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-000293
Prime Contractor: American Bridge/Fluor Enterprises, a JV **Date:** 03-Jun-2009
Submitting Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0267

Type of problem:

Welding	☑	**Concrete**	☐	**Other**	☐	
Welding	☐	**Curing**	☐	**Procedural**	☐	**Bridge No:** 34-0006
Joint fit-up	☐	**Coating**	☐	**Other**	☐	**Component:** X38L and X38K Splice Plates
Procedural	☑	**Procedural**	☐	**Description:**		

Reference Description: Weld Repair Without Preheat, X38L & X38K Splice Plates

Description of Non-Conformance:

Caltrans Quality Assurance (QA) Inspector observed ZPMC welding personnel perform base metal edge weld repair without preheating. The repaired parts are identified as X38L and X38K Splice Plates. According to the applicable WPS, 60 deg. minimum preheat is required for the 18mm thick plates. It appears the contractor has repaired approximately thirty five (35) of these splice plate without the appropriate preheat.

Applicable reference:

AWS D1.5-2002 section 1.9 Welding Procedure Specifications (WPSs)
"All production welding shall be performed in conformance with the provisions of an approved Welding Procedure Specification (WPS), which is based upon successful test results as recorded in a Procedure Qualification Record (PQR) unless qualified in conformance with 1.3.1."

Approved Weld Procedure Specification:
WPS-345-FCAW-1G (1F)-Repair specifies 60 deg. minimum preheat for material equal to or less than 20mm thick.

QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

Who discovered the problem: Steve Hall
Name of individual from Contractor notified: Kevin Chen
Time and method of notification: 1400 hours, 06-03-09, Verbal
Name of Caltrans Engineer notified: Stanley Ku
Time and method of notification: 1830 hours, 06-04-09, Email
QC Inspector's Name: Shi Lin
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, 1500.042.2360, who represents the Office of Structural Materials for your project.

Inspected By:	Guest,Skyler	SMR
Reviewed By:	Wahbeh,Mazen	SMR

DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge
666 Feng Bin Road Room 708, Changxing Island
Shanghai 201913 PR China
Tel: 021-56856666 ext 207061 Fax:

NON-CONFORMANCE REPORT TRANSMITTAL

To:	AMERICAN BRIDGE/FLUOR, A JV 375 BURMA ROAD OAKLAND CA 95607	**Date:**	08-Jun-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:**	05.03.06-000258
Subject:	NCR No. ZPMC-0267		

Reference Description: Weld Repair Without Preheat, X38L & X38K Splice Plates

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:**

Remarks:

Caltrans Quality Assurance (QA) Inspector observed ZPMC welding personnel perform base metal edge weld repair without preheating. The repaired parts are identified as X38L and X38K Splice Plates. According to the applicable WPS, 60 deg. Celsius minimum preheat is required for the 18mm thick plates. It appears that ZPMC has repaired approximately thirty five (35) of these splice plate without the appropriate preheat.

Action Required and/or Action Taken:

Please propose a resolution for the identified non-conformance to prevent future occurrences.

Transmitted by: Stanley Ku Sr. Bridge Engineer

Attachments: ZPMC-0267

cc: Rick Morrow, Gary Pursell, Peter Siegenthaler, Brian Boal, Doug Coe, Jason Tom, Doug Wright, Ching Chao

File: 05.03.06

AMERICAN BRIDGE/FLUOR ENTERPRISES, a JV
P.O. BOX 23223 Oakland, CA 94623
Phone (510) 419-0120 / Fax (510) 839-0666

NCR PROPOSED RESOLUTION

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

Attention: Pursell, Gary
Resident Engineer

Ref: 05.03.06-000258

Subject: NCR No. ZPMC-0267

Dated: **03-Aug-2009**

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

Job Name: SAS Superstructure

Document No.: **ABF-NPR-000277 Rev: 00**

Contractor's Proposed Resolution:

Reference Resolution: ZPMC has responded to this NCR and has attached documents as evidence of completion. ZPMC requests closure of this NCR.

ZPMC has responded to this NCR and has attached documents as evidence of completion. ZPMC requests closure of this NCR.

