

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-000672**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 03-Feb-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island**NCR #:** ZPMC-0640**Type of problem:**

Welding	Concrete	Other	
Welding	Curing	Procedural	Bridge No: 34-0006
Joint fit-up	Coating	Other	Component: Segment 9AE Floorbeam
Procedural	Procedural	Description: Missed UT and MT indications by QC	

Reference Description: Missed MT and UT indications by QC on welded members in Segment 9AE**Description of Non-Conformance:**

During the Quality Assurance Ultrasonic Testing (UT) review of welds located on Orthotropic Box Girder (OBG) segment 9AE, this Quality Assurance Inspector (QA) discovered the following issues:

- Location #1: Two (2) longitudinal Class "A" indications.
- Indication #1 measures approximately 15mm.
- The indication dBs rating is +6.
- Material thickness is 20mm.
- The depth of the indication is approximately 16.5mm.
- The weld is identified as SSD19A-PP72-134.
- The indication is clearly marked on or near the weld.
- The Y location is approximately 70mm from edge of the flange plate.
- The weld is a Complete Joint Penetration (CJP) Butt joint joining Flange Plate X5D-2 to Floor Beam X5D.

- Location #2: One Indication measures approximately 12mm.
- The indication dBs rating is +7.
- Material thickness is 20mm.
- The depth of the indication is approximately 17mm.
- The weld is identified as SSD19A-PP73-128.
- The indication is clearly marked on or near the weld.
- The Y location is approximately 55mm from edge of the flange plate.
- The weld is a Complete Joint Penetration (CJP) "T" joint joining Flange Plate X5D-2 to Floor Beam X7L.
- These indications (location #1 and #2) are located in an area previously tested and accepted by ZPMC Quality Control (QC) personnel. As per the contract documents, ZPMCs QC personnel are required to perform 25% UT inspection of this weld.

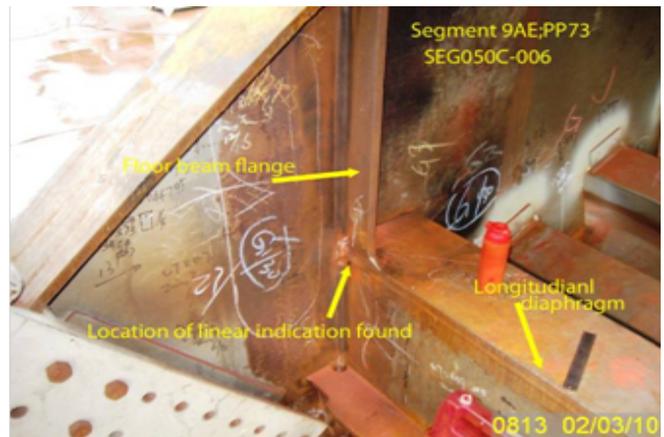
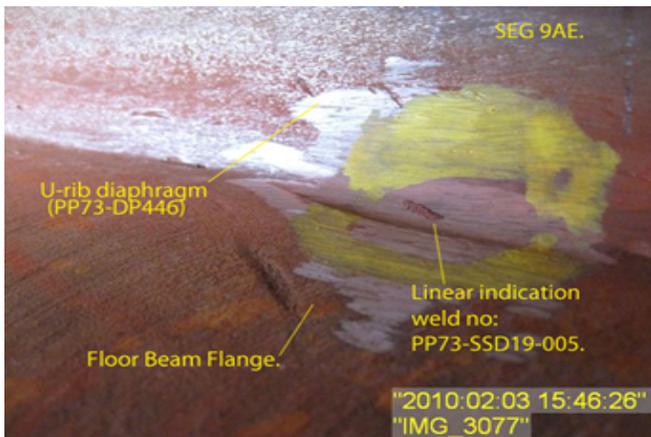
QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 3)

During the Quality Assurance Magnetic particle Testing (MT) review of welds located on OBG Segment 9AE, this Quality Assurance Inspector (QA) discovered the following issue:

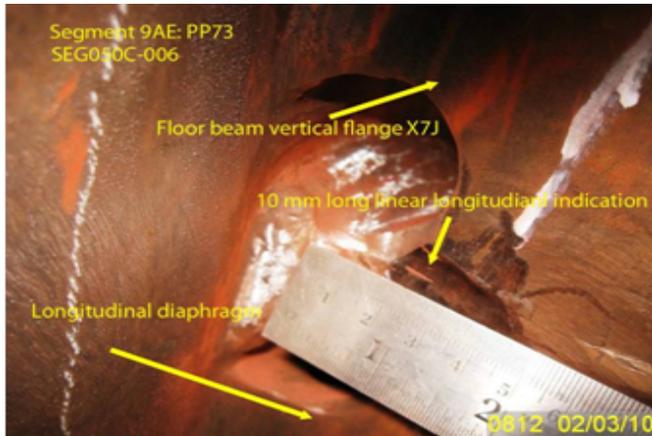
- One (1) longitudinal linear crack that measured approximately 10mm in length.
 - The weld is identified as SEG050C-006 at panel point (PP) 73.
 - This weld is a partial joint penetration (PJP) weld joining the Floor Beam (FB10A) to the vertical Flange (X7J) that attaches to the Longitudinal Diaphragm (LD2A).
 - This weld joint is designated as Non-Seismic Performance Critical Member (Non-SPCM).
-
- One (1) longitudinal linear indication measuring approximately 8 mm.
 - The weld is identified as SSD19-PP73-005.
 - The weld is an 8mm fillet T-joint joining the deck panel diaphragm to the top flange of the FL2-1 floor beam at PP 73.
 - The Y location is approximately 9800mm from the bike path end of this floor beam.
 - The indication is clearly marked on the material on/near the weld.
-
- These indications are located within the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel. ZPMC's QC personnel are required to perform 100% MT inspection of this weld.

The Notice of Witness Inspection Number (NWIT) is 005165 for the above UT and MT inspections.



QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 3 of 3)



Applicable reference:

AWS D1.5-02 Section 6; Table 6.3 specifies a class A indication as having a rating of 10dbs and under for material thicknesses 8mm through 20mm.

AWS D1.5 (02) Section 6.26.2 – “Welds that are subject to MT in addition to visual inspection shall have no cracks.

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.”

Who discovered the problem: Subhasis Bera, Chandra Sudalaimuthu, Vikram Singh.

Name of individual from Contractor notified: Wang Hang

Time and method of notification: 1630 hours, 02-03-10, Verbal

Name of Caltrans Engineer notified: Bill Howe, Ching Chao

Time and method of notification: 1100 hours, 02-04-10, Verbal

QC Inspector's Name: Zhong Wei, Wang Wei Ming

Was QC Inspector aware of the problem: Yes No

Contractor's proposal to correct the problem:

N/A

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 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



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: 03-Feb-2010

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

Dear: Mr. Charles Kanapicki
Attention: Mr. Thomas Nilsson Project/Fabrication Manager
Subject: NCR No. ZPMC-0640

Job Name: SAS Superstructure
Document No: 05.03.06-000631

Reference Description: Missed MT and UT indications by QC on welded members in Segment 9AE

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:** 09

Remarks:

During the Quality Assurance Ultrasonic Testing (UT) review of welds located on Orthotropic Box Girder (OBG) segment 9AE, this Quality Assurance Inspector (QA) discovered the following issues:

- Location #1: Two (2) longitudinal Class “A” indications.
 - Indication #1 measures approximately 15mm.
 - The indication dBs rating is +6.
 - Material thickness is 20mm.
 - The depth of the indication is approximately 16.5mm.
 - The weld is identified as SSD19A-PP72-134.
 - The indication is clearly marked on or near the weld.
 - The Y location is approximately 70mm from edge of the flange plate.
 - The weld is a Complete Joint Penetration (CJP) Butt joint joining Flange Plate X5D-2 to Floor Beam X5D.

