

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-000413

Prime Contractor: American Bridge/Fluor Enterprises, a JV

Date: 21-Sep-2009

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

NCR #: ZPMC-0387

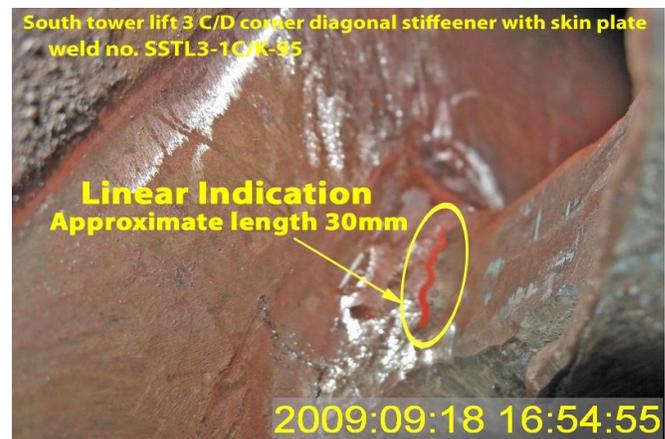
Type of problem:

Welding	Concrete	Other	
Welding	Curing	Procedural	Bridge No: 34-0006
Joint fit-up	Coating	Other	Component: South Tower
Procedural	Procedural	Description: South Tower, Lift 3	

Reference Description: Missed MT indication on South Tower, Lift 3, Diagonal Stiffener weld

Description of Non-Conformance:

During Magnetic Particle Testing (MT) of South Tower, Lift 3, C/D corner diagonal stiffener to skin plate weld SSTL3-1C/K-95, QA discovered a linear indication of approximately 30 mm in length. This weld had been previously tested and accepted by ZPMC Quality Control personnel.



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 D1.5-2002, Section 6.26.2 – “Welds that are subject to MT in addition to visual inspection shall have no cracks.

Who discovered the problem: Umesh Gaikwad

Name of individual from Contractor notified: Liu Cheng

QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 2)

Time and method of notification: 9/18/2009, 17:00; Verbal

Name of Caltrans Engineer notified: Scott Kennedy

Time and method of notification: 9/21/2009, 8:00; Verbal

QC Inspector's Name: Zhang Jiadi

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.

Inspected By:	Sinevod,Serge	ASMR
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Reviewed By:	Wahbeh,Mazen	SMR
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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: 21-Sep-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: 05.03.06-000375

Subject: NCR No. ZPMC-0387

Reference Description: Missed Indication (MT) / South Shaft Lift 3 / Diagonal Stiffener Weld

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:** 03

Remarks:

During Magnetic Particle Testing (MT) of South Tower, Lift 3, C/D corner diagonal stiffener to skin plate weld SSTL3-1C/K-95, QA discovered a linear indication of approximately 30 mm in length. This weld had been previously tested and accepted by ZPMC Quality Control personnel.

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 D1.5-2002, Section 6.26.2 – “Welds that are subject to MT in addition to visual inspection shall have no cracks.

Action Required and/or Action Taken:

Propose a resolution for this systematic non-conformance that addresses the failure of Quality Control to identify the linear indication during magnetic particle testing of the welds. Provide documentation of the steps/actions taken by the Quality Control Manager to prevent future occurrences.

In addition to the Quality Control non-conformance, address the material/workmanship for the identified non-conformance including documentation that the deficiency has been brought into compliance with the contract requirements. Additionally address the probable causes for the indication and the actions that will be taken to limit future occurrences.

Recent failures by Quality Control to identify linear indications (MT) have resulted in the issuance of NCR ZPMC-0358, ZPMC-0359, ZPMC-0371, ZPMC-0372, ZPMC-0373, ZPMC-0375, ZPMC-0376, ZPMC-0377, ZPMC-383, ZPMC-0384 and ZPMC-0386 related to Tower.