Submitted by:

Attachment(s): ABF-NPR-000277R00;

Caltrans' comments:

Status: CLO

Date: 18-Aug-2009

The proposed resolution is acceptable. The welds in question have been accepted by VT, MT and UT as shown in the attached documents. The Department concurs that Non-Conformance ZPMC-0267 is closed.

Submitted by: Wright, Doug

Date: 18-Aug-2009

Attachment(s):

ZPMC

No. B-425

LETTER OF RESPONSE

TO: American Bridge/Flour

DATE: 2009-7-29

REGARDING: NCR-000293 (ZPMC-0267)

With this letter of response, ZPMC requests closure for Caltrans **NCR-000293 (ZPMC-0267).** We agree the condition describe in the non-conformance report, but should make some clarification, that repair in according with the approval WPS-345-FCAW-1G(1F)-Repair-1. and that's require for minimum preheat temperature is 10 degree if the base metal thickness less than 20mm, so I think the air temperature is enough and no need the additional preheat.

By the way we provide the final visual and NDT inspection report to support the weld repair that were performed and that repair were acceptable.

So base on the above explanation and attached documentation, ZPMC applies to close the caltrans's report **NCR-000293 (ZPMC-0267)**。

Please reference attached documentation for acceptance and closure the **NCR-000293 (ZPMC-0267).**

ATTACHMENT:
NCR-000293 (ZPMC-0267)
ZPMC internal NCR
The final VT/UT/MT report
The corresponding repair WPS

Zhao Shuanzhao

2009. 7. 29.

ZPMC	Nonconformance Report 不符合项报告
Project Name: S.F.O.B.B 项目名称: 美国加州海湾大桥	NCR Number: NCR 编号: NCR-B-179 （ZPMC-267）
Item : Weld repair Without preheat,X38L & X38K Splice Plates 名称描述: 返修没有预热 Item Number: 件号: X38L， X38K Splice plate	Drawing: 图号: X38L,X38K
Location: OBG X38L & X38K Splice Plates 位置:	Date: 日期: 2009-06-10

Description of Nonconformance:

Caltrans Quality Assurance (QA) Inspector observed ZPMC welding personnel perform base metal edge weld repair without preheating . The repaired parts are identified as X38L and X38K Splice Plates. According to the applicable WPS, 60 deg. Celsius minimum preheat is required for the 18mm thick plates. It appears that ZPMC has repaired approximately thirty five (35) of these splice plate without the appropriate prheat.

加洲检验员发现 ZPMC 的焊工在对连接板 X38L 和 X38K 的母材边缘返修补焊的时候，预热温度只有 35℃，而返修使用的 WPS 上要求的，板厚 18mm 的钢板的最低预热温度是 60℃。

Work By: 施工方: 黄[illegible]　Prepared by: 准备: Shen Xuejun 2009.6.10　Reviewed by QCE: 质量工程师批准: Zhao Shuangbao 6.10

☐ Drawing Error 图纸错误　☐ Material Defect 材料缺陷　☒ Fabrication Error 制作错误　☐ Other 其他原因

Disposition: 处理措施:　☐ Use as is 回用　☑ Repair 返修　☐ Reject 拒收

VT. MT 已做.

Recommendation:

建议: 所有补焊位置必须达到预热温度.
All the welds shall reach preheat temperature before welding.

Prepared by: 准备 Lizhi Gang　Approved by QCA: 质量经理批准

Reason for Nonconformance:

不符合原因: 焊接前预热温度没达到WPS要求.
The preheat temperature didn't reach WPS requirement.

Prevention of Re-occurrence:

预防措施: 加强施焊前的温度监控. Enhance supervision before welding.

Approved by/批准: Lizhi Gang

Technical Justification for Use-As-Is/Repair: ☐ Attachment 附件 ☐ Non-attachment 无附件

回用或返修的技术依据:

根据图纸要求对应进行NDT检测，若无缺陷回用；若存在缺陷进行返修。

perform NDT inspection according to drawing requirement if without defects. it use as it is. if with defects. it shall repair it.

