2010

**Attachment(s):**

**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-000484**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 21-Jan-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0320**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:** 30-Jul-2009**Description of Non-Conformance:**

QA observed that ZPMC personnel had performed heat straightening on East and South Towers in a manner not in accordance with the ZPMC Welding Quality Control Plan (WQCP). Heat straightening procedures not outlined in the WQCP require prior Engineer approval.

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

Provide performed repair procedure and supporting NDT documentation that shows nearby welds were not negatively affected.

**Corrective action taken:**

The HSR1 and associated NDT documentation was provided. In the future ZPMC will request engineer approval when the procedure is not in the WQCP.

**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 Structural Materials for your project.

**Inspected By:** Ng, Michael

Quality Assurance Inspector

**Reviewed By:** Wahbeh, Mazen

QA Reviewer