

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, P.R. China**Report No:** NCR-000616**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 09-Jan-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island**NCR #:** ZPMC-0589**Type of problem:**

Welding	Concrete	Other	
Welding	Curing	Procedural	Bridge No: 34-0006
Joint fit-up	Coating	Other	Component: Segment 5AE and 5BE Side Panel
Procedural	Procedural	Description: Missed MT indication by QC	

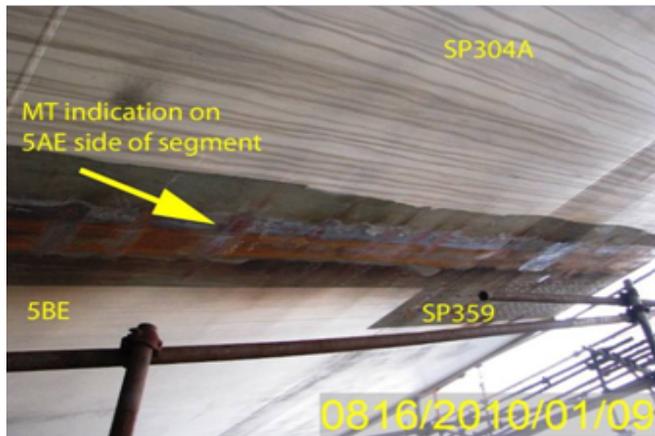
Reference Description: Missed MT Indication by QC on 5AE/5BE Side Panel**Description of Non-Conformance:**

During the Quality Assurance Magnetic Particle Testing (MT) review of base metal and welds located on Segment 5AE 5BE weld splice, this Quality Assurance Inspector (QA) discovered the following issues:

- Two (2) Longitudinal linear indication measuring approximately 60mm and 30mm in length.
- The Notice of Witness Inspection Number (NWIT) is 005023. The indication is located inside the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel. According to the contract documents ZPMC Quality Control (QC) is required to perform 100% MT of temporary attachment removal areas.
- The indications were found at temporary attachment removal areas on two (2) side panels.
- The Side Panel on 5AE is identified as: SP304A
- The Side Panel on 5BE is identified as: SP359A
- Length and Y location of the MT indication on SP304A (5AE) is as followed: 60mm in length and 1800mm off corner assembly weld splice on the bike path side of segment.
- Length and Y location of the MT indication on SP359A (5BE) is as followed: 30mm in length and 5555mm off corner assembly weld splice on the bike path side of segment.
- The CJP splice weld # is designated as OBE5A-004.

QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 3)



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 (02) Section 6.26.2 – “Welds that are subject to MT in addition to visual inspection shall have no cracks.

ZPMC temporary attachment removal procedure TA100 “100% MT will be performed on the surface where the attachment has been removed.

Who discovered the problem: Joe Alaniz

Name of individual from Contractor notified: Shen Ruzhun

Time and method of notification: 1020 hours, 01-09-10, Email

Name of Caltrans Engineer notified: Wang Lu

Time and method of notification: Bill Howe, Ching Chao

QC Inspector's Name: 2300 hours, 01-09-10, Email

Was QC Inspector aware of the problem: Yes No

Contractor's proposal to correct the problem:

N/A

Comments:

QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 3 of 3)

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, +(86) 134.7247.7571, who represents the Office of Structural Materials for your project.

Inspected By:	Tsang, Eric	SMR
Reviewed By:	Wahbeh, Mazen	SMR

NCT

(Continued Page 2 of 2)

cc: Rick Morrow, Gary Pursell, Peter Siegenthaler, Stanley Ku, Brian Boal, Jason Tom, Contract Files, Ching Chao

File: 05.03.06

NCR PROPOSED RESOLUTION

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

Attention: Pursell, Gary
Resident Engineer

Ref: 05.03.06-000579

Subject: NCR No. ZPMC-0589

Dated: 18-Jan-2010

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

Job Name: SAS Superstructure

Document No.: ABF-NPR-000505 Rev: 00

Contractor's Proposed Resolution:

Reference Resolution: As a means of preventing future occurrences, the ABF QCM has performed refresher MT training. See attached MT training agenda and attendance roster.