Reviewed /批准: 张[illegible]刚 6/12/09

Verification: ☑ Acceptable 可接受 ☐ Unacceptable 不可接受

确认:

CWI Gu Yong Jian 07120671

Verified by QCI/质检确认: _____ Reviewed by QCA/质检主任审核: _____

#R787-QCP-1300

DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge
666 Feng Bin Road Room 708, Changxing Island
Shanghai 201913 PR China
Tel: 021-56856666 ext 207061 Fax:

NON-CONFORMANCE REPORT TRANSMITTAL

To:	AMERICAN BRIDGE/FLUOR, A JV 375 BURMA ROAD OAKLAND CA 95607	Date:	08-Jun-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:	05.03.06-000258
Subject:	NCR No. ZPMC-0267		

Reference Description: Weld Repair Without Preheat, X38L & X38K Splice Plates

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:**

Remarks:

Caltrans Quality Assurance (QA) Inspector observed ZPMC welding personnel perform base metal edge weld repair without preheating. The repaired parts are identified as X38L and X38K Splice Plates. According to the applicable WPS, 60 deg. Celsius minimum preheat is required for the 18mm thick plates. It appears that ZPMC has repaired approximately thirty five (35) of these splice plate without the appropriate preheat.

Action Required and/or Action Taken:

Please propose a resolution for the identified non-conformance to prevent future occurrences.

Transmitted by: Stanley Ku Sr. Bridge Engineer
Attachments: ZPMC-0267

cc: Rick Morrow, Gary Pursell, Peter Siegenthaler, Brian Boal, Doug Coe, Jason Tom, Doug Wright, Ching Chao
File: 05.03.06

ZPMC

周数	89#		
日期	2009.07.18		

Visual Weld Inspection Report
焊缝目视检查报告

Girder/梁:	OBG Connect Plate		
Tower/塔:	NA		
Caltrans Contract No. 加州合同编号	04-0120F4	Representative: 质检代表:	Zhuo Shuangbao
Project No.: 项目名称	San Francisco Oakland Bay Bridge 美国 海湾大桥	CWI: 检验员:	Gu Rongjian 07120671
Project No.: 项目编号:	ZP06-787	Quality Assurance Manager ~Approval 质量控制经理:	Lu Jianhua.

Weld No. 焊缝编号	Welder I.D.# 焊工识别号	Location 位置	Welding consumables 焊接材料	Undercut 咬边	Porosity 气孔	Over lap 焊瘤	Crater 弧坑	Arc strike 电弧擦伤	Spatters 飞溅	Crack 裂纹	Accept or Reject 接受或拒收	Repair 返修	Accept or Reject after repair 返修后接受或拒收
Base metal	220067	3G	Supercored71 ¢1.4	√	√	√	√	√	√	√	Acc	NA	NA

☐ After root weld ☐ After cover pass

☐ After CWR or WRR No.: ☐ After HSR No.: ☑ Others NCR-B-179

#R787-QCP-603

" √ " is no defects. " X " is defects. "NA" is not applicable.

ZPMC

REPORT OF MAGNETIC PARTICLE EXAMINATION

磁粉检测报告

REPORT NO. 报告编号 B787-MT-12511	DATE日期 2009.07.28	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:	X38K/X38L OBG CONNECTION PLATE	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 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	√ WELDING 焊接件 ☐ CASTING 铸件 ☐ FORGING 锻造	Material & thickness 母材,厚度	A709M-345 18 mm
WELDING PROCESS 焊接方法	FCAW	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			
X38L				ACC.		AFTER REPAIRED
X38K				ACC.		AFTER REPAIRED
BLANK						

EXAMINED BY主探 Tan chao wei Tanchaowei LEVEL - II SIGN 签名 / DATE日期 09.7.28	REVIEWED BY 审核 Sungongchang LEVEL-II SIGN / DATE日期 09.7.28
质量经理 / QCM Lujianlua 签字 SIGN / 日期 DATE 7.28	用户CUSTOMER 签字 SIGN / 日期 DATE

(FORM# ZPQC-MT01)