Transmitted by: Scott Kennedy Sr. Bridge Engineer

NCT

(Continued Page 2 of 2)

Attachments: ZPMC-0387

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: 05.03.06-000375

Subject: NCR No. ZPMC-0387

Dated: 16-Oct-2009

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

Job Name: SAS Superstructure

Document No.: ABF-NPR-000375 **Rev:** 00

Contractor's Proposed Resolution:

Reference Resolution: ABFJV QCM has implemented training with ZPMC to improve the quality of inspections. In addition, ABFJV has committed to perform overchecks in both the Tower and OBG.

ABFJV QCM has implemented training with ZPMC to improve the quality of inspections. ABFJV will provide documentation showing attendance by ZPMC QC inspectors and the subject of training. Topics to be covered during the instruction are: inspection of equipment prior to use, proper conditions for inspection, proper technique for MT, and UT. In addition, ABFJV has committed to perform overchecks in both the Tower and OBG. This will serve two purposes, first to monitor if the training is effective at reducing the number of missed indications and second to ensure missed indications are prevented.

Please see attached documentation showing repair and acceptable NDT results of the missed indication. ZPMC requests closure of this NCR.

Submitted by:

Attachment(s): ABF-NPR-000375R00;

Caltrans' comments:

Status: AAP

Date: 18-Oct-2009

The proposal is acceptable. However, the Department will consider closure of this NCR (ZPMC-387) once all the training documents are submitted and reviewed.

Submitted by: Lee, Ken

Date: 18-Oct-2009

Attachment(s):



No. T-065

LETTER OF RESPONSE

TO: American Bridge/Flour JV
DATE: 2009-10-15
REGARDING: NCR-000413(ZPMC-0387)

ZPMC received NCR-000413(ZPMC-0387), it mentioned that CT inspector discovered an approximately 30mm length linear indication on Lift 3 South Tower corner diagonal stiffener to skin plate weld, which was previously tested and accepted by ZPMC. The relational weld was SSSL3-1C/K-95.

ZPMC acknowledged this problem, and already put forward T-CWR253 to repair it. As a result, ZPMC had removed the indication and repaired it, then finally performed re-inspection by MT. Also this weld was re-inspected and accepted by CT inspector. In order to avoid such problem occurs again ZPMC will perform NDT work according to related procedures strictly, and enhance QC be more responsible. Here attached the CWR and MT Reports to prove the weld is perfect after repairing.

So ZPMC hope Caltrans could take a review and close this NCR.

ATTACHMENT:
NCR-000413(ZPMC-0387)
T-CWR253
T787-MT-5913R1

Zheng Jundi

2009. 10. 15



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 Date: 21-Sep-2009
375 BURMA ROAD
OAKLAND CA 95607 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: 05.03.06-000375
Subject: NCR No. ZPMC-0387

Reference Description: Missed Indication (MT) / South Shaft Lift 3 / Diagonal Stiffener Weld

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

Material Location: Tower Lift: 03

Remarks:

During Magnetic Particle Testing (MT) of South Tower, Lift 3, C/D corner diagonal stiffener to skin plate weld SSTL3-1C/K-95, QA discovered a linear indication of approximately 30 mm in length. This weld had been previously tested and accepted by ZPMC Quality Control personnel.

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 D1.5-2002, Section 6.26.2 – "Welds that are subject to MT in addition to visual inspection shall have no cracks."

Action Required and/or Action Taken:

Propose a resolution for this systematic non-conformance that addresses the failure of Quality Control to identify the linear indication during magnetic particle testing of the welds. Provide documentation of the steps/actions taken by the Quality Control Manager to prevent future occurrences.

In addition to the Quality Control non-conformance, address the material/workmanship for the identified non-conformance including documentation that the deficiency has been brought into compliance with the contract requirements. Additionally address the probable causes for the indication and the actions that will be taken to limit future occurrences.

