

**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

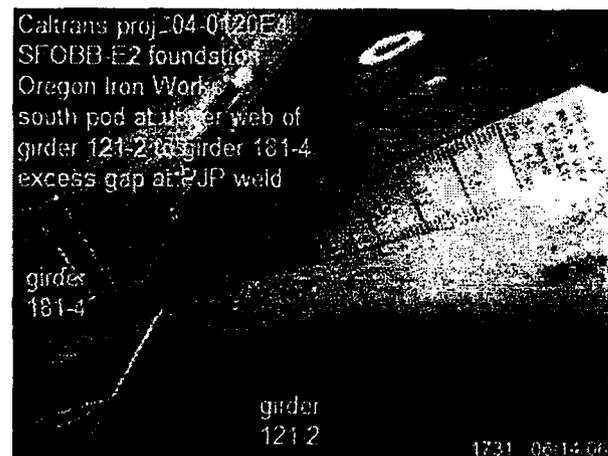
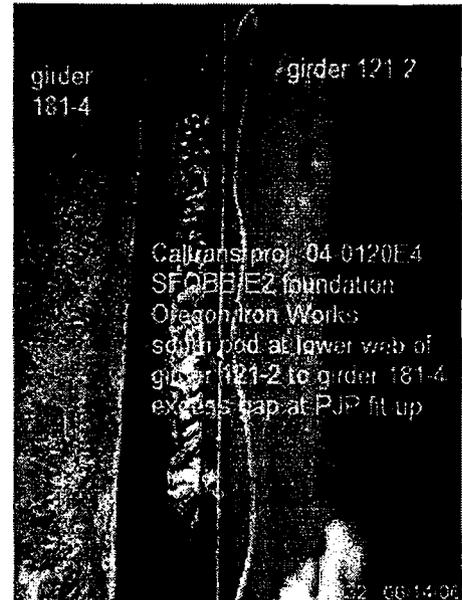
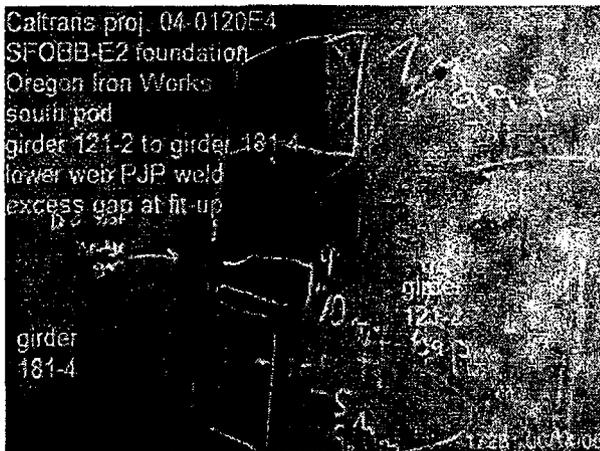
FAX: (707) 649-5493

Contract # : **04-0120E4**Cty **SF** Rte **80** PM **13.4, 13.8**File # **13.25 B****QUALITY ASSURANCE - NONCONFORMANCE REPORT****Location:** Vancouver, WA**Date:** 6-14-06**Prime Contractor:** Kiewit, FCI, Manson, (KFM) Joint Venture**NCR #** 097**Submitting Contractor:** Oregon Iron Works**Type of problem:****Welding**  **Concrete**  **Other** **Welding:**  **Curing:**  **Procedural:**  **Bridge No.#** 34-0006**Joint fit-up:**  **Coating:**  **Other:**  **Component:** # E2**Procedural:**  **Procedural:** **Description of Non-Conformance:** QA observed that KFM and OIW quality control allowed welding of partial penetration joint at south pod girder 121-2 to girder 181-4 web where fit-up gaps of 7 to 12+ mm substantially exceeds the 3 mm as allowed by AWS D1.5 figure 2.5, section 3.3.2, and WPS #3245.**Applicable reference:** AWS D1.5 2002**Who discovered the problem:** Caltrans Quality Assurance Inspectors**Name of individual from Contractor notified:** OIW QC managers Russell Lynch and Nate Lindell**Time and method of notification:** 6-14-06 at 1645 hours**Name of Caltrans Engineer notified:** Mark Vilcheck, Structure Representative**Time and method of notification:** June 15, 2006 at approximately 1000 hours during the weekly fabrication meeting**QC Inspector's Name:** Mike Gregson**Was the QC Inspector aware of problem:** yes