As it is necessary to respond to the NCR with a proposed plan of action, ABF is doing so without all of the repair documentation at this time. As a means of preventing future occurrences, the ABF QCM has performed refresher MT training. See attached MT training agenda and attendance roster. The ABF QCM has been discussing missed MT indications with the ZPMC QCM and related NDT supervisory personnel. The ZPMC level III is in the process of assessing personnel, techniques and equipment. Preliminary findings have resulted in ZPMC taking immediate action by performing 100% overchecks of the previously tested areas beginning the week of 18 January 09 as a means of preventing future NCR's for missed indications. ABF has purchased powder dispensers for all the ZPMC MT technicians as a means to help control the amount of powder applied during MT testing. ZPMC requests this NCR be placed in the Approved Action Pending status category until such time that all the repair documents have been assembled and submitted.

Submitted by: Lawton, Steve

Attachment(s): ABF-NPR-000505R00;

Caltrans' comments:

Status: AAP

Date: 25-Jan-2010

The preventative measures taken by the QCM and the proposed resolution for closing NCR submitted by the contractor are acceptable. The NCR will be closed upon completion of the repair and review of the repair documents by the Engineer when submitted by the contractor.

Submitted by: Chao, Ching

Date: 25-Jan-2010

Attachment(s):

Tool Box Training Agenda

Subject: MT Techniques

Reason for Training: Several CT NCR's of indications missed during ZPMC NDT inspection.

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 Adequate working condition
- f. Pie Gage

3. Inspection Techniques

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



教育培训纪录

培训编号: MT-22-Dec-09

培训内容:	MT Techniques
培训对像:	项目质检
授课人员:	Steve Lawton
培训类型:	内部培训
培训时间:	22-Dec-09 5:00 PM
计划培训地点:	ZPMC QC office

人员签到:

姓名	部门	姓名	部门
孙力杰 Sunlei	钢桥	狄坤龙 Di Kunlun	钢桥
孙广强 Sun Guangqiang	钢桥	蔡新鑫 Cai Xinxin	钢桥
徐海 Xu Hai	钢桥	傅春强 Fu Zhongqiang	钢桥
卞源源 Bian Yuanyuan	钢桥	顾云武 Gu Yunwu	钢桥
许兵 Xu Bing	钢桥	金建廷 Jin Jianting	钢桥 MT
李振华 Li Zhenhua	钢桥	常方杰 Chang Fangjie	钢桥
李坤阳 Li Xunyang	QA	袁俊 Yuan Jun	钢桥
王威 Wang Wei	钢桥	刘章敏 Liu Zhangmin	
孙林 Sun Lin	钢桥 MT	徐华祥 Xu Huaxiang	钢桥
丁阿成 Ding A Cheng	钢桥 MT	周东超 Zhou Dongchao	钢桥
贺佳佳 He Jiajia	钢桥	赵成功 Zhao Chenggong	钢桥
黄瑞 Huang Rui	钢桥	孙广强 Sun Guangqiang	钢桥
李黎明 Li Liming	钢桥	徐辉 Xu Hui	钢桥
李昌涛 Li Changtao		刘宏斌 Liu Hongbin	

NCR PROPOSED RESOLUTION

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

Attention: Pursell, Gary
Resident Engineer

Ref: 05.03.06-000579

Subject: NCR No. ZPMC-0589

Dated: 17-Mar-2010

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

Job Name: SAS Superstructure

Document No.: ABF-NPR-000505 Rev: 01

Contractor's Proposed Resolution:

Reference Resolution: ZPMC is providing the CWR and associated post NDT to show that missed indications were repaired and the welds are now acceptable.

ZPMC is providing the CWR and associated post NDT to show that missed indications were repaired and the welds are now acceptable. To limit further incidents of missed indications, ZPMC and ABFJV has conducted training with the inspectors to improve their technique. Since this training has occurred there has been a decrease in the number of NCRs related to missed MT indications. Based on this ZPMC requests closure of this NCR.

Submitted by: Ishibashi, Joshua

Attachment(s): ABF-NPR-000505R01;

Caltrans' comments:

Status: CLO

Date: 24-Mar-2010

This proposed resolution is acceptable. The documentation received is sufficient and the Department concurs that Non-Conformance ZPMC-0589 is closed.