 - Location #2: One Indication measures approximately 12mm.
 - The indication dBs rating is +7.
 - Material thickness is 20mm.
 - The depth of the indication is approximately 17mm.
 - The weld is identified as SSD19A-PP73-128.
 - The indication is clearly marked on or near the weld.
 - The Y location is approximately 55mm from edge of the flange plate.
 - The weld is a Complete Joint Penetration (CJP) “T” joint joining Flange Plate X5D-2 to Floor Beam X7L.
 - These indications (location #1 and #2) are located in an area previously tested and accepted by ZPMC Quality Control (QC) personnel.
- As per the contract documents, ZPMCs QC personnel are required to perform 25% UT inspection of this weld.

During the Quality Assurance Magnetic particle Testing (MT) review of welds located on OBG Segment 9AE, this Quality

NCT

(Continued Page 2 of 2)

Assurance Inspector (QA) discovered the following issue:

- One (1) longitudinal linear crack that measured approximately 10mm in length.
- The weld is identified as SEG050C-006 at panel point (PP) 73.
- This weld is a partial joint penetration (PJP) weld joining the Floor Beam (FB10A) to the vertical Flange (X7J) that attaches to the Longitudinal Diaphragm (LD2A).
- This weld joint is designated as Non-Seismic Performance Critical Member (Non-SPCM).

- One (1) longitudinal linear indication measuring approximately 8 mm.
- The weld is identified as SSD19-PP73-005.
- The weld is an 8mm fillet T-joint joining the deck panel diaphragm to the top flange of the FL2-1 floor beam at PP 73.
- The Y location is approximately 9800mm from the bike path end of this floor beam.
- The indication is clearly marked on the material on/near the weld.

- These indications are located within the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel. ZPMC's QC personnel are required to perform 100% MT inspection of this weld.

The Notice of Witness Inspection Number (NWIT) is 005165 for the above UT and MT inspections.

Action Required and/or Action Taken:

Propose a resolution for the identified non-conformance with revised procedures to prevent future occurrences. A response for the resolution of this issue is expected within 7 days.

Transmitted by: Bill Howe Sr. Transportation Engineer

Attachments: ZPMC-0640

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: 05.03.06-000631

Subject: NCR No. ZPMC-0640

Dated: 08-Feb-2010

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

Job Name: SAS Superstructure

Document No.: ABF-NPR-000567 Rev: 00

Contractor's Proposed Resolution:

Reference Resolution: The ABFJV QCM has instituted training sessions for ZPMC inspectors. In addition to training, ABF has purchased new equipment to standardize both ABF and ZPMC with the equipment used by Caltrans.

ZPMC and ABFJV have taken steps to reduce the number of both MT and UT missed indications. The ABFJV QCM has instituted training sessions for ZPMC inspectors to reinforce key points of performing UT and MT, the most recent was held in December 2009. The ZPMC Level III has conducted training with the inspectors as well. In addition to training, ABF has purchased new equipment to standardize both ABF and ZPMC with the equipment used by Caltrans. Examples of this are the powder bulbs with magnetic caps, and the same transducers used by Caltrans. Documents of the acceptable NDT will be provided when they are available at a later date. Based on this ZPMC requests that this NCR be approved with actions pending.

Submitted by: Ishibashi, Joshua

Attachment(s): ABF-NPR-000567R00;

Caltrans' comments:

Status: AAP

Date: 08-Feb-2010

AAP approved.

Submitted by: Howe, Bill

Date: 08-Feb-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
培训对象:	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	狄坤伦 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 Chunqiang	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 Cheng Gong	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	



教育培训纪录

培训编号:

培训内容:	UT复习培训教程 UT Techniques
培训对象:	ZPMC UT GUYS
授课人员:	STEVE LAWTON
培训类型:	UT Refresher Training Agenda
培训时间:	2009. 12. 24. 16:30
计划培训地点:	ZPMC NDT OFFICE

人员签到:

姓名	部门	姓名	部门
戴斌 Dai Goud Shen	江江 Jiang Jiang		
薛宇 Xuellamang	黄廷 Huang Ting		
马志长 Majzhang	黄廷 Huang Ting		
谭善 Tanxingshan	李黎明 Li Liming		
马建 Ma Jian	李黎明 Li Liming		
孙金福 Sun Jinfu	徐坤 Xu Kun		
沈健 Shen Jian	李黎明 Li Liming		
黄宇 Huang Yu			
金峰 Jin Feng			
吴文 Wu Wen			
解坤 Xie Kun			
周海周 Zhou Hai Zhou			
徐坤 Xu Kun			

UT Refresher Training Agenda

Subject: UT Techniques

Reason for Training: Several CT NCR's for missed UT indications

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

2. **Tools**
 - a. Calibrated UT Machine condition of machine
 - b. Coaxial cable condition of cable
 - c. Transducer condition of transducer
 - d. IIW Block
 - e. Scraper
 - f. UT couplant

3. **Inspection Techniques**
 - a. Surface preparation
 - b. Location of weld UT from beveled plate
 - c. Scanning patterns
 - d. Correct choice of Angles
 - e. Calibration per ZPMC procedure at regular intervals
 - f. Scanning speed
 - g. Know where your sound is at.... First leg, second leg etc...

4. **Inspection Criteria**
 - a. Table 6.3 or Table 6.4
 - b. Are surface inspections complete VT and or MT should always occur before UT
 - c. Scanning Levels
 - d. Criteria dictated by the thinner of the two members
 - e. Planar flaws

NCR PROPOSED RESOLUTION

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

Attention: Pursell, Gary
Resident Engineer

Ref: 05.03.06-000631

Subject: NCR No. ZPMC-0640

Dated: 15-Mar-2010

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

Job Name: SAS Superstructure

Document No.: ABF-NPR-000567 Rev: 01

Contractor's Proposed Resolution:

Reference Resolution: ZPMC has repaired the missed indications and is providing the repairs reports and NDT to show that the welds are acceptable. Based on this ZPMC request that this NCR be closed.

ZPMC has repaired the missed indications and is providing the repairs reports and NDT to show that the welds are acceptable. ZPMC has conducted training with its inspectors to improve their technique and reduced incidents of missed indications. Based on this ZPMC request that this NCR be closed.

Submitted by: Ishibashi, Joshua

Attachment(s): ABF-NPR-000567R01;

Caltrans' comments:

Status: CLO

Date: 18-Mar-2010

The documentation received is sufficient to close this NCR.

Submitted by: Howe, Bill

Date: 18-Mar-2010

Attachment(s):



No. B-676

LETTER OF RESPONSE

TO: American Bridge/Flour

DATE: 2010-3-15

REGARDING: NCR-000672(ZPMC-0640)

ZPMC acknowledged this problem and has issued internal NCR. ABF QCM has instituted training sessions for ZPMC inspectors. As request by CT, ZPMC is providing the documentations show these welds are accepted after repair. Based on this ZPMC requests that this NCR to be closed.