# QUALITY ASSURANCE - NONCONFORMANCE REPORT

(Continued, Page 2 of 2)

**Contractor's proposal to correct the problem:** Change joint designation from a partial penetration joint to a complete penetration joint. Excessive root opening to be corrected by flux core arc weld buttering to conform to joint configuration for complete joint penetration per AWS D1.5-2002, figure 2.4, TC-U5-F, and WPS 3279.



**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: Ron Brown

Quality Assurance Inspector

Reviewed By: Dave McClary

Lead QA Reviewer

# Memorandum

*Flex your power!  
Be energy efficient!*

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

**Date:** September 7, 2006

**File:** 04-0120E4  
E2/T1 Foundations

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

## KFM SUBMITTALS FOR OREGON IRON WORK'S (OIW) RESPONSES TO NCRs

The Materials Engineering and Testing Service (METS) has reviewed the following submittals requesting to close Nonconformance Reports (NCRs) regarding the fabrication of the E2 and T1 Steel Piling in Napa, CA. Please find the following comments regarding NCRs:

<b>Submittal Number</b>	<b>Date Submitted</b>	<b>Description</b>	<b>Approved / Rejected</b>	<b>Notes</b>
<b>206-01</b>	08/24/06	OIW Response to NCR 018	Approved	1
<b>851-00</b>	08/29/06	OIW Response to NCR 091	Approved	2
<b>872-00</b>	09/06/06	OIW Response to NCR 113	Approved	3
<b>873-00</b>	09/06/06	OIW Response to NCR 34 & 51	Approved	4
<b>870-00</b>	08/30/06	OIW Response to NCR 081	Approved	5
<b>875-00</b>	09/06/06	OIW Response to NCR 098	Approved	6
<b>871-00</b>	09/06/06	OIW Response to NCR 022	Approved	7
<b>874-00</b>	09/06/06	OIW Response to NCR 099	Approved	8
<b>869-00</b>	09/05/06	OIW Response to NCR 104	Approved	9
<b>885-00</b>	09/07/06	OIW Response to NCR 118	Approved	10

<b>884-00</b>	09/07/06	OIW Response to NCR 116	Approved	11
<b>883-00</b>	09/07/06	OIW Response to NCR 097	Approved	12
<b>882-00</b>	09/07/06	OIW Response to NCR 100	Approved	13
<b>881-00</b>	09/07/06	OIW Response to NCR 106	Approved	14
<b>880-00</b>	09/06/06	OIW Response to NCR 105	Approved	15
<b>879-00</b>	09/06/06	OIW Response to NCR 055	Approved	16

Notes:

1. METS NCR 018 was issued on October 24, 2005 to document the Contractor allowing the heat straightening of ring segment A43-6 without prior approval by the Engineer. In order to continue with the removal of the distortion in the ring segments, the Contractor forwarded KFM Submittal 206-00, dated November 2, 2005, outlining the procedure and conditions for “pre-approved” heat straightening. In accordance with State Letter 05.003.01.000631, dated December 8, 2005, the Department agreed to allow the heat straightening with provided that three conditions were included in the Contractor’s procedure. Although KFM and OIW agreed to these conditions verbally in December 2005, they were not incorporated into OIW’s Welding Quality Control Plan until Submittal 206-01, dated August 28, 2006. METS takes no exception to the revisions contained in Submittal 206-01; however, it should be noted that the attached Ultrasonic Examination Reports show the examination results of the pile sleeves after heat straightening and are not necessary for approval of Submittal 206-01 or the closure of NCR 018. METS considers this issue resolved as a heat straightening request would not have been necessary to remove the distortion from A43-6 per the approved changes to Submittal 206-01.
2. In accordance with the OIW letter dated August 25, 2006, the welders have received additional training regarding the use of proper preheat before welding the steel piling. Additionally, OIW has installed Cooperheat thermal pads to aide in achieving and maintaining the heat during welding operations. As of the date of this memorandum, METS understands that the Contractor has addressed the issue and has implemented measures to control

the heat before, during, and after welding. METS considers this NCR to be resolved at this time.