Submitted by: Eagen, Sean

Attachment(s):

Date: 24-Mar-2010



No. B-690

LETTER OF RESPONSE

TO: American Bridge/Flour

DATE: 2010-3-17

REGARDING: NCR-000616(ZPMC-0589)

ZPMC is providing the CWRs and NDT records show the repairs for missed MT indications on base metal are acceptable. After NDT verification this issue has been removed from punchlist by CT's representative. Based on this, ZPMC is requesting this NCR to be closed.

ATTACHMENT:

NCR-000616(ZPMC-0589)

B-CWR1174

B787-MT-18541 R1

B-CWR1237

B787-MT-19657 R1

A handwritten signature in black ink, appearing to be 'J. M.' followed by a flourish.

3/17/10



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: 10-Jan-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: 05.03.06-000579
Subject: NCR No. ZPMC-0589

Reference Description: Missed MT Indication by QC on 5AE/5BE Side Panel

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: OBG

Lift: 04

Remarks:

During the Quality Assurance Magnetic Particle Testing (MT) review of base metal and welds located on Segment 5AE 5BE weld splice, this Quality Assurance Inspector (QA) discovered the following issues:

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- The CJP splice weld # is designated as OBE5A-004.

Action Required and/or Action Taken:

Propose a resolution for the identified non-conformance with revised procedures to prevent future occurrences. Missed MT indications are a chronic issue. Provide the ZPMC technician training and equipment required so the technician can find the types of indications previously missed. A response for the resolution of this issue is expected within 7 days.

Transmitted by: Bill Howe Sr. Transportation Engineer

Attachments: ZPMC-0589

NCT

(Continued Page 2 of 2)

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

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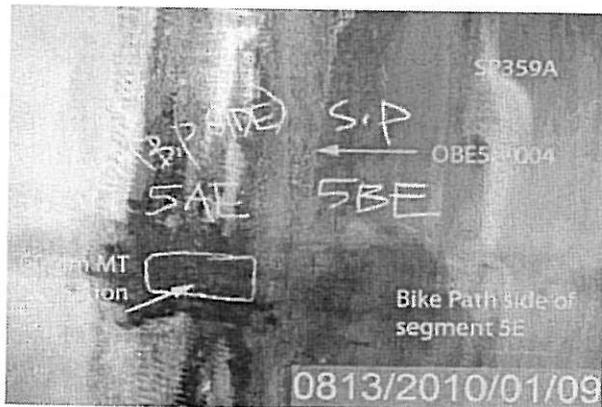
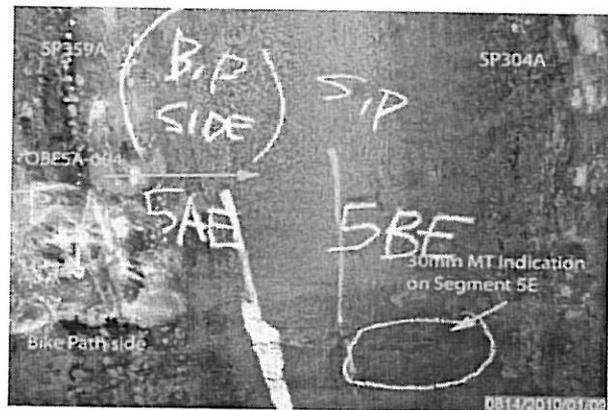
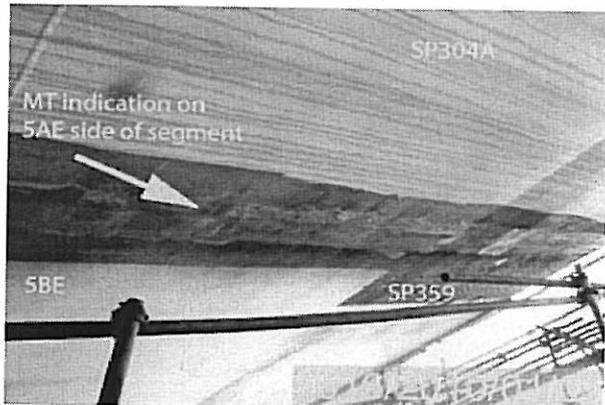
Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.25B**QUALITY ASSURANCE -- NON-CONFORMANCE REPORT****Location:** Changxing Island, Shanghai, P.R. China**Report No:** NCR-000616**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 09-Jan-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island**NCR #:** ZPMC-0589**Type of problem:**Welding Concrete Other Welding Curing Procedural **Bridge No:** 34-0006Joint fit-up Coating Other **Component:** Segment 5AE and 5BE Side PanelProcedural Procedural **Description:** Missed MT indication by QC**Reference Description:** Missed MT Indication by QC on 5AE/5BE Side Panel**Description of Non-Conformance:**

