

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, China

Report No: NCR-000796

Prime Contractor: American Bridge/Fluor Enterprises, a JV

Date: 12-Jul-2010

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

NCR #: ZPMC-0758

Type of problem:

Welding	Concrete	Other	
Welding	Curing	Procedural	Bridge No: 34-0006
Joint fit-up	Coating	Other	Component: Longitudinal Diaphragm LD3030-001
Procedural	Procedural	Description:	

Reference Description: Heat Straightening without Prior Approval from the Engineer

Description of Non-Conformance:

During Quality Assurance (QA) in-process observations of the fabrication of Longitudinal diaphragm LD3030-001, QA discovered the following issue:

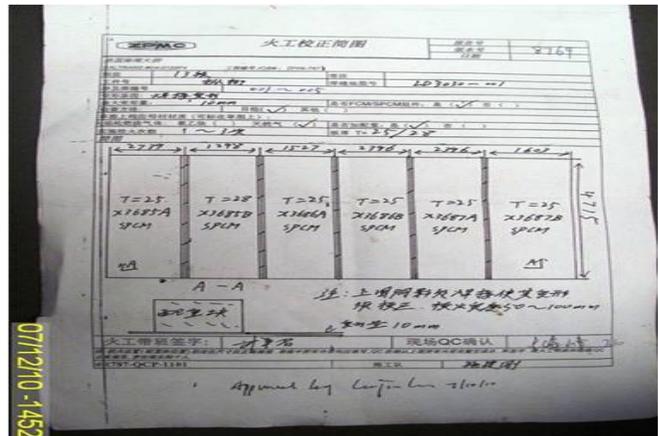
- ZPMC personnel performing heat straightening on distorted member without prior Engineer's approval.
- The Longitudinal Diaphragm is identified as LD3030-001.
- The plates are identified as X3685A (SPCM), X3685B (SPCM), X3686A (SPCM), X3686B (SPCM), X3687A (SPCM), and X3687B (SPCM).
- The deviation from flat as measured by QA was 14mm in 1000mm.
- The Material thickness is 25 mm and 28 mm.
- This Longitudinal Diaphragm is located in Sub assembly Bay#3.

For further information, please see the attached pictures below.



QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 2)



Applicable reference:

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

Caltrans Special Provisions Section 8-3: "For material more than 16 mm, the Contractor shall not heat straighten members more than 3 in 1000 without prior approval of the Engineer".

Who discovered the problem: D.Sukanthan

Name of individual from Contractor notified: Mr.Wang wen bin

Time and method of notification: 15:00 hours, 07-12-2010, Verbal

Name of Caltrans Engineer notified: Laraine Woo

Time and method of notification: 10:00_07/13/10_Verbal

QC Inspector's Name: Chen Xi

Was QC Inspector aware of the problem: Yes No

Contractor's proposal to correct the problem:

NA

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,(818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By: Devey,Jim 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: 14-Jul-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: 05.03.06-000754

Subject: NCR No. ZPMC-0758

Reference Description: Heat Straightening without Prior Approval from the Engineer

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:** 13

Remarks:

During Quality Assurance (QA) in-process observations of the fabrication of Longitudinal diaphragm LD3030-001, QA discovered the following issue:

- ZPMC personnel performing heat straightening on distorted member without prior Engineer's approval.
- The Longitudinal Diaphragm is identified as LD3030-001.
- The plates are identified as X3685A (SPCM), X3685B (SPCM), X3686A (SPCM), X3686B (SPCM), X3687A (SPCM), and X3687B (SPCM).
- The deviation from flat as measured by QA was 14mm in 1000mm.
- The Material thickness is 25 mm and 28 mm.
- This Longitudinal Diaphragm is located in Sub assembly Bay#3.

Action Required and/or Action Taken:

Proposed 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: Laraine Woo Transportation Engineer

Attachments: ZPMC-0758

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

File: 05.03.06

NCR PROPOSED RESOLUTION

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

Attention: Pursell, Gary
Resident Engineer

Ref: 05.03.06-000754

Subject: NCR No. ZPMC-0758

Dated: 13-Aug-2010

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

Job Name: SAS Superstructure

Document No.: ABF-NPR-000737 Rev: 00

Contractor's Proposed Resolution:

Reference Resolution: The length of the plate is 12 meters long, so the plate would have to be out of flatness greater than 36mm before Engineer approval is needed.