3. Per the comments in OIW's response letter to State Letter 05.003.01-001764, dated September 6, 2006, METS understands that the Contractor's use of an unapproved WPS was an isolated oversight by the Quality Control Department and should not be an issue in the future. Additionally, it should be noted that the WPS in question was approved by METS in KFM Submittal 864-00 on September 7, 2006. METS considers this NCR to be resolved at this time.
4. Per the comments in OIW's response letter to State Letter's 05.003.01-00828 and 05.003.01-001069, the OIW staff was counseled regarding the importance of receiving approval prior to proceeding with Heat Straightening. METS concurs that no further instances of this issue occurred after the above documented instances. Additionally, HSR 026 and HSR 041 have documented the heat straightening performed. At this time HSR 026 has been closed; however, HSR 041 is still pending. METS considers this NCR to be resolved provided that the Contractor will clear the repair through the closing documents for HSR 026 and HSR 041.
5. In OIW's response letter to State Letter 05.003.01-001174, dated August 30, 2006, OIW repaired a crack in the weld connecting Pile Sleeve 301-1 to Girder G121-2 as a result in miscommunication between the Quality Control and Production departments regarding the status of approval by the Engineer. METS understands that OIW has counseled their staff about the importance of receiving approval prior to proceeding with Critical Weld Repairs. METS considers this NCR to be resolved provided that the Contractor will clear the CWR through the closing documents for CWR 020.
6. As stated in OIW's response letter to State Letter 05.003.01-001450, dated September 6, 2006, the joint connecting G181-3 and G171-1 was originally a Partial Joint Penetration (PJP) weld and was approved to be a changed to a Complete Joint Penetration (CJP) weld per KFM RFI 258. METS understands that the welder was unaware of this change and welded the joint as a PJP weld. OIW has since verified that all welders understand the detail change in order to prevent future occurrences. The PJP weld has been removed and rewelded as a CJP in accordance with the approved repair procedure in OIW CWR 028. METS considers this issue to be resolved at this time.
7. In OIW's response letter to State Letter 05.003.01-000591, dated September 6, 2006, METS understands that OIW performed the CWR as a result of

miscommunication with their night shift personnel. OIW has counseled their staff regarding the importance of receiving approval prior to proceeding with Critical Weld Repairs. METS considers this NCR to be resolved provided that the Contractor will clear the CWR through the closing documents for CWR 006.

8. NCR 099 was issued to document the Contractor welding the joints on G181-3 and 171-1 with excessive root gaps. As stated in OIW's response letter to State Letter 05.003.01-001451, dated September 6, 2006, OIW ensured the root pass in question was removed during the backgouging of the CJP weld. Additionally, the Contractor's Quality Control Inspectors examined the area by Magnetic Particle Testing (MT) before depositing the subsequent fill passes. The attached MT reports verify the suspect area to be clear. The Contractor also agreed that future buttering of welds would be performed with Flux Cored Arc Welding (FCAW) in lieu of Submerged Arc Welding (SAW) in order to obtain the correct joint geometry prior to welding root pass.
9. In accordance with the OIW letter dated August 30, 2006, the welders have received training regarding the use of proper preheat before welding the steel piling. Additionally, OIW has installed Cooperheat thermal pads to aide in achieving and maintaining the heat during welding operations. As of the date of this memorandum, METS understands that the Contractor has addressed the issue and has implemented measures to control the heat before, during, and after welding. METS considers this NCR to be resolved at this time.
10. NCR 118 was issued to document the Contractor proceeding with second time repairs on the weld connecting the support beam to Pile Sleeve 306-1. METS understands that this issue occurred as a result of the Contractor's decision to proceed in order to meet deadlines in their schedule. METS personnel have discussed this issue with the KFM and OIW Quality Control Managers and have reminded them of their contractual requirement to receive Engineer approval before proceeding with CWRs. METS does not expect this to be an issue with OIW in the future. Additionally, OIW has included the NDT reports of the repairs made to the above referenced weld and the results appear to be acceptable. METS considers this NCR to be resolved at this time.
11. NCR 116 was issued to document the Contractor proceeding with a CWR without approval by the Engineer. In accordance with OIW's response letter to NCR 116, dated September 7, 2006, METS understands that OIW proceeded with the G181-3/G121-3 connection as a result of a misunderstanding that it had been approved

with multiple other repairs that had been submitted the same day. METS believes this to be an isolated instance and does not expect it to be a reoccurring issue as the Contractor typically obtains approval before proceeding with CWRs. METS considers this NCR to be resolved at this time.