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QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 3)



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Name of individual from Contractor notified: Shen Ruzhun

Time and method of notification: 1020 hours, 01-09-10, Email

Name of Caltrans Engineer notified: Wang Lu

Time and method of notification: Bill Howe, Ching Chao

QC Inspector's Name: 2300 hours, 01-09-10, Email

Was QC Inspector aware of the problem: Yes No

Contractor's proposal to correct the problem:

N/A

Comments:

QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 3 of 3)

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Inspected By: Tsang, Eric

SMR

Reviewed By: Wahbeh, Mazen

SMR

Handwritten initials



关键焊缝返修报告
Critical Welding Repair Report (CWR)

版本
Rev. No.:

0

项目名称 Project Name:	美国海湾大桥 SFOBB	部件图号 Drawing No.:	5AE/5BE	报告编号 Report No.:	B-CWR1174
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	Temporary attachment	NDT 报告编号 NDT Report No.:	B787-MT-18541
项目编号 Project No.:	ZP06-787				

焊缝缺陷描述:

Description of Welding Discontinuity:

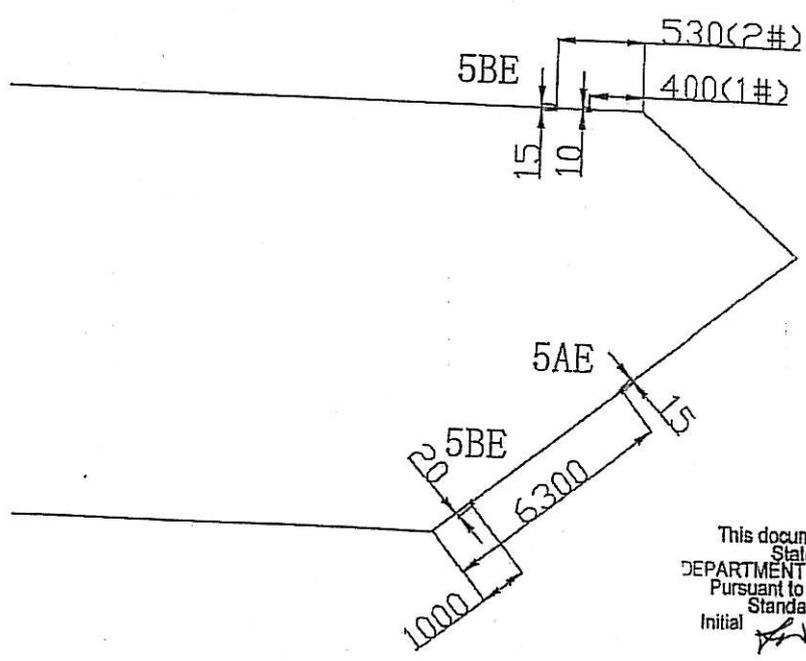
在对SP304A检测时, 发现1处横向裂纹。1、L=15mm
 在对SP305A检测时, 发现1处横向裂纹。1、L=20mm
 在对DP633A检测时, 发现2处横向裂纹。1、L=10mm;2、L=15mm
 Welder ID No. (焊工编号):048659 Position:(位置): 1G
 One transverse crack was found by use of MT on SP304A. ✓
 One transverse crack was found by use of MT on SP305A.
 Two transverse cracks were found by use of MT on DP633A.