REPORT OF ULTRASONIC EXAMINATION
UT探伤报告

REPORT NO. 报告编号	B787-UT-7862	DATE	2009.07.27	PAGE 1 OF 1	Revision No: 0

PROJECT NO. :工程编号 ZP06-787		CONTRACTOR : CALTRANS
ITEMS NAME: 部件名称 OBG CONNECTION PLATE	DRAWING NO.: 图号 X38L/38K	CALTRANS CONTRACT NO.: 04-0120F4 加州工程编号
REFERENCING CODE 参考规范 AWS D1.5-2002	ACCEPTANCE STANDARD接受标准 AWS D1.5-2002(Table 6.3)	PROCEDURE NO. 程序编号 ZPQC-UT-01
WELDING PROCESS 焊接方法 FCAW	JOINT TYPE 焊缝类型 NA	CALIBRATION DUE DATE仪器校正有效期 Dec. 28ST ,2009

EQUIPMENT 设备 UT SCOPE	MANUFACTURER 制造商 PANAMETRICS	MODEL NO. 样式编号 EPOCH-4B	SERIAL NO. 序列编号 071565311, 061488510, 061495811, 070152011,
CALIBRATION BLOCK 试块 AWS IIW BLOCK TYPE II	COUPLANT 耦合剂 C.M.C	MATERIAL/THICKNESS 材料厚度 A709M-345 18mm	

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 Indication Level a	Reference Level b	Attenuation Factor c	Indication Rating d	DISCONTINUITY 不连续性 LOCATION OF DISCONTINUITY 不连续位置(mm) Length 长度	Sound Path 声程	Depth from Surface 距表面深度	From'X 距X	From'Y 距Y	Discontinuity Evaluation 缺陷估计	Remark 备注
X38L		0				32								ACC.	100%
X38K		0				32								ACC.	100%
BLANK															

EXAMINED BY主探 Sun yin Sun Yin LEVEL - II SIGN / DATE 9.07.27	REVIEWED BY 审核 Zhuqin LEVEL - II SIGN / DATE 9.07.27
质量经理 / QCM Cuyianhua 签字 SIGN / 日期 DATE 7.27	用户CUSTOMER 签字 SIGN / 日期 DATE

(FORM# ZPQC-UT01)

	焊接工艺规程 B* WELDING PROCEDURE SPECIFICATION	编号 No. WPS-345-FCAW-1G(1F)-Repair-1 (非 FCM 返修焊接工艺) 有效期 Period of validity FCM :2007.1~2010.1 NON-FCM :2007.1~2012.1

母材技术条件（Material specification） ASTM A.709M Gr.345F2
焊接方法（Welding process） 药芯焊丝 CO2 气体保护焊(FCAW)
手工或机械（Manual or machine or semi-auto） 半自动(Semi-auto)
焊接位置（Position of welding） 平焊(1G、1F)
填充金属技术条件（Filler metal specification） AWS A5.20
填充金属级别（Filler metal classification） E71T-1
填充金属牌号（Filler metal brand） Supercored 71H (Φ1.4)
焊剂（Flux） N/A
保护气体（Shielding gas） 100%CO2 流率（Flow rate） 18~25L/min
单焊道或多焊道（Single or multiple pass） 多道(Multiple Pass)
单弧或多弧（Single or multiple arc） 单弧(Single arc)
焊接电流（Welding current） 直流(DC)
极性（Polarity） 反接(EP)
焊丝伸出长度（Electrode extension） 20mm
焊接方向（Welding progression） N/A
根部处理（Root treatment） N/A
焊前最低预热温度和道间温度（Minimum preheat and interpass temperature before welding）
10℃ [T≤20mm] 20℃ [20mm<T≤40mm] 65℃ [40mm<T≤60mm] 110℃ [60mm<T]
最高预热和道间温度（Preheat and interpass temperature Max）230℃
后热温度(Postheat temperature) N/A
热输入（线能量）(Heat input) 最小(Min) 0.65KJ/mm 最大(Max) 1.02KJ/mm

☒ APPROVED
☐ APPROVED AS NOTED
☐ NOT APPROVED

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

Signed _____ Structure Representative

Date 31 Aug 2007

焊 接 工 艺
(Welding procedure)

焊道序号 Pass No.	焊条(丝)规格 Electrode Size (mm)	焊接电流 Welding Current 安培 Amp(s)	焊接电流 Welding Current 伏特 Volts	焊接速度 Travel Speed (mm/min)	接头详图 Joint Detail
1~n	1.4	245.4~300	27.2~31.3	463~565.9	见附页(see attached)

选定适用的电流、电压后在 WPS 焊接参数选用表中查到焊接速度范围。
Refer to WPS parameters table to determine operating parameter to stay within the heat input limit.

