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STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY Arnold Schwarzenegger, Governor

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: SFOBB E2/T1 Foundations **Date**: 01/10/07

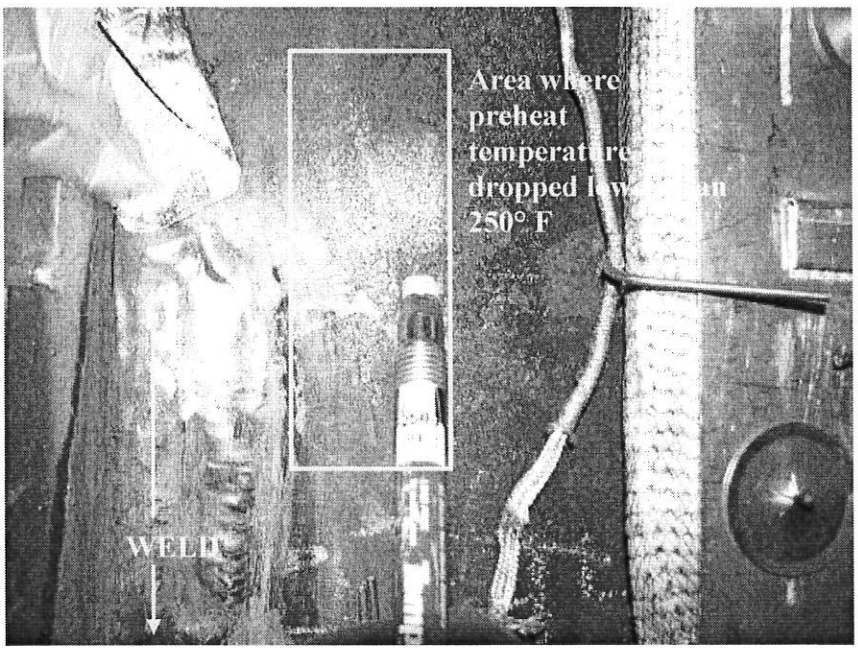
Prime Contractor: Kiewitt/FCI/Manson (KFM) **NCR #**131

Submitting Contractor: KFM

Type of problem:

Welding	☒	**Concrete**	☐	**Other**	☐	
Welding:	☒	**Curing:**	☐	**Procedural:**	☐	**Bridge No.** 34-0006
Joint fit-up:	☐	**Coating:**	☐	**Other:**	☐	**Component:** E2E foundation
Procedural:	☒	**Procedural:**	☐	____		

Description of Non-Conformance:
The Contractor failed to maintain the preheat temperature during the welding of several E2 pile head connection plates as required by the Special Provisions, Section 10-1.31, Field Welding of Pile/Sleeve Connector Plates, Line F. The loss in preheat temperature occurred at the following locations: Pile head connection plate **3-E** weld # 1 (top area only) and the pile head connection plate **7-F** welds # 1 and 2 (entire weld area). The digital photographs below depict the area on connection plate **3-E** where the temperature indicator shows a temperature less than 250°F. This is not the first occurrence of this issue.



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

Who discovered the problem: The QA Inspector Alfredo Acuna at pile head connection **3-E** and KFM Welding Supervisor Scott McCoy at pile head connection **7-F.**

Hardcopy Routing Instructions:
1. Resident Engineer *2. Inspecting Branch Contract File* *3. Responsible Branch Contract File (with supporting documentation)*

QUALITY ASSURANCE - NONCONFORMANCE REPORT

(Continued, Page 2 of 2)

Name of individual from Contractor notified: KFM Quality Control Manager, Chris Webb

Time and method of notification: 07:30 via telephone

Name of Caltrans Engineer notified: Mark Vilcheck, Structure Representative

Time and method of notification: January 10, 2007 via verbal notification during a meeting

QC Inspector's Name: Dave Aultman

Was the QC Inspector aware of problem: 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: Alfredo Acuna Bill Levell for Alfredo Acuna Quality Assurance Inspector

Reviewed By: Albert Carreon/ Bill Levell Lead QA Reviewer

Hardcopy Routing Instructions:

1. Resident Engineer *2. Inspecting Branch Contract File* *3. Responsible Branch Contract File (with supporting documentation)*

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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 # 131**

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

Type of problem:

Welding	☒	**Concrete**	☐	**Other**	☒
Welding:	☐	**Curing:**	☐	**Procedural:**	☐
Joint fit-up:	☐	**Coating:**	☐	**Other:**	☒ Loss of preheat temperature
Procedural:	☒	**Procedural:**	☐		

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

Date nonconformance report was written: January 10, 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 at the following locations: PHCP 3-E weld one (top area only), and 7-F weld numbers one and two.

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 performed Magnetic Particle (MT) Testing after the weld was brought back up to the minimum required preheat temperature.

Did corrective action require Engineer's approval? ☒**Yes** ☐**No**

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

Is Engineer's approval attached: ☒**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 contactRyan 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: Ryan Smith Structural Materials Representative (SMR)

Hardcopy Routing Instructions:
1. Resident Engineer *2. Inspecting Branch Contract File* *3. Responsible Branch Contract File (with supporting documentation)*

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

Attn: Mr. Kevin Carpenter
Welding Quality Control Manager

February 26, 2007

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

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

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.

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