检验员 (Inspector): Ding Acheng

日期 (Date): 2010-01-23

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 *DA* Date: 1/27/10

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):

Ma Ruiquan

日期 (Date):

10.01.23

处理意见

Disposition:

1. 这次返修时, QC和Leader CWI到现场对打磨, 焊接进行指导和监控工作以保证返修按照处理意见进行;
2. 整个返修的过程, QC和Leader CWI应该有批准CWR的复印件;
3. 去除热影响区域上在各个方向上不小于25mm范围内的油漆;
4. 返修范围为裂纹长度以及两端各加50mm, 对于多个裂纹的返修, 打磨返修范围为清除多个裂纹外另加其最外端的每一端加长50mm;
5. 将杂物以及MT检测遗留的残留物清理干净。采用打磨的方法去除母材缺陷。打磨前预热至65° C;
6. 对裂纹去除过程当中导致母材损伤深度超过3mm的应先进行母材修补完成后再进行接头修补工作。
7. 焊接前按照新的焊接返修工艺准备焊缝接头形式;
8. 返修前, VT和MT检测确认返修区域没有裂纹及其他缺陷存在;
9. 将杂物以及MT检测遗留的残留物清理干净。按照批准的WPS进行预热和焊接, 预热温度不低于160° C—230° C;
10. 焊接后按WPS要求进行后热, 后热温度为230° C—315° C, 后热时间至少1个小时;
11. 后热后将焊缝逐渐冷却到周围环境温度, 并控制冷却速率不超过50° C每小时;
12. 将修补区域打磨与母材或相邻焊缝平齐;
13. 在焊缝冷却至环境温度至少经过48小时以后进行NDT检查;
14. 根据图纸要求对返修区域进行NDT(VT, MT, UT)检测以确定无缺陷存在。

This document is APPROVED
 State of California
 DEPARTMENT OF TRANSPORTATION
 Pursuant to Section 5-1.02 of the
 Standard Specifications
 Initial: *LR* Date: 1/27/10

1. QC and a Lead CWI shall be present, direct and supervise all grinding and welding operations during this repair to ensure the repair is per the disposition requirements
2. QC and a Lead CWI shall have an approved copy of the CWR in hand prior to the repair.
3. Remove paint ≥ 25 mm in all direction of HAZ prior to MT.
4. Extend repair .50mm beyond each end of the crack and 50mm beyond the outermost cracks for multiple crack repairs.
5. Clean the excavation area of all loose debris including MT powder. Remove defects by grinding. Preheat to 65° C before removing cracks by grinding;
6. Perform base metal repair work prior to performing joint repair work when crack removal procedures result in damage than 3mm,
7. Prepare excavation in accordance with the New Repair Procedure prior to welding.
8. Perform VT and MT prior to welding to verify no defects exist;
9. Clean excavation area of all loose debris including MT powder after excavation. Preheat and weld according to repair WPS, the minimum preheat shall not less than 160° C—230° C;
10. Perform post weld heating according to repair WPS, the postheat shall between 230° C—315° C and for one hour minimum.
11. Allow the weld to cool to ambient temperature gradually. Control cooling rate after PWHT to no more than 50° C per hour
12. Grind the repair area flush with base metal or the adjacent weld;
13. Wait 48 hours at least after the repair area has cooled to ambient temperature before performing NDT.
14. Perform VT, MT and UT on repair area to ensure no defects exist.

工艺:

Technical Engineer: He Xiaohui

审核:

Approved By: *Luyankun*

日期:

Date: 10.01.23



关键焊缝返修报告

Critical Welding Repair Report (CWR)

版本
Rev. No.:

0

项目名称 Project Name:	美国海湾大桥 SFOBB	部件图号 Drawing No.:	5AE/5BE	报告编号 Report No.:	B-CWR1174
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	Temporary attachment	NDT 报告编号 NDT Report No.:	B787-MT-18541
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):

Ma Ruiquan

日期 (Date):

10.01.23

参照的WPS编号 Repair WPS No.:	WPS-345-SMAW-1G(1F)-Repair WPS-345-SMAW-4G(4F)-FCM-Repair	工艺员 Technologist:	He Xiaoli 10.01.23
返修(碳刨)前预热温度 Preheat Temperature Before Gouging:	70℃	返修的缺陷 Description of Discontinuity:	Crack
焊前处理检查 Inspection Before Welding:	Acc	焊前预热温度 Preheat Temperature Before Welding:	174℃
最大碳刨深度 Max. Depth of Gouge:	5mm	碳刨总长 Total Length of Gouge:	460mm
焊工 Welder:	054467	焊接类型 Welding Type:	SMAW
焊接电流 Current:	151/152	焊接电压 Voltage:	22/23
		焊接位置 Position:	4F/1F
		焊接速度 Speed:	100/105

