

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
MATERIALS ENGINEERING AND TESTING 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
FAX: (707) 649-5493



Contract # : 04-0120E4
Cty SF Rte 80 PM 13.4/13.8
File # 1.25 B

QUALITY ASSURANCE - NONCONFORMANCE REPORT

Location: E2East Foundation

Date: 01-31-07

Prime Contractor: Kiewit/FCI/Manson-KFM-JV

NCR #139

Submitting Contractor: Kiewit/FCI/Manson-KFM-JV

Type of problem:

- Welding Concrete Other
- Welding: Curing: Procedural: Bridge No. 34-0006 L / R
- Joint fit-up: Coating: Other: Component: E2E foundation footing
- Procedural: Procedural: Loss of preheat temperature

Description of Non-Conformance: The Contractor failed to maintain the preheat temperature during the welding of E2E pile head connector plates (PHCP) as required by Caltrans Special Provisions, Section 10-1.31, Field Welding of Pile/Sleeve Connector Plates, Line F. The loss in preheat occurred on several pile head connector plates (PHCP) due to a loss of power to the main control panel. The following locations were affected by the loss of preheat. Pile head connection plate welds 2D1, pile 3C4, and pile 3F3. On these particular weld locations only the root weld pass had been deposited and the Contractor elected to remove the weld. On pile head connection plate welds 2B3, pile 2D2, pile 3C3, pile 3F4, pile 1D1 and pile 1D2 there were subsequent weld passes that had been deposited prior to the loss of heat. The Contractor elected to leave the weld passes in place and perform magnetic particle testing, bring the weld up to the required minimum preheat, and commence welding.

Applicable reference: Caltrans Special Provisions, Section 10-1.31, Field Welding of Pile/Sleeve Connector Plates, Line F

Who discovered the problem: Westar Marine preheat monitoring crew and KFM Superintendent, Joel Dodd at 11:00 hours 1-30-07

Name of individual from Contractor notified: KFM Weld Superintendent, Dennis Winter

Time and method of notification: 01/31/07 at approximately 0600 via telephone notification

Name of Caltrans Engineer notified: Mark Vilcheck, Caltrans Structure Representative

Time and method of notification: 0700 hours January 31, 2007 via telephone notification

QC Inspector's Name: Kevin Carpenter

Was the QC Inspector aware of problem: No

Contractor's proposal to correct the problem: Unknown at this time.

Comments: This report is for the purpose of determining general 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 Ryan Smith, (858) 232-6799, who represents the Office of Structural Materials for your project.

Inspected By: Bill Levell *Bill Levell* Quality Assurance Inspector

Reviewed By: Albert Carreon/ Bill Levell *[Signature]* Lead QA Reviewer

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Contract #: 04-0120E4
Cty SF Rte 80 PM 13.4/13.8
File # 1.25A

QUALITY ASSURANCE - NONCONFORMANCE RESOLUTION

Location: SFOBB Jobsite

Date: February 26, 2007

Prime Contractor: Kiewit/FCI/Manson (KFM) – Joint Venture

NCR # 139

Submitting Contractor: Kiewit/FCI/Manson (KFM) – Joint Venture

Type of problem:

Welding [X] Concrete [] Other [X]
Welding: [] Curing: [] Procedural: []
Joint fit-up: [] Coating: [] Other: [X] Loss of preheat temperature
Procedural: [X] Procedural: []

Bridge No. 34-0006L/R Component E2 Foundation Footing

Date nonconformance report was written: January 31, 2007

Description of Non-Conformance: The Contractor failed to maintain the preheat temperature during the welding of several E2 pile head connection plates (PHCP) as required by Caltrans Special Provisions, Section 10-1.31, Field Welding of Pile/Sleeve Connector Plates, Line F. The loss of preheat occurred in the root pass of the following locations and the Contractor elected to remove the welds: 2D1, 3C4 and 3F3. The loss of preheat occurred at the following locations and the Contractor elected to perform magnetic particle (MT) testing prior to commencing welding: 2B3, 2D2, 3C3, 3F4, 1D1 and 1D2.

Contractor's proposal to correct the problem: The Contractor has implemented additional measures to prevent future occurrences of loss of preheat, such as elevation of the issue to the supplier of the heating equipment, periodic monitoring of the preheat consoles and monitoring by the night shift tug operators, and increased verification by the welders and Quality Control (QC) personnel during welding operations.

Corrective action taken: The Contractor removed the root pass weld at the following locations: 2D1, 3C4 and 3F3. At locations identified as 2B3, 2D2, 3C3, 3F4, 1D1 and 1D2, the Contractor performed MT after the weld was brought back up to the minimum required preheat temperature.