ATTACHMENT:

NCR-000672(ZPMC-0640)

NCR-B-444(ZPMC-0640)

B-WR10656

B-WR-10657

B787-UT-11170 R1

B-CWR1134

B787-MT-18083 R1

B-CWR1218

B787-MT19169 R1

A handwritten signature in black ink, appearing to be "J. W.", is located below the list of attachments.

3/15/10



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: 03-Feb-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: 05.03.06-000631

Subject: NCR No. ZPMC-0640

Reference Description: Missed MT and UT indications by QC on welded members in Segment 9AE

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: 09

Remarks:

During the Quality Assurance Ultrasonic Testing (UT) review of welds located on Orthotropic Box Girder (OBG) segment 9AE, this Quality Assurance Inspector (QA) discovered the following issues:

- Location #1: Two (2) longitudinal Class "A" indications.
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 - Material thickness is 20mm.
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 - The weld is identified as SSD19A-PP72-134.
 - The indication is clearly marked on or near the weld.
 - The Y location is approximately 70mm from edge of the flange plate.
 - The weld is a Complete Joint Penetration (CJP) Butt joint joining Flange Plate X5D-2 to Floor Beam X5D.

 - Location #2: One Indication measures approximately 12mm.
 - The indication dBs rating is +7.
 - Material thickness is 20mm.
 - The depth of the indication is approximately 17mm.
 - The weld is identified as SSD19A-PP73-128.
 - The indication is clearly marked on or near the weld.
 - The Y location is approximately 55mm from edge of the flange plate.
 - The weld is a Complete Joint Penetration (CJP) "T" joint joining Flange Plate X5D-2 to Floor Beam X7L.
 - These indications (location #1 and #2) are located in an area previously tested and accepted by ZPMC Quality Control (QC) personnel.
- As per the contract documents, ZPMCs QC personnel are required to perform 25% UT inspection of this weld.

During the Quality Assurance Magnetic particle Testing (MT) review of welds located on OBG Segment 9AE, this Quality

02.02:15.04
03.03.06-000631.NCT

Received
NCT-000631 04 Feb 10 Page 1 of 2

NCT

(Continued Page 2 of 2)

Assurance Inspector (QA) discovered the following issue:

- One (1) longitudinal linear crack that measured approximately 10mm in length.
- The weld is identified as SEG050C-006 at panel point (PP) 73.
- This weld is a partial joint penetration (PJP) weld joining the Floor Beam (FB10A) to the vertical Flange (X7J) that attaches to the Longitudinal Diaphragm (LD2A).
- This weld joint is designated as Non-Seismic Performance Critical Member (Non-SPCM).

- One (1) longitudinal linear indication measuring approximately 8 mm.
- The weld is identified as SSD19-PP73-005.
- The weld is an 8mm fillet T-joint joining the deck panel diaphragm to the top flange of the FL2-1 floor beam at PP 73.
- The Y location is approximately 9800mm from the bike path end of this floor beam.
- The indication is clearly marked on the material on/near the weld.

- These indications are located within the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel. ZPMC's QC personnel are required to perform 100% MT inspection of this weld.

The Notice of Witness Inspection Number (NWIT) is 005165 for the above UT and MT inspections.

Action Required and/or Action Taken:

Propose a resolution for the identified non-conformance with revised procedures to prevent future occurrences. A response for the resolution of this issue is expected within 7 days.

Transmitted by: Bill Howe Sr. Transportation Engineer

Attachments: ZPMC-0640

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

File: 05.03.06

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-000672

Prime Contractor: American Bridge/Fluor Enterprises, a JV

Date: 03-Feb-2010

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

NCR #: ZPMC-0640

Type of problem:

Welding Concrete Other
 Welding Curing Procedural Bridge No: 34-0006
 Joint fit-up Coating Other Component: Segment 9AE Floorbeam
 Procedural Procedural Description: Missed UT and MT indications by QC

Reference Description: Missed MT and UT indications by QC on welded members in Segment 9AE

Description of Non-Conformance:

During the Quality Assurance Ultrasonic Testing (UT) review of welds located on Orthotropic Box Girder (OBG) segment 9AE, this Quality Assurance Inspector (QA) discovered the following issues:

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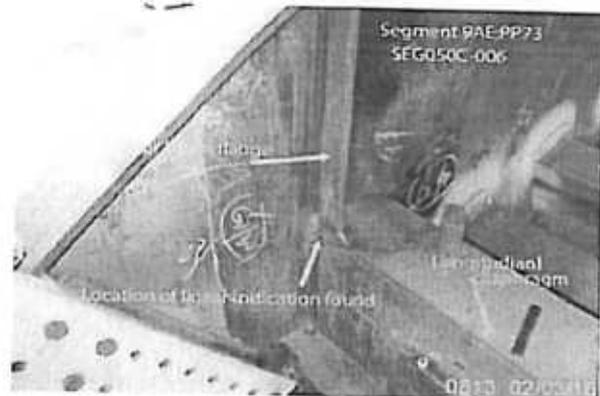
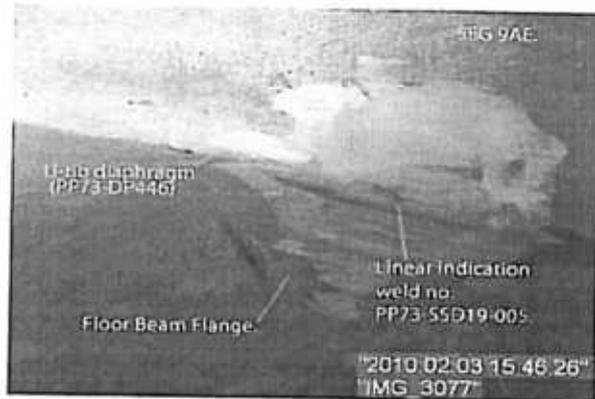
QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 3)

During the Quality Assurance Magnetic particle Testing (MT) review of welds located on OBG Segment 9AE, this Quality Assurance Inspector (QA) discovered the following issue:

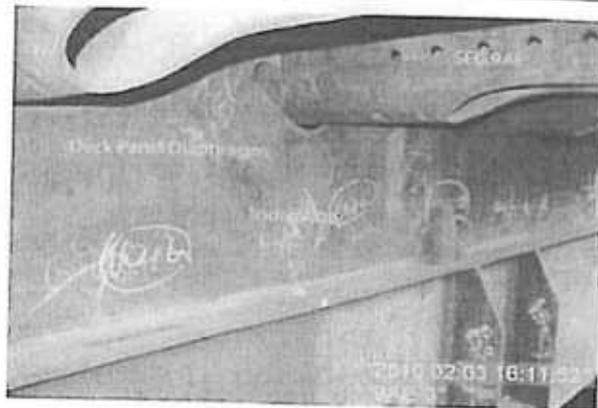
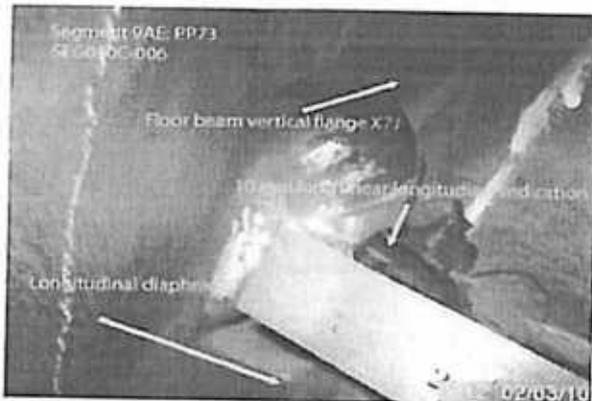
- One (1) longitudinal linear crack that measured approximately 10mm in length.
 - The weld is identified as SEG050C-006 at panel point (PP) 73.
 - This weld is a partial joint penetration (PJP) weld joining the Floor Beam (FB10A) to the vertical Flange (X7J) that attaches to the Longitudinal Diaphragm (LD2A).
 - This weld joint is designated as Non-Seismic Performance Critical Member (Non-SPCM).
-
- One (1) longitudinal linear indication measuring approximately 8 mm.
 - The weld is identified as SSD19-PP73-005.
 - The weld is an 8mm fillet T-joint joining the deck panel diaphragm to the top flange of the FL2-1 floor beam at PP 73.
 - The Y location is approximately 9800mm from the bike path end of this floor beam.
 - The indication is clearly marked on the material on/near the weld.
-
- These indications are located within the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel. ZPMC's QC personnel are required to perform 100% MT inspection of this weld.