12. Due to difficulties when the Contractor was installing the inter-tie girders between the two half pods in the South Pod Assembly, the Contractor chose to grind the edge of several joints in order to provide additional space during fit-up operations. As a result, this created excessive root gaps (7-12mm) in the PJP welds on the bottom flanges of multiple inter-tie girders. NCR 097 was issued when OIW proceeded with welding the joint connecting G181-4 and G121-2 without building the weld to achieve the correct joint geometry. The Department approved the change from a Partial Joint Penetration (PJP) weld to a Complete Joint Penetration (CJP) weld per the response to KFM RFI 258. METS understands that this weld was subsequently backgouged and welded in accordance with the approved procedure that was included with the Contractor's response to the NCR. Additionally, the Contractor has included the NDT reports verifying the examination of the modified CJP weld. METS understands this is no longer an issue and considers the NCR to be resolved at this time.
13. NCR 100 was issued to document the Contractor's use of temporary attachments on the shear key angles which have not been approved in the shop drawings. As stated in OIW's response to State Letter 05.003.01-001452, the Contractor has issued METS an advanced copy of the revised drawings on September 7, 2006. METS takes no issue with the use of the attachments and has verified their removal from the structure. METS considers this issue to be resolved provided that the revised drawings are submitted by the Contractor and approved by the Department.
14. NCR 106 was issued to document the Contractor allowing the welding of G181-3 to G121-3 without maintaining the required preheat. The insufficient preheat was apparent as the top flange of G121-3 was remained wet during the welding operations. In discussions with the Contractor regarding this issue, OIW stated that the proper preheat temperature was maintained on the bottom side of the G121-3 flange during the entire time the joint was welded. Additionally, OIW has provided the NDT reports for this joint and they appear to be acceptable. METS considers this NCR to be resolved at this time.
15. NCR 105 was issued on July 10, 2006 to document the Contractor welding outside the parameters of the WPS for the connection of G191-1 to Pile Sleeve 301-1. The

WPS requires a flux filled channel as backing for the weld joint; however, the channel did not contain any flux. As stated in OIW's response letter to State Letter 05.003.01-001517, dated September 7, 2006, the Contractor performed a deeper backgouge to ensure the root and butter passes were removed before depositing subsequent fill passes. METS agreed to this proposal and has verified the repair. METS considers this NCR to be resolved at this time.

16. NCR 055 was issued on February 27, 2006 to document the Contractor welding over a crack in the weld connecting G101-2 to Pile Sleeve 302-1. As stated in OIW's response to State Letter 05.003.01-001070, the issue occurred as a result of a welder excavating an in-process repair that extended close to the root of the weld. Instead of backgouging the area and having to reweld the root pass, the welder chose to deposit additional weld passes and repair the area from the other side. OIW subsequently informed all welders not to weld over cracks under any circumstances. METS understands this issue was an isolated instance and is no longer an issue. METS considers this NCR to be resolved provided that the Contractor will clear the repair through closing documents for CWR 016.

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

cc: Rafael Bolon  
Tom Shimada  
David McClary

**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

September 14, 2006

Attn: Mr. Lee Zink  
Project Manager

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

Letter No. 05.003.01-001888

Subject: Response to Submittal No. 883, Revision No. 00 (Oregon Iron Works Response to METS NCR #97 (QA/QC Issue #44))

Dear Lee,

The Department has reviewed Kiewit-FCI-Manson (KFM) Submittal No. 883, Revision No. 00, dated September 8, 2006, which responded to the Department's Letter No. 1887 dated September 14, 2006, which notified KFM of a Non-conformance Report (NCR) for Oregon Iron Works (OIW) dated June 14, 2006. The Department hereby approves Submittal No. 883, Revision No. 00, pursuant to Section 8-3.01, "Welding," of the Special Provisions. The NCR for OIW dated June 14, 2006, is considered to be resolved.