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Transmitted by: Scott Kennedy Sr. Bridge Engineer

NCT

(Continued Page 2 of 2)

Attachments: ZPMC-0387

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

File: 05.03.06

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.25B

QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

Location: Changxing Island, Shanghai, PRC

Report No: NCR-000413

Prime Contractor: American Bridge/Fluor Enterprises, a JV

Date: 21-Sep-2009

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

NCR #: ZPMC-0387

Type of problem:

Welding Concrete Other
Welding Curing Procedural **Bridge No:** 34-0006
Joint fit-up Coating Other **Component:** South Tower
Procedural Procedural **Description:** South Tower, Lift 3

Reference Description: Missed MT indication on South Tower, Lift 3, Diagonal Stiffener weld

Description of Non-Conformance:

During Magnetic Particle Testing (MT) of South Tower, Lift 3, C/D corner diagonal stiffener to skin plate weld SSTL3-1C/K-95, QA discovered a linear indication of approximately 30 mm in length. This weld had been previously tested and accepted by ZPMC Quality Control personnel.



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 D1.5-2002, Section 6.26.2 – “Welds that are subject to MT in addition to visual inspection shall have no cracks.

Who discovered the problem: Umesh Gaikwad

Name of individual from Contractor notified: Liu Cheng

QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 2)

Time and method of notification: 9/18/2009, 17:00; Verbal

Name of Caltrans Engineer notified: Scott Kennedy

Time and method of notification: 9/21/2009, 8:00; Verbal

QC Inspector's Name: Zhang Jiadi

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.

Inspected By: Sinevod,Serge

ASMR

Reviewed By: Wahbeh,Mazen

SMR

南三CD角焊缝 9.23收

Finished, ct 验收 09.12.1

	关键焊缝返修报告 Critical Welding Repair Report (CWR)				版本 Rev. No.: 0
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项目名称 Project Name:	英坭海湾大桥 SFOBB	部件图号 Drawing No.:	SSTL3-1C/K	报告编号 Report No.:	T-CWR 253
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	Tower(S) 3 rd lifting CD angle	NDT 报告编号 NDT Report No.:	T787-MT-5913
项目编号 Project No.:	ZP06-787				

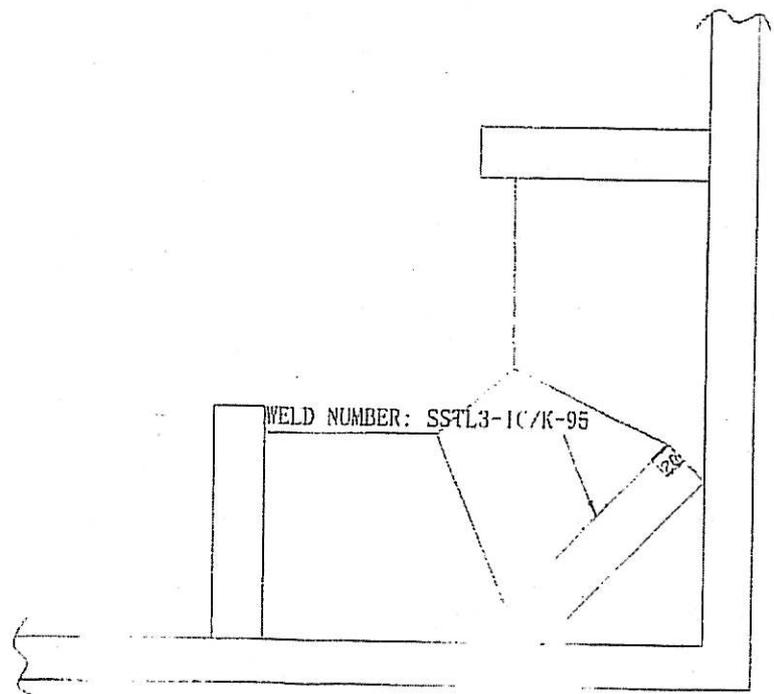
焊缝缺陷描述:
 Description of Welding Discontinuity:
 在对SSTL3-1C/K-95检测时, 发现1处线性缺陷。

Welder ID No. (焊工编号): 070478 Position:(位置): 3G

One line indication was found by use of MT on SSTL3-1C/K-95.