The Notice of Witness Inspection Number (NWIT) is 005165 for the above UT and MT inspections.



QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 3 of 3)



Applicable reference:

AWS D1.5-02 Section 6; Table 6.3 specifies a class A indication as having a rating of 10dbs and under for material thicknesses 8mm through 20mm.

AWS D1.5 (02) Section 6.26.2 – "Welds that are subject to MT in addition to visual inspection shall have no cracks.

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."

Who discovered the problem: Subhasis Bera, Chandra Sudalaimuthu, Vikram Singh.

Name of individual from Contractor notified: Wang Hang

Time and method of notification: 1630 hours, 02-03-10, Verbal

Name of Caltrans Engineer notified: Bill Howe, Ching Chao

Time and method of notification: 1100 hours, 02-04-10, Verbal

QC Inspector's Name: Zhong Wei, Wang Wei Ming

Was QC Inspector aware of the problem: Yes No

Contractor's proposal to correct the problem:

N/A

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 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



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-444(ZPMC-0640)	
Item: Miss UT & MT Indication 名称描述: UT&MT 漏检	Item Number: 件号:	Drawing: 图号: 9AE
Location: 位置: 外场	Date: 日期: 2010-02-09	

Description of Nonconformance:

During the Quality Assurance Ultrasonic Testing (UT) review of welds located on Orthotropic Box Girder (OBG) segment 9AE, this Quality Assurance Inspector (QA) discovered the following issues:

Location#1: Two(2) longitudinal Class "A" indications, measures approximately 15mm. The indication dBs rating is +6. Material thickness is 20mm. The depth of the indication is approximately 16.5mm. The weld is identified as SSD19A-PP72-134. The indication is clearly marked on or near the weld. The Y location is approximately 70mm from edge of the flange plate. The weld is a Complete Joint Penetration (CJP) Butt joint joining Flange Plate X5D-2 to Floor Beam X5D.

Location#2: One Indication measures approximately 12mm. The indication dBs rating is +7. Material thickness is 20mm. The depth of the indication is approximately 17mm. The weld is identified as SSD19A-PP73-128. The indication is clearly marked on or near the weld. The Y Location is approximately 55mm from edge of the flange plate. The weld is a Complete Joint Penetration (CJP) "T" joint joining Flange Plate X5D-2 to Floor Beam X7L. These indications are located in an area previously tested and accepted by ZPMC Quality Control (QC) personnel. As per the contract documents, ZPMC's QC personnel are required to perform 25% UT inspection of this weld.

During the Quality Assurance Magnetic particle Testing (MT) review of welds located on OBG Segment 9AE, this Quality Assurance Inspection (QA) discovered the following issue:

One (1) longitudinal linear crack that measured approximately 10mm in length. The weld is identified as SEG050C-006 at PP73. This weld is a partial joint penetration (PJP) weld joining the Floor Beam (FB10A) to the vertical Flange (X7J) that attaches to the Longitudinal Diaphragm (LD2A).

One longitudinal linear indication measuring approximately 8mm. The weld is identified as SSD19-PP73-005. The weld is an 8mm fillet T-joint joining the deck panel diaphragm to the top flange of the FL2-1 floor beam at pp73. The Y location is approximately 9800mm from the bike path end of this floor beam. These indications are located within the area that has been previously tested and accepted by ZPMC Quality Control (QC) personnel. ZPMC's QC personnel are required to perform 100% MT inspection of this weld.

位置 1: 两条 "A" 级纵向线性缺陷长度将近 15mm。该缺陷 dB 值是+6。材质厚度是 20mm。缺陷深度是 16.5。焊缝是 SSD19A-PP72-134。缺陷 Y 值是从隔板翼缘板起 70mm。该焊缝是 CJP 焊缝连接翼缘板 X5D-2 至隔板 X5D。

位置 2: 一条线性缺陷长度约为 12mm。dB 值是+7。材质厚度是 20mm。缺陷深度是将近 17mm。焊缝是 CJP 焊缝连接翼缘板 X5D-2 至隔板 X7L。这些缺陷位置之前已经被 ZPMC UT 检验人员所检验并接收。

在对 9AE 进行 MT 检验的过程中, 加州检验员发现以下问题:

一条纵向线性缺陷长度将近 10mm, 焊缝是 SEG050C-006 在 PP73 位置。该焊缝是 PJP 焊缝连接 FB10A 至 X7J。

一条纵向线性缺陷长度是 8mm。焊缝是 SSD19-PP73-005。Y 值是从悬臂梁侧开始 9800mm。这些缺



焊缝返修报告

版次 Rev. No.

0

Welding Repair Report

项目名称 Project Name	美国海湾大桥 SFOBB	部件图号 Drawing No	SSD19A	报告编号 Report No.	B-WR10656
合同号 Contract No.	04-0120F4	部件名称 Items Name	9AE FLOOR BEAM SPLICE	NDT报告编号 Report No. of NDT	B787-UT-11170
项目编号 Project No.	ZP06-787				

焊缝缺陷描述:

Description of welding discontinuity:

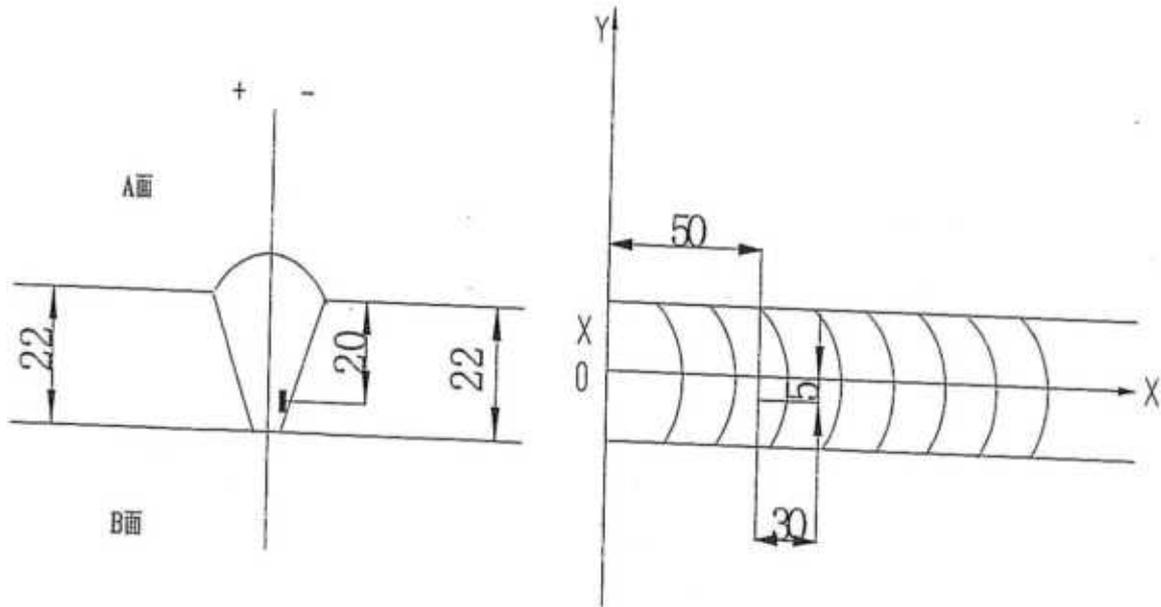
Rejected indication found by ultrasonic inspection is less than the maximum allowance aggregate length.

(UT探伤发现的缺陷总长度小于最大允许长度。) SSD19A-PP072-134

检验员 (Inspector): Sun Yin 日期 (Date): 2010.02.04

焊缝返修位置示意图:

Draft of welding discontinuity:



WELD NUMBER: SSD19A-PP072-134

产生原因:

Caused:

1. 焊道未及时处理干净,

1. Did not clear the weld pass completely in time.

车间负责人(Foreman): *Li Zhigang* 日期(Date): 2.5.

处理意见

Disposition:

1. 从缺陷距离端面较近一侧 ($D \leq 0.65T$, D 为缺陷深度, T 为板厚) 采用碳刨或打磨的方法去除焊缝缺陷;

2. 参照返修焊接工艺规程 (WPS) 准备正确的接头型式, 预热和焊接;

3. 焊前对修补区域进行VT检测保证缺陷完全被清除;

4. 将修补区域打磨到与母材或邻近焊缝平齐;

5. 对焊缝进行UT检测, 检测范围为返修区域以及其两端各延长50mm.

1. Gouge or grind from nearer side from metal edge ($D \leq 0.65T$, "D" is depth of defects, "T" is thickness of metal) to remove all defects;

2. Follow repair WPS for joint preparation, preheat, and weld deposit;

3. Verify with VT no defects remain in the weld joint prior to welding;

4. Grind the repaired area flush with base metal or the adjacent weld;

5. Perform UT inspection to the weld along with 50mm on each end of the repair area;

工艺: *hexiaolin*
Technical engineer

10.2.5

审核:
Approved by

日期
Date



焊缝返修报告

Welding Repair Report

版本 Rev. No.

0

项目名称 Project Name	英国海湾大桥 SFOBB	部件图号 Drawing No	SSD19A	报告编号 Report No.	B-WR10656
合同号 Contract No.:	04-0120F4	部件名称 Items Name	9AE FLOOR BEAM SPLICE	NDT报告编号 Report No.of NDT	B787-UT-11170
项目编号 Project No.:	ZP06-787				

纠正措施:

Correction action to prevent re occurrence:

1. 加强焊接监控和道间清理。

1. Improve monitoring of welding and interpass cleaning.

车间负责人(Foreman): *Li Zhigang* 日期(Date): 2.5

参照的WPS编号 Repair WPS No.	WPS-345-SMAW-2 G(2F)-Repair WPS-345-FCAW-2 G(2F)-Repair-1 WPS-345-SMAW-4 G(4F)-Repair	工艺员 technologist	<i>Hexiadin</i> <i>2.5.</i>
返修(碳刨)前预热温度 Preheat temperature before gouging	<i>85</i>	返修的缺陷 Description of discontinuity	<i>2F</i>
焊前处理检查 Inspection before welding	<i>Acc</i>	焊前预热温度 Preheat temperature before welding	<i>113</i>
最大碳刨深度 Max. depth of gouging	<i>10</i>	碳刨总长 Total length of gouging	<i>100</i>
焊工 welder	<i>044772</i>	焊接类型 welding type	<i>SM&LW</i>
焊接电流 Current	<i>180</i>	焊接电压 Voltage	<i>24.8</i>
		焊接位置 position	<i>26</i>
		焊接速度 Speed	<i>160</i>
返修后检查 Inspection After repairing:			
外观检查 VT result	<i>Acc</i>	检验员 Inspector	<i>Zhuangling</i> <i>070726/</i>
NDT复检 NDT result	<i>Acc</i>	探伤员 NDT person	<i>Huang Jing</i>
日期 Date		日期 Date	<i>2010.3.9</i>
日期 Date		日期 Date	<i>10.3.9</i>
见证: Witness/Review:			
备注: Remark:			



焊缝返修报告

REV. No.

Welding Repair Report

0

项目名称 Project Name	美国海河大桥 SFOBB	部件图号 Drawing No	SSD19A	报告编号 Report No.	B-WR10657
合同号 Contract No.	04-0120F4	部件名称 Items Name	9AE FLOOR BEAM SPLICE	NDT报告编号 Report No. of NDT	B787-UT-11170
项目编号 Project No.:	ZP06-787				

焊缝缺陷描述:

Description of welding discontinuity:

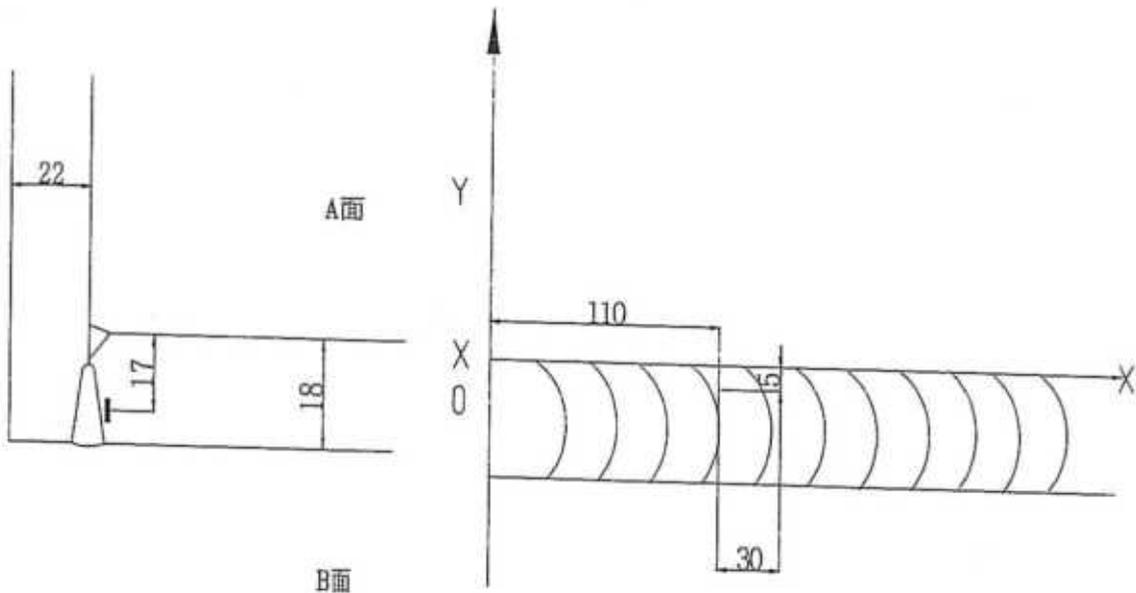
Rejected indication found by ultrasonic inspection is less than the maximum allowance aggregate length.