Did corrective action require Engineer's approval? [X] Yes [] No

If so, name of the Engineer providing approval: Structural Materials Representative (SMR) Ryan Smith, in accordance with response to KFM Letter. Date: 2-26-07

Is Engineer's approval attached: [X] Yes [] No

Comments: This report is for the purpose of determining general 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 Ryan Smith, (858) 232-6799, who represents the Office of Structural Materials for your project.

Inspected By: Bill Levell [Signature] Quality Assurance Inspector

Reviewed By: Ryan Smith [Signature] Structural Materials Representative (SMR)

DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge Program

333 Burma Rd.
Oakland, CA 94607
(510) 286-0538, (510) 286-0550 fax



Kiewit-FCI-Manson, JV
220 Burma Rd.
Oakland, CA 94607

February 26, 2007

Attn: Mr. Kevin Carpenter
Welding Quality Control Manager

Contract No. 04-0120E4
04-SF-80-13.4, 13.8
SAS T1 & E2 Foundations
SFOBB-ESSSP

Letter No. 05.003.01-002901

Subject: Response to Kiewit-FCI-Manson Letter Nos. 229, 230, 234, 238, 239, 240, 241, and 242

Dear Kevin,

The Department has reviewed Kiewit-FCI-Manson (KFM) Letter Nos. 229, 230, 234, 238, 239, 240, 241, and 242, which respond to the Department's Letter Nos. 2542, 2543, 2544, 2569, 2654, 2655, 2836, 2795, 2804, 2806, and 2807. These Department's letters notified KFM of the Non Conformance Reports (NCRs) at the SAS T1/E2 Foundations project site concerning the loss of preheat during the welding of the Pier E2 pile/sleeve connection plates. Regarding the above-mentioned KFM's letters, the Department takes no exception to the preventive measures and corrective actions taken by the Contractor. However, the Department will continue to monitor the preheat temperatures and future instances of preheat nonconformance will result in NCRs. The Department expects that the Contractor will take necessary action to further maintain the preheat temperatures as required by Section 10-1.31, "Steel Structures," of the Special Provisions.

The Department considers the NCRs generated by the Department's Letter Nos. 2542, 2543, 2544, 2569, 2654, 2655, 2836, 2795, 2804, 2806, and 2807 closed.

If you have any questions or need additional information, please contact Mark Vilcheck at (510) 286-0526.

Sincerely,

Mark Woods
Senior Bridge Engineer

For: Pedro J. Sanchez
Resident Engineer

cc: M. Vilcheck
P. Sanchez
R. Smith

file: 05.003.01, 09.006.03

DEPARTMENT OF TRANSPORTATION - District 4 Toll Bridge Program

333 Burma Rd.
Oakland, CA 94607
(510) 286-0538, (510) 286-0550 fax



Kiewit-FCI-Manson, JV
220 Burma Rd.
Oakland, CA 94607

February 27, 2007

Attn: Mr. Lee Zink
Project Director

Contract No. 04-0120E4
04-SF-80-13.4, 13.8
SAS T1 & E2 Foundations
SFOBB-ESSSP

Letter No. 05.003.01-002904

Subject: Response to Submittal No. 1335, Revision No. 00 (KFM Preheat NCR's 4, 5, 6)

Dear Lee,

The Department has reviewed Kiewit-FCI-Manson (KFM) Submittal No. 1335, Revision No. 00, dated February 7, 2007, which notified the Department of the Contractor's Non-conformance Report (NCR) Nos. 4, 5, and 6. Regarding these NCRs, the Department has already documented and notified the Contractor of the NCRs in the Department's Letter Nos. 2795, 2806, and 2807. In addition, the KFM Letter Nos. 239, 241, and 242 have already responded to these Department's letters. The Department's Letter No. 2901, dated February 26, 2007, was issued to close these NCRs. The Department has no further comments regarding Submittal No. 1335, Revision No. 00, and considers it closed.

If you have any questions or need additional information, please contact Mark Vilcheck at (510) 286-0526.

Sincerely,

Mark Woods
Senior Bridge Engineer

For: Pedro J. Sanchez
Resident Engineer

cc: P. Sanchez
M. Vilcheck
R. Smith

file: 05.003.01, 09.006.03, 09.013, 55.1335

NON-CONFORMANCE REPORT

4

Location of Mat'l/Item: E2E Pile 1, 2 & 3

Title/Description: Loss of preheat Pile 1-D3,4 Pile 2-B3,4 & H1,2 Pile 2-C4 Pile 3-C3,F4

Group: E2 Foundations

Superintendent: Joel Dodd

Foreman: Scott McCoy

Report of Condition/Cause of Non-Conformance:

Shore power fuse in breaker box blew, causing loss of power to welding heaters, reading in heater thermocouplers read below 250 degree farenhiet. Listed connection plate locations and welds had root passes and hot passes installed prior to heat loss. All other welds with only root passes installed were removed at locations Pile 2-D1, Pile 3-C4, Pile 3- F3

Recommended Corrective Action:

Switch power supply from shore power to generator power, bring preheat back up to parameters MT welds, make any necessary repairs and complete weld.