Measuring determining flatness using 1 meter is not sufficient to determine the if the flatness is out of tolerance, see Item 11.2.2.b from Letter 05.03.01-000419. The tolerance referenced in Section 8-3, Special Provisions (3 over 1000mm) should be used as a ratio when the length of the plate is longer than 1 meter. In this case the length of the plate is 12 meters long, so the plate would have to be out of flatness greater than 36mm before Engineer approval is needed. Based on this clarification and that ZPMC had a valid HSR1 in hand at the time, ZPMC requests this NCR be closed.

Submitted by: Ishibashi, Joshua

Attachment(s): ABF-NPR-000737R00;

Caltrans' comments:

Status: CLO

Date: 17-Aug-2010

The proposed resolution is acceptable. This NCR is considered closed.

Submitted by: Woo, Laraine

Date: 17-Aug-2010

Attachment(s):



No. B-840

LETTER OF RESPONSE

TO: American Bridge/Flour

DATE: 2010-08-13

REGARDING: NCR-000796(ZPMC-0758)

The measurement is incorrect. As claimed several times, flatness checks by utilizing the 1000mm template is not sufficient to determine if the out of flatness tolerances specified in the contract have been exceeded. It also was stated the department's letter No. 05.03.01-000419. Based on this, please consider closure of this NCR.

ATTACHMENT:

NCR-000796(ZPMC-0758)



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: 14-Jul-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: 05.03.06-000754
Subject: NCR No. ZPMC-0758

Reference Description: Heat Straightening without Prior Approval from the Engineer

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: 13

Remarks:

During Quality Assurance (QA) in-process observations of the fabrication of Longitudinal diaphragm LD3030-001, QA discovered the following issue:

- ZPMC personnel performing heat straightening on distorted member without prior Engineer's approval.
- The Longitudinal Diaphragm is identified as LD3030-001.
- The plates are identified as X3685A (SPCM), X3685B (SPCM), X3686A (SPCM), X3686B (SPCM), X3687A (SPCM), and X3687B (SPCM).
- The deviation from flat as measured by QA was 14mm in 1000mm.
- The Material thickness is 25 mm and 28 mm.
- This Longitudinal Diaphragm is located in Sub assembly Bay#3.

Action Required and/or Action Taken:

Proposed 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: Laraine Woo Transportation Engineer

Attachments: ZPMC-0758

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

Report No: NCR-000796

Prime Contractor: American Bridge/Fluor Enterprises, a JV

Date: 12-Jul-2010

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

NCR #: ZPMC-0758

Type of problem:

Welding Concrete Other

Welding Curing Procedural

Joint fit-up Coating Other

Procedural Procedural Description:

Bridge No: 34-0006

Component: Longitudinal Diaphragm LD3030-001

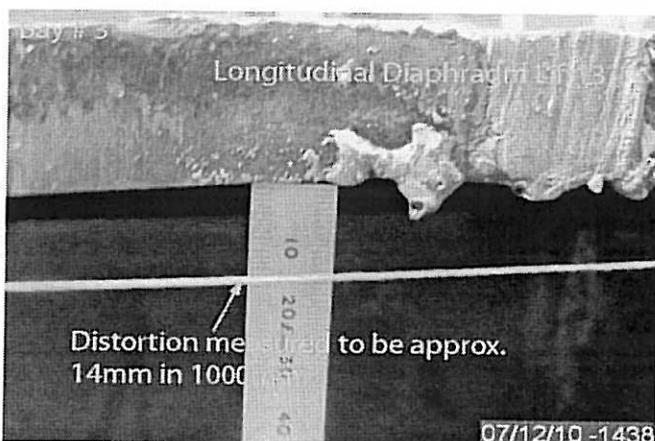
Reference Description: Heat Straightening without Prior Approval from the Engineer

Description of Non-Conformance:

During Quality Assurance (QA) in-process observations of the fabrication of Longitudinal diaphragm LD3030-001, QA discovered the following issue:

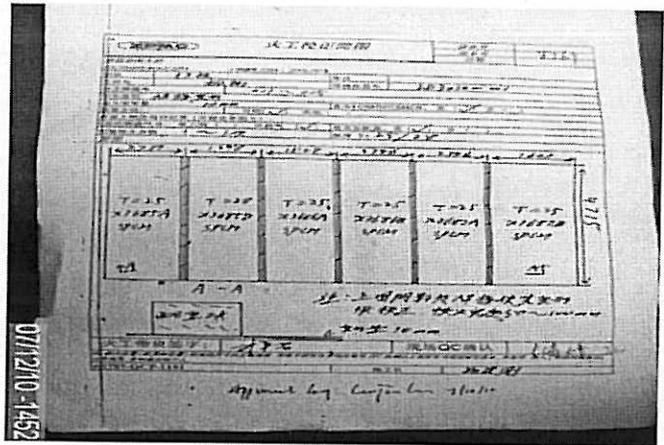
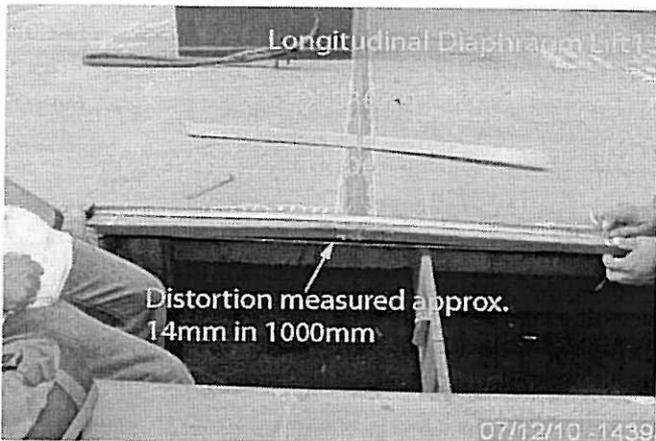
- ZPMC personnel performing heat straightening on distorted member without prior Engineer's approval.
- The Longitudinal Diaphragm is identified as LD3030-001.
- The plates are identified as X3685A (SPCM), X3685B (SPCM), X3686A (SPCM), X3686B (SPCM), X3687A (SPCM), and X3687B (SPCM).
- The deviation from flat as measured by QA was 14mm in 1000mm.
- The Material thickness is 25 mm and 28 mm.
- This Longitudinal Diaphragm is located in Sub assembly Bay#3.

For further information, please see the attached pictures below.



QUALITY ASSURANCE -- NON-CONFORMANCE REPORT

(Continued Page 2 of 2)



Applicable reference:

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

Caltrans Special Provisions Section 8-3: "For material more than 16 mm, the Contractor shall not heat straighten members more than 3 in 1000 without prior approval of the Engineer".

Who discovered the problem: D.Sukanthan

Name of individual from Contractor notified: Mr.Wang wen bin

Time and method of notification: 15:00 hours, 07-12-2010, Verbal

Name of Caltrans Engineer notified: Laraine Woo

Time and method of notification: 10:00_07/13/10_Verbal

QC Inspector's Name: Chen Xi

Was QC Inspector aware of the problem: Yes No

Contractor's proposal to correct the problem:

NA

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,(818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By: Devey,Jim

SMR

Reviewed By: Wahbeh,Mazen

SMR

DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge Program

333 Burma Rd.

Oakland, CA 94607

(510) 622-5660, (510) 286-0550 fax

*Flex your power
Be energy efficient!*

July 31, 2007

Contract No. 04-0120F4

04-SF-80-13.2 / 13.9

Self-Anchored Suspension Bridge

Letter No. 05.03.01-000419

Michael Flowers
Project Executive
American Bridge/Fluor Enterprises, a JV
375 Burma Road
Oakland, CA 94607

Dear Michael Flowers,

Submittal 54, Rev. 1, DRAFT Welding Quality Control Plan

The Department has completed review of Submittal ABF-SUB-000054R01, "DRAFT Welding Quality Control Plan (WQCP) for ZPMC," dated July 17, 2007. The submittal is returned "Approved as Noted" as shown on the attached redlined WQCP. All comments made by the Department on the WQCP are required for approval and shall be put into practice during fabrication.

Additionally, the following items supplement the written WQCP or are required to be revised in future addendums to the original WQCP, as in the case of WPS's not approved.

1. **Item 8.6** - There shall be separate drying and holding ovens.
2. The following WPS's have been revised to specify welding parameters within those allowed for procedures qualified in accordance with AWS D1.5, Section 5.12.1 (Maximum Heat Input). The 1G SAW WPS's that refer to "PQR HP2006134 – PQR," were submitted as "AWS D1.5, Section 5.12.1 Max HI," but the associated WPS's were varied in accordance with AWS D1.5, Section 5.13:
 - a. WPS-B-T-2221-B-U3c-S
 - b. WPS-B-T-2221-B-L2c-S
 - c. WPS-B-T-2221-B-L2a-3
 - d. WPS-B-T-2221-TC-U4b-S
 - e. WPS-B-T-2221-1-TC-U5-S
 - f. WPS-B-T-2122-1
 - g. WPS-345-SAW-1G(2F)-Repair
3. Revise the following fillet weld WPS's to include the maximum size single pass and minimum size multi-pass weld qualified by the associated macroetches of the fillet weld soundness plate:
 - a. WPS-B-T-2131, 2132 and 2133
 - b. WPS-B-T-2122-1 and 2122-1
 - c. WPS-B-T-3122
 - d. WPS-B-T-3111, 3112, 4111-1, 4112-1 and 4121