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

Sincerely,

Rafael Bolon  
District Representative

For: Pedro J. Sanchez  
Resident Engineer

cc: P. Sanchez  
M. Woods  
R. Smith

file: 05.003.01, 09.006.03, 55.0883



P.O. BOX 23223 Oakland, CA 94623  
 Phone (510) 419-0120 / Fax (510) 832-1456

**LETTER OF SUBMITTAL**  
**SAS Foundations E2/T1 Project**

Run Date 08-Sep-06  
 Time 9:29 AM

Dated: 08-Sep-2006

SUBMITTAL No: KFM-SUB-000883

Rev: 00

To: **Pedro Sanchez**  
 Caltrans - SAS E2/T1 Foundation Project  
 333 Burma Road  
 Oakland CA 94607  
 Phone: 510-286-0538 Fax:

Co/Job # 364-4347  
 Contract # 04-0120E4  
 Sub/Supplier: OIW  
 Sub/Supplier No:

Subject: Oregon Iron Works Response to METS NCR #97 (QA/QC Issue #44)

Special Provis. (SP) REF: 08-3.01

Standard Spec. (SS) REF:

RESUBMITTAL/SUPPLEMENTAL REF:

We are sending the following attached items:  Attached

Via Fax

- |                                                    |                                                    |                                              |
|----------------------------------------------------|----------------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Contract Plans/Specs      | <input type="checkbox"/> Certs of Compl./Samples   | <input type="checkbox"/> Working Drawings    |
| <input type="checkbox"/> Drawings/Calculations     | <input type="checkbox"/> Schedule                  | <input type="checkbox"/> WQCP and/or Addenda |
| <input type="checkbox"/> Change Order              | <input type="checkbox"/> Progress Estimate Request | <input type="checkbox"/> Weekly Weld Reports |
| <input checked="" type="checkbox"/> Copy of Letter | <input type="checkbox"/> Payroll Information       | <input type="checkbox"/> CWR Procedure       |

Item	Date	Copies	Description	Drawing No	Rev	Status	Pages
01	07-Sep-06	1	NCR Response		0	Pending	9

These are transmitted as checked below:

- |                                                  |                                             |                                                |
|--------------------------------------------------|---------------------------------------------|------------------------------------------------|
| <input checked="" type="checkbox"/> For Approval | <input type="checkbox"/> For Review/Comment | <input type="checkbox"/> Return For Correction |
| <input type="checkbox"/> For Your Use            | <input type="checkbox"/> As Requested       | <input type="checkbox"/> For Information       |

Remarks:

CC:

Please review / approve by : 14-Sep-2006

Submitted By: Chris Webb  
 (KFM Staff Member - Originator of Transmittal)

Checked & Sent By:   
 Contract Admin/DCS Staff



# OREGON IRON WORKS, INC.

9700 S.E. LAWNFIELD ROAD • CLACKAMAS, OREGON 97015  
TELEPHONE (503) 653-6300 • FAX (503) 653-5870

September 7, 2006

**KIEWIT / FCI / MANSON JV**  
220 Burma Rd.  
Oakland, CA 94607

Reply to: SL-2083-176

**Attention: Chris Webb**

**Reference: OAKLAND BAY BRIDGE PIER CAP E2 / CONTRACT NO. 04-0120E4**  
**KFM Material Contract Dated April 22, 2004**

**Subject: METS NCR 97 (QA/QC Issue #44)**

Gentlemen:

Oregon Iron Works, Inc. (OIW) has been verbally notified of Mets NCR 97, which documents a non-conformance for welding a root gap of greater than 12mm on the G121-2/G181-4 weld joint.

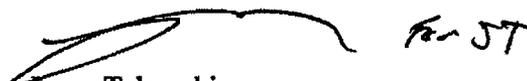
This joint was originally detailed as a Partial Joint Penetration Weld (PJP), but it was necessary to change it to a Complete Joint Penetration Weld (CJP). All required QC Inspections have been performed and results are attached. A "red-lined" detail is also attached and a formal "as built" detail will follow.