返修后检查
Inspection After Repair:

外观检查 VT Result:	Acc	检验员 Inspector:	Wuzhicheng	日期 Date:	2010.2.27
NDT复检 NDT Result:	无72 Acc	探伤员 NDT Person:	Wuzhicheng	日期 Date:	2010-03-14

见证:
Witness/Review:

备注:
Remark:

#R787-QCP-900

This document is APPROVED
State of California
DEPARTMENT OF TRANSPORTATION
Pursuant to Section 5-1.02 of the
Standard Specifications
Initial: [Signature] Date: 1/27/10



REPORT OF MAGNETIC PARTICLE EXAMINATION

磁粉检测报告

REPORT NO. 报告编号 B787-MT-18541R1		DATE日期 2010.03.14	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: 5AE/5BE temporary attachment		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 ST , 2010	
EQUIPMENT 设备 MT YOKE	MANUFACTURER 制造商 PARKER	MODEL NO. 样式编号 B310S	SERIAL NO. 连续编号 5395 5617 5620	
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-345F2 18/20mm	
WELDING PROCESS 焊接方法	SMAW	TYPE OF JOINT 焊缝类型	NA	

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			
SP304A	1R1			ACC.		100%MT
SP305A	1R1			ACC.		100%MT
DP633A	1R1			ACC.		100%MT
	2R1			ACC.		100%MT

AFTER B-CWR1174

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EXAMINED BY主探 Ding Acheng LEVEL - II SIGN 签名 / DATE日期 质量经理 / QCM	REVIEWED BY 审核 Su Wei LEVEL-II SIGN / DATE日期 用户CUSTOMER
签字 SIGN / 日期 DATE	签字 SIGN / 日期 DATE



关键焊缝返修报告
Critical Welding Repair Report (CWR)

版本
Rev. No.:

0

项目名称 Project Name:	美国海湾大桥 SFOBB	部件图号 Drawing No.:	SP359A ✓	报告编号 Report No.:	B-CWR1237
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	SIDE PLATE	NDT 报告编号 NDT Report No.:	B787-MT-19657
项目编号 Project No.:	ZP06-787				

焊缝缺陷描述:

Description of Welding Discontinuity:

在对母材PL912A检测时, 发现1处纵向裂纹。1、L=50mm

Welder ID No. (焊工编号): NA

Position:(位置): NA

One longitudinal crack was found by use of MT on base metal PL912A.

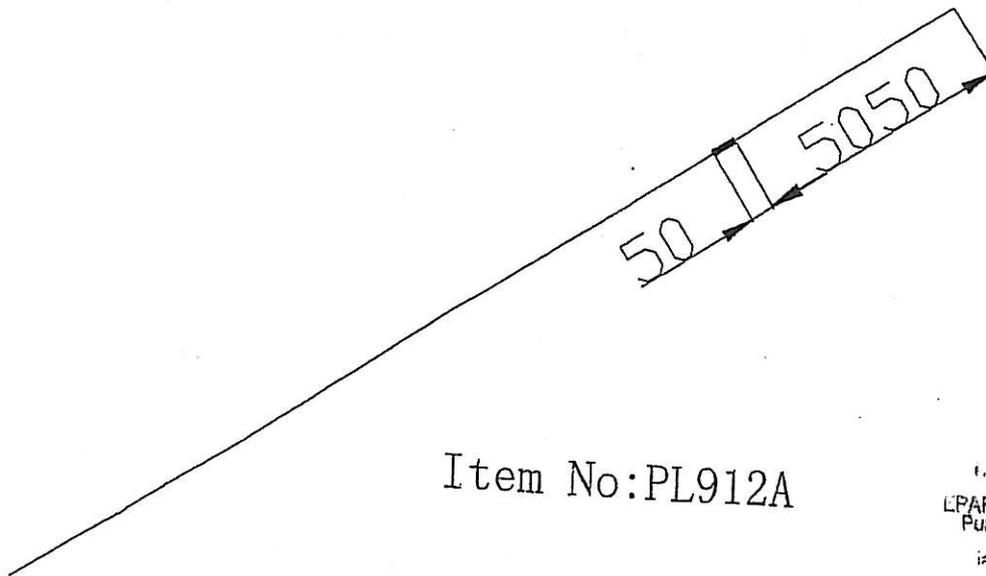
检验员 (Inspector): Ding Acheng

Ding Acheng

日期 (Date): 2010-02-28

焊缝返修位置示意图:

Draft of Welding Discontinuity:



Item No: PL912A

State of California
DEPARTMENT OF TRANSPORTATION
Pursuant to Section 5-102 of
Standard Specifications

RW 3/5/10

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):

Ma Ruiqun

日期 (Date):

10.02.28

处理意见

Disposition:

1. 这次返修时, QC和Leader CWI到现场对打磨, 焊接进行指导和监控工作以保证返修按照处理意见进行;
2. 整个返修的过程, QC和Leader CWI应该有批准CWR的复印件;
3. 去除热影响区域上在各个方向上不小于25mm范围内的油漆;
4. 将杂物以及MT检测遗留的残留物清理干净。然后采用打磨的方法去除裂纹, 打磨前预热至65° C。对于单个裂纹返修, 打磨返修范围清除长度为沿裂纹长度加上超出其每一端50mm;
5. 如果打磨时母材损伤, 则在返修前将损伤区域打磨干净; 如果打磨时或打磨后根部间隙大于5mm, 则在继续返修前另需递交文件给工程师予以审核批准, 并按照被批准的方法将角焊缝改成CJP焊缝;
6. 焊接前按照新的焊接返修工艺准备焊接接头形式;
7. 返修前, VT和MT检测确认返修区域没有裂纹及其他缺陷存在, 同时靠近裂纹的母材也要做MT, 保证没有裂纹延伸到母材。如果在母材上发现裂纹, 则另外需CWR, 且只有当这份另出的CWR批准后才能继续返修;
8. 将杂物以及MT检测遗留的残留物清理干净。按照WPS进行预热和焊接, 预热温度为160° C-230° C;
9. 焊接后WPS要求进行后热, 后热温度为230° C-315° C, 后热时间至少1个小时;
10. 后热后将焊缝逐渐冷却到周围环境温度, 并控制冷却速率不超过50° C每小时;
11. 后热后将修补区域打磨与母材或相邻焊缝平齐;
12. 在焊缝冷却至环境温度至少经过48小时以后进行NDT检查;
13. 返修后根据图纸进行MT检测, 并按照合同10-1.59 "钢结构" 中的 "检测和试验" 要求进行附加MT检测。对于CJP焊缝, NDT为VT, MT和UT。

1. QC and a Lead CWI shall be present, direct and supervise all grinding and welding operations during this repair to ensure the repair is per the disposition requirements
2. QC and a Lead CWI shall have an approved copy of the CWR in hand prior to the repair.
3. Remove paint $\geq 25\text{mm}$ in all direction of HAZ prior to MT.
4. Clean the excavation area of all loose debris including MT powder. Preheat to 65° C before removing cracks by grinding, repair area shall extend a minimum of 50mm beyond each end of single crack repairs.
5. If base metal is damaged by grinding, the damaged area shall be ground clean prior to performing weld repair. If gap $> 5\text{mm}$ is found during or after grinding, comply with the notification on changing fillet weld to CJP which is submitted for Engineer's review and approval form.
6. Prepare excavation in accordance with the New Repair Procedure prior to welding.
7. Before this repair, Verify with VT and MT repair areas are defects free, and also MT shall be performed on the base metal laying abroad cracks to ensure that no cracks were propagated to the base metal. Separate CWR approval is needed if cracks are found in the base metal, and only after this new CWR's approval can continue the repair.
8. Clean excavation area of all loose debris including MT powder after excavation. Preheat and weld according to repair WPS, the preheat shall between 160° C-230° C.
9. Perform post weld heating according to repair WPS, the postheat shall between 230° C-315° C and for one hour minimum.
10. Allow the weld to cool to ambient temperature gradually. Control cooling rate after PWHT to no more than 50° C per hour.
11. Grind the repaired area flush with base metal or the adjacent weld after post weld heating.
12. Wait 48 hours at least after the repair area has cooled to ambient temperature before performing NDT.
13. Perform MT inspection to all repair area according to Contract Drawings along with all additional NDT required by the applicable notes Special Provision Section 10-1.59 'Steel Structure', subsection 'inspection and testing'. NDT include VT, MT and UT if it is a CJP weld.