检验员 (Inspector): Wang Wei 日期 (Date): 2009.09.18

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 5-1.02 of the
 Standard Specifications
 Initial SFL Date: 09/22/09

产生原因:

Cause:

1. 火焰加热时,水汽没有完全的去掉或者这个区域预热不够;

1. Moisture wasn't completely removed during drying operation (preheating) or the area wasn't preheated sufficiently.

车间负责人 (Foreman): *Lu Yofei* 日期 (Date): *07.07.19*

处理意见

Disposition:

1. QC shall monitor and direct the welder and the grinder doing the repair operation.
2. Preheat before gouging; the temperature shall be at least 65°C.
3. Gouge the weld to remove identified defects.
4. Joint details shall refer to the approved WPS repair.
5. Grind the gouged areas to a smooth and shiny surface.
6. Verify with VT and MT to ensure no defects remain in the weld joint prior to welding.
7. QC shall monitor all welding passes being deposited.
8. QC shall ensure all slag has been removed prior the deposition of next pass.
9. Preheat and maintain interpass temperature control in accordance with the WPS.
10. Blend the weld repaired areas into the adjacent weld or base metal by grinding.
11. Perform VT, MT and UT NDT inspection to the repaired areas.

1. 在返修过程中, QC 应该监控和指导焊工和打磨工;
2. 碳刨之前必须先进行预热, 温度不低于 65° C;
3. 碳刨去除缺陷;
4. 缺陷被完全消除后, 必须准备一个正确的接头型式, 具体接头型式请参见对应的修补焊接工艺规程(WPS);
5. 将碳刨面打磨光滑;
6. 在准备好焊接接头焊接前, 用 VT 和 MT 检测缺陷被完全消除;
7. 在返修过程中, QC 确认焊道清理干净;
8. 在进入下到焊缝前, QC 应该保证所有的缺陷已经去除,
9. 根据 WPS 控制预热和焊道的温度;
10. 打磨返修区域与临近焊缝和母材持平;
11. VT, MT 和其它 NDT 检测焊缝。

工艺:

Technical Engineer: *Shay Jinduf* 审核: Approved By:

Lu Yofei
for client

日期: *07.07.20*
Date:

#R787-QCP-900

This document is APPROVED
State of California
DEPARTMENT OF TRANSPORTATION
Pursuant to Section 5-1.02 of the
Standard Specifications
Initial SFC Date: *07/22/09*



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.:	SSTL3-1C/K	报告编号 Report No.:	T-CWR253
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	Tower(S) 3 rd lifting CD angle	NDT 报告编号 NDT Report No.:	T787-MT-5913
项目编号 Project No.:	ZP06-787				

纠正措施:

Corrective Action to Prevent Re-occurrence:

1. 返修前, QC确认有效的预热, 以将水汽全部去除。

1. QC shall verify sufficient preheat has been applied, to remove moisture, prior to welding.

车间负责人 (Foreman):

Lu Yefei

日期 (Date):

09.09.19

参照的 WPS 编号 Repair WPS No.:	WPS-345-SMAW-3 G(3F)-Repair WPS-345-SMAW-2 G(2F)-Repair	工艺员 Technologist:	Shang Jindong 09.09.20
返修 (碳刨) 前预热温度 Preheat Temperature Before Gouging:	NA	返修的缺陷 Description of Discontinuity:	Orca link indication
焊前处理检查 Inspection Before Welding:	VT/MT Au	焊前预热温度 Preheat Temperature Before Welding:	200°C
最大碳刨深度 Max. Depth of Gouge:	NA	碳刨总长 Total Length of Gouge:	NA
焊工 Welder:	ok058/	焊接类型 Welding Type:	SMAW
焊接电流 Current:	150A	焊接电压 Voltage:	24.1V
		焊接位置 Position:	4G
		焊接速度 Speed:	110 mm/min

返修后检查

Inspection After Repair:

外观检查 VT Result:	VT Au	检验员 Inspector:	liuyang	日期 Date:	09.9.26
NDT 复检 NDT Result:	MT Au	探伤员 NDT Person:	Xutian	日期 Date:	09.9.30

见证:

Witness/Review:

备注:

Remark:

#R787-QCP-900



REPORT OF MAGNETIC PARTICLE EXAMINATION

磁粉检测报告

REPORT NO. 报告编号 T787-MT-5913R1 DATE日期 2009.09.30 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: SSSL3-1B/K,C/K,D/K,F/K,G/K,H/K,I/K,J/K Tower(S) 3rd lifting CD angle 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. 28ST, 2009

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

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: WELDING 焊接件 CASTING 铸件 FORGING 锻造 Material & thickness 母材,厚度: A709M-345T2-Z/A709M-HPS-485WT2-Z 45/38/75mm

WELDING PROCESS 焊接方法: SMAW TYPE OF JOINT 焊缝类型: T-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			
SSSL3-1C/K-95	1R1			ACC.		excavation

AFTER T - CWR 253

BLANK

EXAMINED BY 主探: Xu Hai REVIEWED BY 审核: Wang Wei
 LEVEL - II SIGN 签名 / DATE 日期: 09.09.30 LEVEL-II SIGN / DATE 日期: 09.09.30

质量经理 / QCM: [Signature] 2009.9.30 用户 CUSTOMER: _____
 签字 SIGN / 日期 DATE: _____ 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: 05.03.06-000375

Subject: NCR No. ZPMC-0387

Dated: 10-Nov-2009

Contract No.: 04-0120F 4
04-SF-80-13.2 / 13.9

Job Name: SAS Superstructure

Document No.: ABF-NPR-000375 **Rev:** 01

Contractor's Proposed Resolution:

Reference Resolution: Attached is the documentation of training of ZPMC QC's MT technicians by ABF JV's QCM. ZPMC requests closure of this NCR.

Attached is the documentation of training of ZPMC QC's MT technicians by ABF JV's QCM. ZPMC requests closure of this NCR.

Submitted by:

Attachment(s): ABF-NPR-000375R01;

Caltrans' comments:

Status: CLO

Date: 10-Nov-2009

Based on the traing document submitted, the Department concurs that Non-conformance ZPMC-387 is closed.

Submitted by: Lee, Ken

Date: 10-Nov-2009

Attachment(s):

Tool Box Training Agenda

Subject: MT Techniques

Reason for Refresher Training: Several CT NCR's for missed MT indications

1. Safety

- a. Safety Glasses
- b. Gloves (if required)
- c. Knee Pads
- d. Electrical shock

2. Tools

- a. Lighting
- b. MT Powder. Red for ambient, Yellow for High Temperature.
- c. Powder Bulb
- d. Powder Blower
- e. MT Yoke condition

3. Inspection Techniques

- a. Lighting
- b. Position of body (distance of eyes to the weld surface)
- c. Application of Powder
- d. Continuous method
- e. Two directions
- f. Both sides of weld

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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(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-000310**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 20-Oct-2009**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0387**Type of problem:**

Welding	Concrete	Other	
Welding	Curing	Procedural	Bridge No: 34-0006
Joint fit-up	Coating	Other	Component:
Procedural	Procedural	Description:	

Date the Non-Conformance Report was written: 21-Sep-2009**Description of Non-Conformance:**

During Magnetic Particle Testing (MT) of South Tower, Lift 3, C/D corner diagonal stiffener to skin plate weld SSTL3-1C/K-95, QA discovered a linear indication of approximately 30 mm in length. This weld had been previously tested and accepted by ZPMC Quality Control personnel.

Contractor's proposal to correct the problem:

Repair affected weld.

Corrective action taken:

Weld has been repaired and Non-Destructive Testing (NDT) documentation indicating a sound weld has been submitted. To resolve the recurring failure for QC to detect MT indications, ABFJV QCM has implemented training with ZPMC to improve quality of inspectors. Topics include: inspection of equipment prior to use, proper conditions for inspection, proper technique for MT & UT. In addition, ABFJV is performing weld over-checks. This will serve two purposes, first to monitor if the training is effective at reducing the number of missed indications and second, to ensure missed indications are prevented.

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

Inspected By: Sinevod, Serge

Quality Assurance Inspector

Reviewed By: Wahbeh, Mazen

QA Reviewer