该工艺可以因制造工序、装配、焊道尺寸等而变化。但应在 AASHTO/AWS D1.5 第 5 章给出的变量限值之内。
(This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.)

修订号(Revision No.) _____ 批准(Authorized by) _____
工艺评定记录编号(PQR No.) HP2007225/HP2007226-1 日期(Date) 2007-7-25
* 本 WPS 符合 AASHTO/AWS D1.5 2002，用于桥梁结构。
(This WPS is conformable with the current edition of AASHTO/AWS D1.5 2002, used for BRIDGE structure.)

R787-QCP-1601

	焊接参数选用表 B# SELECTED LIST OF WELDING PARAMETER	编号 No. WPS-345-FCAW-1G(1F)-Repair-1 (非 FCM 返修焊接工艺)

PQR 编号：HP2007225
PQR No.

根据 5.13 评定的 WPS
For WPS qualified to 5.13

	电流 Amps	电压 Volts	焊接速度 Travel Speed (mm/min)	热输入 Heat Input (KJ/mm)						
平均值 Average	272.7	29.3	514.4	0.98						
范围 Range										
最大值 Maximum	300.0	31.3	565.9	1.02						
最小值 Minimum	245.4	27.2	463.0	0.65						

经过评定合格的 WPS 焊接参数选用表
WPS Parameters Table

电压 Volts	电流 Amps									
	245.4		259.1		272.7		286.4		300.0	
27.2	463.0	565.9	463.0	565.9	463.0	565.9	463.0	565.9	478.4	565.9
28.2	463.0	565.9	463.0	565.9	463.0	565.9	473.8	565.9	496.4	565.9
28.6	463.0	565.9	463.0	565.9	463.0	565.9	479.6	565.9	502.4	565.9
30.3	463.0	565.9	463.0	565.9	484.0	565.9	508.2	565.9	532.4	565.9
31.3	463.0	565.9	475.4	565.9	500.4	565.9	525.4	565.9	550.4	565.9
	焊接速度 Travel Speed in mm/min									

选用示例：如选用 272.7A 和 28.6V，在表中纵横相交查到的焊接速度范围为 463~565.9mm/min.
EX.: 272.7A × 28.6V × Travel speed Range 463~565.9mm/min.

☒ APPROVED
☐ APPROVED AS NOTED
☐ NOT APPROVED

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

Signed _____
Structure Representative

Date 31 Aug 2007

批准(Authorized By): _____

日期(Date): 2007.7.25

R737-QCP-1602

163A

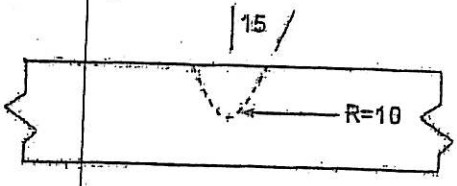
焊接工艺规程
WELDING PROCEDURE SPECIFICATION

接头详图 JOINT DETAIL

参考 Reference: WPS-345-FCAW-1G(1F)-Repair-1

所有齿槽的最小斜度为2:1(45°)
Taper ends of all excavations - 2:1 (45°) min.

齿槽形状最小半径为 R=10mm
Shape excavations to 10mm radius min.



注释 NOTES

预热和道间温度必须与产品 WPS 所规定的值相同.对于接头具有比较高的约束度时,可以要求更高的预热温度.
Preheat and interpass temperatures shall be the same as the production WPS . Higher preheat temperatures may be required for highly restrained joints.

焊缝修补 Repairs

所有的焊接修补都应符合 AWS D1.5-2002 3.2、3.7焊接修补章节,标准规范以及合同规定.
All repairs are to be made in accordance with the provisions of AWS D1.5-2002,Section 3.2、3.7 – Repair Welding; the Standard Specifications and the Special Provisions for Contract.