工艺:

Technical Engineer: He Xiaoli

审核:

Approved By:

Lujiashun

日期:

Date:

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

10.02.28

3/5/10



关键焊缝返修报告

Critical Welding Repair Report (CWR)

版本
Rev. No.:**0**

项目名称 Project Name:	美国海湾大桥 SFOBB	部件图号 Drawing No.:	SP359A	报告编号 Report No.:	B-CWR1237
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	SIDE PLATE	NDT 报告编号 NDT Report No.:	B787-MT-19657
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):

Ma Ruiguan

日期 (Date):

10-02-28

参照的WPS编号 Repair WPS No.:	WPS-345-SMAW-4G(4F)-FCM -Repair		工艺员 Technologist:	Hexiao Gu 10.02.28	
返修(碳刨)前预热温度 Preheat Temperature Before Gouging:	65°C		返修的缺陷 Description of Discontinuity:	crack	
焊前处理检查 Inspection Before Welding:	Au		焊前预热温度 Preheat Temperature Before Welding:	165°C	
最大碳刨深度 Max. Depth of Gouge:	4 mm		碳刨总长 Total Length of Gouge:	150 mm	
焊工 Welder:	048659	焊接类型 Welding Type:	SMAW	焊接位置 Position:	KG
焊接电流 Current:	142	焊接电压 Voltage:	25.4	焊接速度 Speed:	97
返修后检查 Inspection After Repair:					
外观检查 VT Result:	Au	检验员 Inspector:	Li Yang	日期 Date:	2010.03.07
NDT复检 NDT Result:	NT/Au	探伤员 NDT Person:	Ding Hong	日期 Date:	2010.03.07
见证: Witness/Review:					
备注: Remark:					

#R787-QCP-900

State of California
DEPARTMENT OF TRANSPORTATION
Pursuant to Section 5-1.02 of the
Standard Specifications
3/15/10

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-000603**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 14-Apr-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0589**Type of problem:**

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

Date the Non-Conformance Report was written: 09-Jan-2010**Description of Non-Conformance:**

During the Quality Assurance Magnetic Particle Testing (MT) review of base metal and welds located on Segment 5AE 5BE weld splice, this Quality Assurance Inspector (QA) discovered the following issues:

- Two (2) Longitudinal linear indication measuring approximately 60mm and 30mm in length.
- The Notice of Witness Inspection Number (NWIT) is 005023. The indication is located inside the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel. According to the contract documents ZPMC Quality Control (QC) is required to perform 100% MT of temporary attachment removal areas.
- The indications were found at temporary attachment removal areas on two (2) side panels.
- The Side Panel on 5AE is identified as: SP304A
- The Side Panel on 5BE is identified as: SP359A
- Length and Y location of the MT indication on SP304A (5AE) is as followed: 60mm in length and 1800mm off corner assembly weld splice on the bike path side of segment.
- Length and Y location of the MT indication on SP359A (5BE) is as followed: 30mm in length and 5555mm off corner assembly weld splice on the bike path side of segment.
- The CJP splice weld # is designated as OBE5A-004.

Contractor's proposal to correct the problem:

Repair said indication and perform NDT required to verify weld quality.

Corrective action taken:

Contractor submitted approved CWR used during repair along with subsequent NDT documentation verifying repairs are in conformance with Contract specifications. Supplemental training was provided to MT technicians in regards to this matter.

Did corrective action require Engineer's approval?

QUALITY ASSURANCE -- NON-CONFORMANCE RESOLUTION

(Continued Page 2 of 2)

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 Jim Simonis 152.1675.3703, who represents the Office of Structural Materials for your project.

Inspected By: Simonis,Jim

Quality Assurance Inspector

Reviewed By: Wahbeh,Mazen

QA Reviewer