(UT探伤发现的缺陷总长度小于最大允许长度。) SSD19A-PP073-128

检验员 (Inspector): Sun Yin 日期 (Date): 2010.02.04

焊缝返修位置示意图:

Draft of welding discontinuity:



WELD NUMBER: SSD19A-PP073-128

产生原因:

Caused:

1. 焊道未及时处理干净。
1. Did not clear the weld pass completely in time.

车间负责人(Foreman): *Li Zhigang* 日期(Date): 2.5

处理意见

Disposition:

1. 从缺陷距离端面较近一侧 ($D \leq 0.65T$, D为缺陷深度, T为板厚) 采用碳刨或打磨的方法去除焊缝缺陷;
 2. 参照返修焊接工艺规程 (WPS) 准备正确的接头型式, 预热和焊接;
 3. 焊前对修补区域进行VT检测保证缺陷完全被清除;
 4. 将修补区域打磨到与母材或邻近焊缝平齐;
 5. 对焊缝进行UT检测, 检测范围为返修区域以及其两端各延长50mm.
-
1. Gouge or grind from nearer side from metal edge ($D \leq 0.65T$, "D" is depth of defects, "T" is thickness of metal) to remove all defects;
 2. Follow repair WPS for joint preparation, preheat, and weld deposit;
 3. Verify with VT no defects remain in the weld joint prior to welding;
 4. Grind the repaired area flush with base metal or the adjacent weld;
 5. Perform UT inspection to the weld along with 50mm on each end of the repair area;

工艺: *Hexiaolin*
Technical engineer
10.2.5

审核:
Approved by

日期
Date



焊缝返修报告

版本 Rev. No.

Welding Repair Report

0

项目名称 Project Name	美国海湾大桥 SFOBB	部件图号 Drawing No	SSD19A	报告编号 Report No.	B-WR10657
合同号 Contract No.:	04-0120F4	部件名称 Items Name	9AE FLOOR BEAM SPLICE	NDT报告编号 Report No. of NDT	B787-UT-11170
项目编号 Project No.:	ZP06-787				

纠正措施:

Correction action to prevent re occurrence:

1. 加强焊接监控和道间清理。

1. Improve monitoring of welding and interpass cleaning.

车间负责人(Foreman): *Lizhi gang* 日期(Date): *2.5*

参照的WPS编号 Repair WPS No.	WPS-345-SMAW-2 G(2F)-Repair WPS-345-FCAW-2 G(2F)-Repair-1	工艺员 technologist	<i>HexiaoLin</i> <i>2.5.</i>
返修(碳刨)前预热温度 Preheat temperature before gouging	<i>75</i>	返修的缺陷 Description of discontinuity	<i>IF</i>
焊前处理检查 Inspection before welding	<i>Acc</i>	焊前预热温度 Preheat temperature before welding	<i>114</i>
最大碳刨深度 Max. depth of gouging	<i>8</i>	碳刨总长 Total length of gouging	<i>100</i>
焊工 welder <i>4472</i>	焊接类型 welding type <i>SMAW</i>	焊接位置 position <i>25</i>	
焊接电流 Current <i>181</i>	焊接电压 Voltage <i>25</i>	焊接速度 Speed <i>165</i>	

返修后检查

Inspection After repairing:

外观检查 VT result <i>Acc</i>	检验员 Inspector <i>Zhuo sheng hai</i> <i>02072601</i>	日期 Date <i>2010.3.9</i>
NDT复检 NDT result <i>Acc</i>	探伤员 NDT person <i>Huang Jing</i>	日期 Date <i>10.3.9</i>

见证:

Witness/Review:

备注:

Remark:



REPORT OF ULTRASONIC EXAMINATION

UT探伤报告

REPORT NO. 报告编号 B787-UT-11170 DATE 2010.02.04 PAGE 1 OF 1 Revision No: 0

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

ITEMS NAME: 9AE FLOOR BEAM SPLICE DRAWING NO.: SSD19(A) CALTRANS CONTRACT NO.: 04-0120F4
 部件名称 图号 加州工程编号

REFERENCING CODE 参考规范 ACCEPTANCE STANDARD 接受标准 PROCEDURE NO. 程序编号
 AWS D1.5-2002 AWS D1.5-2002(Table 6.3) ZPQC-UT-01

WELDING PROCESS 焊接方法 JOINT TYPE 焊缝类型 CALIBRATION DUE DATE 仪器校正有效期
 FCAW SMAW BUTT CORNER-JOINT Dec. 28ST, 2010

EQUIPMENT 设备 MANUFACTURER 制造商 MODEL NO. 样式编号 SERIAL NO. 序列编号
 UT SCOPE PANAMETRICS EPOCH-4B 071565311, 061488510, 061495811, 070152011,

CALIBRATION BLOCK 试块 COUPLANT 耦合剂 MATERIAL/THICKNESS 材料厚度
 AWS IIV BLOCK TYPE II C.M.C A709M-345T2-X 22/18mm

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				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		
SSD19A-PP072-134	1	70	A	1	42	32	3	+7	30	60	20	-5	50	REJ.	100%
SSD19A-PP073-128	1	70	A	1	41	32	2	+7	30	54	17	-5	110	REJ.	100%
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EXAMINED BY 主探 <i>Sam Yin</i>	REVIEWED BY 审核 <i>Wm Chao</i>
LEVEL - II SIGN / DATE <i>10.2.4</i>	LEVEL - II SIGN / DATE <i>10.2.4</i>
质量经理 / QCM	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 B787-UT-11170R1 DATE 2010.03.09 PAGE 1 OF 1 Revision No: 0

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

ITEMS NAME: 9AE FLOOR BEAM SPLICE DRAWING NO.: SSD19(A) CALTRANS CONTRACT NO.: 04-0120F4
 部件名称 图号 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 SMAW JOINT TYPE 焊缝类型 BUTT CORNER-JOINT CALIBRATION DUE DATE 仪器校正有效期 Dec. 28ST, 2010

EQUIPMENT 设备 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 IIV BLOCK TYPE II COUPLANT 耦合剂 C.M.C MATERIAL/THICKNESS 材料厚度 A709M-345T2-X 22/18mm

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				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
SSD19A-PP072-134	1R1	70						32							ACC.	100%
SSD19A-PP073-128	1R1	70						32							ACC.	100%

AFTER B-WR10657 10656

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EXAMINED BY 主探 Wang Jing 2010.03.09 REVIEWED BY 审核 Wu Chao 2010.03.09
 LEVEL - II SIGN / DATE LEVEL - II SIGN / DATE

质量经理 / QCM 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.:	SSD19	报告编号 Report No.:	B-CWR1134
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	9AE FLOOR BEAM SPLICE	NDT 报告编号 NDT Report No.:	B787-MT-18083
项目编号 Project No.:	ZP06-787				

焊缝缺陷描述:

Description of Welding Discontinuity:

在对SSD19-PP073-005检测时,发现4处横向裂纹。L1=10mm;L2=3mm;L3=4mm;L4=3mm

Welder ID No. (焊工编号): 214945

Position:(位置): 2F

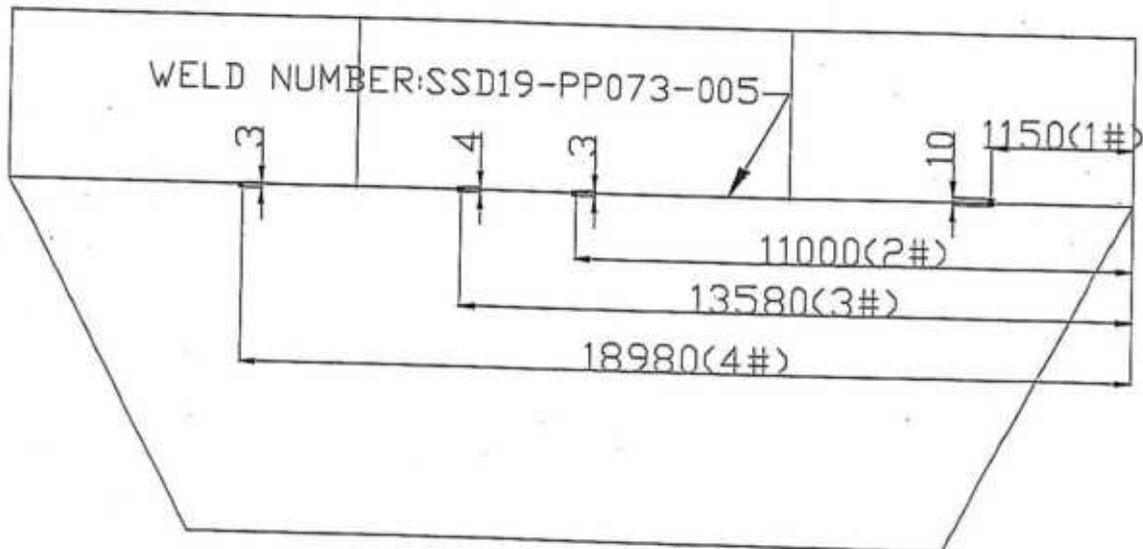
Four transverse cracks were found by use of MT on SSD19-PP073-005.

检验员 (Inspector): Sun Gongchang

日期 (Date): 2010-01-18

焊缝返修位置示意图:

Draft of Welding Discontinuity:



This document is APPROVED
DEPARTMENT OF TRANSPORTATION
Standard Specifications

Date: 1/2/10

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):

Lizhigay

日期 (Date):

10.01.19

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, 打磨返修范围为沿缺陷焊缝每一端加50mm, 对于多个裂纹的返修, 打磨返修范围为多个裂纹最外端的返修加长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各焊缝接头形式;
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 ≥ 25 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 and 50mm beyond the outermost cracks for multiple 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 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 testing'. NDT include VT, MT and UT if it is a CJP weld.

工艺:

Technical Engineer: *Xu Deyuan*

审核:

Approved By: *Lizhigay*

日期:

Date: *10.01.19*

#R787-QCP-900

THIS DOCUMENT IS UNCLASSIFIED
DATE 01/24/10 BY 60322 UCBAW/STP/STP

DEPARTMENT OF DEFENSE
OFFICE OF MILITARY AFFAIRS



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.:	SSD19	报告编号 Report No.:	B-CWR1134
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	SAE FLOOR BEAM SPLICE	NDT 报告编号 NDT Report No.:	B787-MT-18083
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.

4G(4F) NOT APPLICABLE TO REPAIR PROCEDURE

车间负责人 (Foreman):

Li Zhigang

日期 (Date):

10.01.19

10-20-10

参照的WPS编号 Repair WPS No.:	WPS-345-SMAW-2G(2F)-Repair WPS-345-SMAW-4G(4F)-Repair	工艺员 Technologist:	Xu Donghai 10.01.19
返修(碳刨)前预热温度 Preheat Temperature Before Gouging:	86°C	返修的缺陷 Description of Discontinuity:	2-P
焊前处理检查 Inspection Before Welding:	Acc	焊前预热温度 Preheat Temperature Before Welding:	180°C
最大碳刨深度 Max. Depth of Gouge:	4mm	碳刨总长 Total Length of Gouge:	120mm
焊工 Welder:	04138	焊接类型 Welding Type:	SMAW
焊接电流 Current:	160	焊接电压 Voltage:	25
		焊接位置 Position:	2F
		焊接速度 Speed:	14)

返修后检查

Inspection After Repair:

外观检查 VT Result:	Acc	检验员 Inspector:	Liyanhua 07/20/01	日期 Date:	10.01.24
NDT复检 NDT Result:	Acc	探伤员 NDT Person:	San Yongchang	日期 Date:	2010.3.8

见证:

Witness/Review:

备注:

Remark:

#R787-QCP-900

as note
1/2/10



REPORT OF MAGNETIC PARTICLE EXAMINATION

磁粉检测报告

REPORT NO. 报告编号 B787-MT-18083

PROJECT NO.

DATE日期 2010.01.18

PAGE OF页码 1/1

Revision No: 0

工程编号:

ZP06-787

CONTRACTOR:

用户:

CALTRANS

DRAWING NO.

SSD19

CALTRANS CONTRACT NO.:

图号:

9AE FLOOR BEAM SPLICE

加州工程编号

04-0120F4

REFERENCING CODE

ACCEPTANCE STANDARD

PROCEDURE NO.

CALIBRATION DUE DATE

参考规范编码

接受标准

程序编号

仪器校正有效期

AWS D1.5-2002

AWS D1.5-2002

ZPQC-MT-01

Dec. 28ST, 2010

EQUIPMENT 设备

MANUFACTURER 制造商

MODEL NO. 样式编号

SERIAL NO. 连续编号

MT YOKE

PARKER

B310S

5395 5617 5620

MAGNETIZING METHOD

Continuous magnetic yoke

CURRENT

AC

磁化方法

磁轭式连续法

电流

PARTICLE TYPE

Dry magnet powder

YOKE SPACING

70~150mm

磁粉类型

干磁粉

磁轭间距

MATERIAL TO BE

WELDING 焊接件

Material & thickness

A709M-345T2-X

EXAMINED

CASTING 铸件

母材, 厚度

检测材料

FORGING 锻造

TYPE OF JOINT

T-JOINT

WELDING PROCESS

FCAW

焊缝类型

焊接方法

WELD I.D.
焊缝编号

DISCONTINUITY 不连续性

INDICATION
指示

TYPE
类型

LENGTH IN mm
长度

ACCEPT
接受

REJECT
拒收

REMARKS
备注

SSD19-PP073-005

1

transverse crack

10

2

transverse crack

3

3

transverse crack

4

4

transverse crack

3

REJ.

Y=1150

REJ.

Y=11000

REJ.

Y=13580

REJ.