焊接修补应按照已被批准的 WQCP 中包含的工艺进行准备和焊接.QC 人员应在返修开始之前被通知。
Repairs shall be prepared and welded in conformance to the procedures contained in approved Welding Quality Control Plan Quality Control is to be notified prior to beginning any repair.

去除焊缝金属以及部分母材对于完成焊接修补是必要的.去除的数量以保证去除缺陷的前提下必须尽可能的少.焊缝以及母材的去除可以采用打磨或者碳刨+打磨的方法进行.
Retrieve weld metal and any portions of the base material necessary to remove the discontinuity. The amount of material removed shall be the minimum necessary to remove the discontinuity. Removal of weld and base metal may be done by grinding, chipping or gouging+grinding.

对于焊缝或者母材出现的裂纹必须清除裂纹的整个长度加上超出其每一端至少 50mm 的金属.邻近的焊缝金属和母材不能有缺损,凹槽,或者其它损坏.
Cracks in the weld or the base metal shall be excavated a minimum of 2" into sound metal beyond each end. Adjacent weld and base metal shall not be nicked, gouged or otherwise damaged.

碳刨深度必须限制在 2/3 板厚. 若超过该深度需从反面碳刨以完成修补.
The depth of the repair gauge should be limited to 2/3T and gouged from the back side to complete the repair, where possible.

在焊接每道焊缝之前,必须利用铁刷或者其它合适的方法对焊缝以及邻近的焊缝金属的焊渣进行清除.
Before welding over previously deposited weld metal, all slag shall be removed and the weld and the adjacent weld metal shall be cleaned by brushing or other suitable means.

焊接开始之前需对返修区域打磨光亮并执行磁粉探伤.
Grind all repair areas to bright metal and perform Magnetic Particle Testing prior to the start of welding.

在确认清除所有缺陷后,必须填充额外的焊缝金属.母材必须恢复至原金属表面并且光滑过渡.焊缝必须恢复至规定的外形.所有焊缝都需按照 AWS D1.5-2002 第 6.26 章节要求进行目检.
After removal of the discontinuity, additional weld metal shall be deposited. Base metal shall be restored to the original surface and ground smooth. Welds shall be restored to the specified profile. All welding is subject to the visual inspection requirements of AWS D1.5-2002, section 6.26.

焊接修补应按照规定的无损探伤需求进行.
Repair welding shall be subject to the specified NDE testing required.

☒ APPROVED
☐ APPROVED
☐ NOT APPROVED

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

Signed _____
Structure Representative

Date 31 Aug 2007

2007.7.25

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: xx.25A

QUALITY ASSURANCE -- NON-CONFORMANCE RESOLUTION

Location: Changxing Island, Shanghai, P.R. China **Report No:** NCS-000376
Prime Contractor: American Bridge/Fluor Enterprises, a JV **Date:** 02-Nov-2009
Submitting Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0267

Type of problem:

Welding	☑	**Concrete**	☐	**Other**	☐	
Welding	☐	**Curing**	☐	**Procedural**	☐	**Bridge No:** 34-0006
Joint fit-up	☐	**Coating**	☐	**Other**	☐	**Component:**
Procedural	☑	**Procedural**	☐	**Descripton:**		

Date the Non-Conformance Report was written: 03-Jun-2009

Description of Non-Conformance:
Caltrans Quality Assurance (QA) Inspector observed ZPMC welding personnel perform base metal edge weld repair without preheating. The repaired parts are identified as X38L and X38K Splice Plates. According to the applicable WPS, 60 deg. minimum preheat is required for the 18mm thick plates. It appears the contractor has repaired approximately thirty five (35) of these splice plate without the appropriate preheat.

Contractor's proposal to correct the problem:
Preheat for non-critical weld repair on material less than 20mm thick is specifed as 10 degrees C in WPS-345-SMAW-1G(1F)-Repair.

Corrective action taken:
Contractor submitted copy of WPS verifying required preheat along with NDT reports verifying the repairs are in conformance.

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 Jim Simonis: 1347 246 3441, who represents the Office of Structural Materials for your project.

Inspected By:	Simonis,Jim	Quality Assurance Inspector
Reviewed By:	Wahbeh,Mazen	QA Reviewer