All other welds with locations Pile 2-D1, Pile 3-C4, Pile 3- F3 only root passes installed were removed.

Originator Signature:

Date:

Superintendent Signature:

Date:

Joel Dodd

1/31/07

Joel Dodd

1/31/2007

Designer Comments on Corrective Action:

Corrective Actions Verified Complete and Inspected:

Reference Documents:

Date Closed:

Signature:

Memorandum

*Flex your power!
Be energy efficient!*

To: MARK VILCHECK
Structure Representative
333 Burma Road
Oakland, CA 94607

Date: February 26, 2007

File: 04-0120E4
E2/T1 Foundations

From: RYAN T. SMITH
Structural Materials Representative
Quality Assurance and Source Inspection Branch
Office of Structural Materials

KFM LETTERS 230, 234, 238, 239, 240, 241, and 242 – RESPONSE TO METS NCRs 130, 131, 133, 134, 135, 137, 138, 139, 140, 141, 142, and 143

The Materials Engineering and Testing Service (METS) has reviewed KFM Letters 230 (01/29/07), 234 (01/31/07), 238 (02/15/07), 239 (02/15/07), 240 (02/15/07), 241 (02/15/07), and 242 (02/15/07). These letters have been written in response to the State Letter's notifying the Contractor of the nonconformance regarding their failure to maintain preheat on several E2 Pile/Sleeve Connector Plate (PSCP) welds.

As required by the contract Special Provisions, Section 10-1.31, "Field Welding", Line, F, the preheat and interpass temperature shall be in conformance with AWS D1.5, Section 12.14 and also shall be at least 65°C. Furthermore, the specification requires that the minimum preheat temperature shall be maintained continuously from beginning to completion of the entire weld, even if welding is interrupted. On multiple occasions in January and February 2007, METS inspectors documented that the Contractor failed to comply with this specification. The dates and affected welds are listed below:

| NCR # | Date | PSCP Weld # |
|-------|----------|------------------------|
| 130 | 01/08/07 | 2G1, 2G2, 3G3, 3G4, 3H |
| 131 | 01/10/07 | 3E1, 7F1, 7F2 |
| 133 | 01/12/07 | 6F2 |
| 134 | 01/16/07 | 6D2 |
| 135 | 01/17/07 | 6D1 |
| 137 | 01/19/07 | 6A2 |
| 143 | 01/20/07 | 6D2, 2E1 |

| | | |
|-----|----------|---|
| 138 | 01/22/07 | 7B2, 2E2 |
| 139 | 01/31/07 | 2D1, 2D2, 3C3, 3C4, 3F3, 3F4, 2B3, 1D1, 1D2 |
| 140 | 02/02/07 | 4D2 |
| 141 | 02/03/07 | 2E3 |
| 142 | 02/05/07 | 5H2 |

As stated in the response letters, the Contractor believes they have identified the cause of the heating elements failures to be combination of the following:

1. Burnt heater connection cables
2. Thermocouple wires being incidentally knocked loose
3. Cooling air flow from ventilation fans

KFM Letter 230 specifically states that the Contractor has implemented additional measures to prevent future occurrences of the afore mentioned issues. These additional measures include:

1. Elevation of the issue to the supplier of the heating equipment in order to re-inspect the equipment and the Contractor's set-up.
2. Periodic monitoring of the preheat consoles and monitors by the night shift tug operators. The tug operators have been instructed to notify the Contractor in order to have someone repair the malfunction, should they witness any drop in temperature on the welds.
3. Increased checks by both the welder and the Quality Control inspector to ensure the heating equipment is working properly during welding operations. As stated in subsequent letters, the welders will be checking for burnt connectors and loose wires so that they can be replaced and/or corrected.

METS understands the power failure that occurred on January 31, 2007 to be an isolated case and does not expect similar issues in the future. Additionally, METS inspectors have noted no further instances of lost preheat since February 5, 2007 and considers NCRs 130, 131, 133, 134, 135, 137, 138, 139, 140, 141, 142, and 143 resolved at this time. However, should this issue reoccur, METS recommends the Department advise the Contractor that the issue shall be readdressed.

Mark Vilcheck
February 26, 2007
Page 3

If you have any questions, or would like to discuss the issues, please call me at (858) 232-6799.

cc: Rafael Bolon
Tom Shimada
Albert Carreon