Y=18980

BLANK

EXAMINED BY 主探

Sun Gongchao

LEVEL-II SIGN 签名 / DATE 日期

质量经理 / QCM

签字 SIGN / 日期 DATE

(FORM# ZPQC-MT01)

REVIEWED BY 审核

LEVEL-II SIGN / DATE 日期

用户 CUSTOMER

签字 SIGN / 日期 DATE

Sun Gongchao
1/18/10

Spull
1/18/10



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.:	SEG050C	报告编号 Report No.:	B-CWR1218
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	9AE LONGITUDINAL DIAPHRAGM	NDT 报告编号 NDT Report No.:	B787-MT-19169
项目编号 Project No.:	ZP06-787				

焊缝缺陷描述:

Description of Welding Discontinuity:

在对SEG050C-006检测时, 发现1处纵向裂纹。1、L=10mm

Welder ID No. (焊工编号): 044772

Position:(位置): 2G

One longitudinal crack was found by use of MT on SEG050C-006

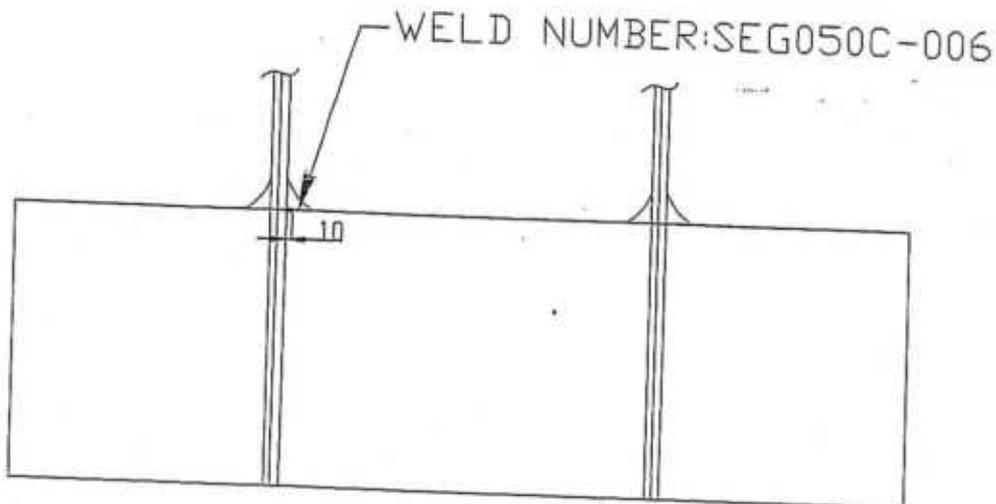
检验员 (Inspector):

Sun Gongchang
Sun Gongchang

日期 (Date): 2010-02-09

焊缝返修位置示意图:

Draft of Welding Discontinuity:



Checked by: [Signature]
Date: 2/16/10

产生原因: Cause:

1. 火焰加热时, 水汽没有完全的去除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): Lizhigang

日期 (Date): 2016.2.10

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, 整个过程中打磨前预热需至65° C. 对于单个裂纹返修, 打磨返修范围为沿缺陷焊缝每一端加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;
6. 焊接前按照焊新的接返修工艺准备焊缝接头形式;
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. 如果打磨深度达到(2/3T+2)mm, 但是缺陷仍然存在, 则停止打磨, 将坡口打磨平滑, 且挖出的凹槽部分两个端头要有1:1的斜势过渡, 然后按照批准的WPS进行第一个面的焊接, 焊接前需至少160° C的预热. 从反面进行打磨直至露出金属光泽, 并对打磨后坡口位置进行100%MT检测, 确保裂纹清除干净, 然后将坡口打磨平滑, 确保来两个端头有1:1的斜势过渡, 并按照WPS的要求进行反面的焊接.
10. 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;
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. 后热后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. 返修后根据图纸进行VT, UT和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.

Welding Inspection
 State of California
 WELDING INSPECTOR
 License No. 5-107
 Signature: [Signature] Date: 2/16/10

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 ≥25mm 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 and it applied to all the repair process. 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.
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 CWI 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. If a crack still present and excavation have reached (2/3T+2)mm maximum, the grinding work shall be ceased. Prepare excavation that all metal is ground clean to a smooth, shiny metal finish and starts and stops are tapered to a 1:1 slope. Weld first side of repair according to approved WPS, and the preheat temperature be 160° C at least. Grind from the opposite side until sound weld metal is reached and perform 100% MT of excavation to ensure no crack exists. Prepare excavation that all metal is ground clean to a smooth, shiny metal finish and starts and stops are tapered to a 1:1 slope. Weld opposite side of repair according to approved WPS.
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 repaired area flush with base metal or the adjacent weld after post weld heating.
13. Wait 48 hours at least after the repair area has cooled to ambient temperature before performing NDT.

Perform VT, UT and 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 testing'.

工艺: [Signature] 审核:

Technical Engineer: [Signature] Approved By: [Signature]

日期: 2/10/10
Date:



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.:	SEG050C	报告编号 Report No.:	B-CWR1218
合同号 Contract No.:	04-0120F4	部件名称 Item Name:	9AE LONGITUDINAL DIAPHRAGM	NDT 报告编号 NDT Report No.:	B787-MT-19169
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):

日期 (Date):

参照的WPS编号 Repair WPS No.:	WPS-345-SMAW-2G(2F)-Repair	工艺员 Technologist:	<i>Xu Dongkai</i> 2010.02.10
返修(碳刨)前预热温度 Preheat Temperature Before Gouging:	170°C	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:	185°C
最大碳刨深度 Max. Depth of Gouge:	NA	碳刨总长 Total Length of Gouge:	NA
焊工 Welder:	044772	焊接类型 Welding Type:	SMAW
焊接电流 Current:	157	焊接电压 Voltage:	24.8
		焊接位置 Position:	2G
		焊接速度 Speed:	103

返修后检查

Inspection After Repair:

外观检查 VT Result:	<i>Acc</i>	检验员 Inspector:	<i>Li Lanhua</i>	日期 Date:	10.03.02
NDT复检 NDT Result:	<i>Acc</i>	探伤员 NDT Person:	<i>Sunwei</i>	日期 Date:	2010.3.6

见证:

Witness/Review:

备注:

Remark:

#R787-QCP-900

2/16/10

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-000560**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 18-Mar-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0640**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: 03-Feb-2010**Description of Non-Conformance:**

During the Quality Assurance Ultrasonic Testing (UT) review of welds located on Orthotropic Box Girder (OBG) segment 9AE, this Quality Assurance Inspector (QA) discovered the following issues:

- Location #1: Two (2) longitudinal Class "A" indications.
- Indication #1 measures approximately 15mm.
- The indication dBs rating is +6.
- Material thickness is 20mm.
- The depth of the indication is approximately 16.5mm.
- The weld is identified as SSD19A-PP72-134.
- The indication is clearly marked on or near the weld.
- The Y location is approximately 70mm from edge of the flange plate.
- The weld is a Complete Joint Penetration (CJP) Butt joint joining Flange Plate X5D-2 to Floor Beam X5D.

- Location #2: One Indication measures approximately 12mm.
- The indication dBs rating is +7.
- Material thickness is 20mm.
- The depth of the indication is approximately 17mm.
- The weld is identified as SSD19A-PP73-128.
- The indication is clearly marked on or near the weld.
- The Y location is approximately 55mm from edge of the flange plate.
- The weld is a Complete Joint Penetration (CJP) "T" joint joining Flange Plate X5D-2 to Floor Beam X7L.
- These indications (location #1 and #2) are located in an area previously tested and accepted by ZPMC Quality Control (QC) personnel. As per the contract documents, ZPMCs QC personnel are required to perform 25% UT inspection of this weld.