4. Visual acuity records were not submitted for the following CWI's and CAWI's. These personnel are not approved at this time.
 - a. **CWI's:** Ya-Dong Zhu, Weifeng Jiang, Daqing Zhou, Yuwei Zhao, Lefeng Lu, Yongjun Ye, Weidong Zhang, Hua Yan, Wenhui Xiong, Nan Wang, Jianhua Lu
 - b. **CAWI's:** Gang Hu, Guogang Fu, Zhonghai Zhu, Dongjun Yu, Xianping Xu, Lianzhui Li, Yong Ding.
5. **Section 12** - does not address welding of HPS 485W of Shear Link Grade steels. It is understood that these will be addressed in separate addendums to this WQCP. The Contractor is not approved to perform welding on HPS 485W or Shear Link Grade steels at this time.
6. **Item 12.8.2** - Personnel qualifications shall be submitted for CWI's described as "TBD" on Attachment A, ZPMC Quality Control Organization Chart.
7. The Department understands electrodes for the following PQR's will be submitted to the Engineer for approval in a future submittal or RFI. The Contractor is not approved to perform closed-rib welding at this time. The Contractor is not allowed to begin welding using WPS's developed from the following PQRs:
 - a. HP2006120 1G FCAW (Supercored 71H) on HPS
 - b. HP2006122 3G FCAW (Supercored 71H) on HPS
 - c. HP2006126-3 2F FCAW (Supercored 71H) on HPS
 - d. HP2006127 3F FCAW (Supercored 71H) on HPS
8. The Department understands additional information from the electrode manufacturer will be submitted in subsequent WQCP addenda to demonstrate the following PQR's for GMAW on the closed-rib PJP welds are operating in the spray transfer mode:
 - a. HP2006136-1 1G GMAW (JM-56)
 - b. HP200782 1G GMAW (SM-70)
 - c. HP2007370 1G GMAW (JM-56)
9. Additional testing shall be submitted in subsequent WQCP addenda to support the following PQR's which detail AWS D1.5 standard joint B-U2a-GF in the 2G position. This joint is pre-qualified only in the 1G, 3G and 4G positions. The following WPS's are not approved at this time:
 - a. WPS-B-T-2232-B-U2a-F
 - b. WPS-B-T-3212-B-U2a
 - c. WPS-B-T-4212-B-U2a
10. Welding of HPS 485W to non-shear length grade A709 gr. 345 using SMAW E7018 electrodes requires additional testing. The Department understands this testing is currently being conducted and will be submitted in future WQCP addenda. The following WPS's are not approved at this time:

- a. WPS-B-P-4211, 4212, 4213, and 4214-TC-U4b
 - b. WPS-B-P-4211, 4212, 4213, and 4214-TC-U4c
 - c. WPS-B-P-4211, 4212, 4213, and 4214-TC-U5b
 - d. WPS-B-P-4211, 4212, 4213, and 4214
 - e. WPS-345-485-SMAW-1G (1F), 2G (2F), 3G (3F), and 4G (4F)-1-Repair
11. The Department understands electrodes for the following WPS's will be submitted to the Engineer for approval in a future submittal or RFI. The following WPS's are not approved at this time:
- a. WPS-B-T-4231, 4232 and 4233-TC-U4b-F
 - b. WPS-B-T-4231, 4232 and 4233-TC-U4c-F
 - c. WPS-B-T-4231, 4232 and 4233-TC-U5-F
 - d. WPS-B-T-4131, 4132 and 4133
 - e. WPS-345-485-FCAW-1G (1F), 2G (2F), and 3G (3F)-1-Repair
12. The Department understands a single closed-rib WPS will be submitted showing the actual joint configuration and combination of processes and include the parameter variation established during the Closed-rib Weld Procedure Trials. The following WPS's for welding the Closed-rib to Deck PJP weld cannot be approved until the Contractor completes the Closed-rib Weld Procedures Trials described in the Special Provisions:
- a. WPS-B-T-2342-U1 and U2 (U-rib)
 - b. WPS-B-T-2141-U3 (U-rib)
 - c. WPS-B-T-2322-U1 (U-rib)
13. Additional testing is required to support WPS-B-T-223(2)1T. The Department understands PQR HP2006117-2 is currently in process and will be submitted in a future WQCP addendum. WPS-B-T-223(2)1T is not approved at this time.
14. Additional testing is required to support WPS-B-T-2221-B-U3c-S-1, L2c-S-1, L2a-S-1, U4b-S-1, U4a-S-1, and U5-S-1. The Department understands PQR HP200748 is currently in process and will be submitted in future WQCP addenda. The WPS is not approved at this time.
15. The Department understands the visual acuity information for ten individuals included in Section 4.3 of the WQCP will be included in a subsequent addendum.
16. **Supplementary Ultrasonic Testing Procedure to Verify Depth of Penetration of Partial Joint Penetration U-rib Welds** - This section was not reviewed. The Department understands that the enclosed procedure is still under development and additional information will be provided in future submittals. The procedure for testing the Closed-rib to Deck PJP weld cannot be approved until the Contractor completes the Closed-rib Weld Procedures Trials described in the Special Provisions. Final approval of this procedure will be based upon successful demonstration of accuracy.

Please note that The Department has changed the word "should" to "shall" in the WQCP to be clear and unambiguous with respect to the basic methods that will be followed to ensure fabrication quality and consistency. However, the Contractor has the option to change to different methods, techniques, or procedures as long as they are adequately documented and approved to ensure the engineered quality of the fabricated product is sustained.

The Department understands the heat straightening techniques listed in Section 11 provide a strategy to describe the patterns of heat that will be used in general scenarios where distortion is likely to occur. Since the actual distortion that occurs will likely include one or more of the scenarios listed, any individual or combination of the heating patterns and/or "spot" heating described are pre-approved for use.

With regards to the Heat Straightening Control Procedure, the Department has also identified items for your consideration that may improve the usefulness of the WQCP document. These items do not require action, but are offered as suggestions. It is ultimately the Contractors decision whether to incorporate these comments.

- **Item 11.1.2:** Consider using figures to illustrate how the flatness tolerances are incorporated across the entire width of length of plates and stiffeners. See attachments.
- **Item 11.2.1.1.b:** Flatness checks utilizing a 1-meter straight edge may not be sufficient to determine if the out of flatness tolerances specified in the contract have been exceeded.
- **Item 11.2.7:** The Contractor is encouraged to consider performing straightness checks and heat straightening progressively as each tower shaft is welded on.
- **Item 11.2.3:** The Contractor should consider how the accuracy of infrared temperature unit or surface pyrometer will be determined. The Department suggests the use of two temperature indicating crayons, one at 1100 °F and one at 1200 °F.

Also note that the section titled "Corrective and Preventative Action" was not required and was not reviewed.

The Department recommends face-to-face discussions with ABF and ZPMC personnel in Shanghai within the next two weeks to resolve any questions regarding comments contained herein. Further, it is recommended a separate meeting be held in Shanghai to discuss recommendations related to distortion control and Section 11 of the WQCP to ensure potential impacts to fabrication are minimized.

Sincerely,



GARY PURSELL
Resident Engineer

Attachments

cc: Rick Morrow, Brian Boal, Mark Wood, Jason Tom, D. Coe, Stanley Ku, Peter Siegenthaler
file: 05.03.01, 55.0054

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, China**Report No:** NCS-000718**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**Date:** 17-Aug-2010**Submitting Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **NCR #:** ZPMC-0758**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: 12-Jul-2010**Description of Non-Conformance:**

During Quality Assurance (QA) in-process observations of the fabrication of Longitudinal diaphragm LD3030-001, QA discovered the following issue:

- ZPMC personnel performing heat straightening on distorted member without prior Engineer's approval.
- The Longitudinal Diaphragm is identified as LD3030-001.
- The plates are identified as X3685A (SPCM), X3685B (SPCM), X3686A (SPCM), X3686B (SPCM), X3687A (SPCM), and X3687B (SPCM).
- The deviation from flat as measured by QA was 14mm in 1000mm.
- The Material thickness is 25 mm and 28 mm.
- This Longitudinal Diaphragm is located in Sub assembly Bay#3.

For further information, please see the attached pictures below.

Contractor's proposal to correct the problem:

NA

Corrective action taken:

After review, it has been determined that this NCR was issued in error and will be rescinded.

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, who represents the Office of Structural

QUALITY ASSURANCE -- NON-CONFORMANCE RESOLUTION

(Continued Page 2 of 2)

Materials for your project.

Inspected By: Simonis,Jim

Quality Assurance Inspector

Reviewed By: Wahbeh,Mazen

QA Reviewer