OIW considers this NCR resolved.

If you have any questions or need further clarification, please contact me at your earliest convenience.

Sincerely,

**OREGON IRON WORKS, INC.**

  
Jerry Takeuchi  
Quality Assurance Manager

H:\GENERAL\DRAFTS\QUALITY\Commercial Jobs Folder\2083\2083- Closing Letters\OIW NCR Closure Letters\SL-2083-176 (NCR 97).doc

The information/data contained on this drawing/file/document (whether in electronic or hard format and copy) contains Proprietary and Confidential information of Oregon Iron Works, Inc. (OIW), 9700 SE Lawnfield Road, Clackamas, Oregon. The disclosure, release, distribution, or unauthorized use of this information/data without the express written consent of OIW is expressly prohibited.



<b>Ultrasonic Examination Report</b>				<b>DATE:</b> Wednesday, August 16, 2006	
San Francisco Oakland Bay Bridge / E-2 Pile Cap				<b>Report #</b>	
CALTRANS #04-0120E4	KFM JOB#364 / 4347	181-S-A1	CJP	C5	UTO1
<b>Sub-Assembly Title:</b> Interior Longitudinal Half-Pod Assy.		<b>Reference Previous Report #</b>			
<b>Drawing #</b> 2083-E-018		N/A			
<b>O.I.W. Mark#</b> Half-Pod G181-S-A1		<b>OIW</b>			
<b>Candraft #</b> na		<b>DWG#</b> 2083-G-181		<b>REV#</b> 1	

\* Welds Listed Below~100% FVT, Final examination unless otherwise noted.

Part / Weld Identification	Visual Inspection		NDE		Transducer	Reference	Note:		
	Accept	Reject	Accept	Indication#	Angle	Level			
C5	YES		YES		70	48	Face A		
C5	YES		YES		45	41	Face A		
<b>Indication Plotting</b>	<b>#1</b>	<b>#2</b>	<b>#3</b>	<b>#4</b>	<b>#5</b>	<b>#6</b>	<b>#7</b>	<b>#8</b>	<b>#9</b>
Indication Level -A									
Reference Level -B									
Attenuation Factor -C									
Indication Rating -D									
Sound Path:									
Surface Distance:									
Depth From "A"									
Length:									
Distance From "X"									
Distance From "Y"									
Accept/Reject(A/R)									
~Comments~									
UT scanned on Face A only. Face B is not accessible due to the angles being welded to the webs.									
<b>Procedure #</b>	<b>QC-115</b>		<b>Material Thickness:</b>		<b>65</b>	<b>Welding Process</b>		<b>FCAW</b>	
<b>Spec./Standard #</b>	<b>AWS D1.5-2002 sec.6</b>		<b>Weld Joint /Criteria:</b>		<b>Tee/Tension</b>		<b>Table</b>	<b>6.3</b>	
<b>Equipment:</b>	<b>Krautkramer</b>		<b>Transducer:</b>		<b>2.25Mhz</b>		<b>2.25Mhz</b>		
<b>Serial #</b>	<b>01FMN7</b>		<b>Wave Mode:</b>		<b>Shear</b>		<b>Longitudinal</b>		

<b>Inspector:</b>	<b>Danny White</b>	<b>Signature:</b>	
<b>CWI #</b>	<b>0020521</b>	<b>Date:</b>	<b>Wednesday, August 16, 2006</b>
<b>NDE Certification:</b>	<b>Level II</b>		





### Travel Speed Table for PQR Number 396A

VOLTS	AMPS							
	188		206		225		235	
13	5.51	9.19	5.86	9.77	6.60	10.99	6.89	11.48
14	5.64	9.40	6.00	10.00	6.75	11.25	7.05	11.75
15	5.90	9.83	6.27	10.45	7.06	11.76	7.37	12.28
16	6.15	10.25	6.55	10.91	7.36	12.27	7.69	12.82
17	6.41	10.68	6.82	11.36	7.67	12.78	8.01	13.35

J

RELEASE FOR FABRICATION

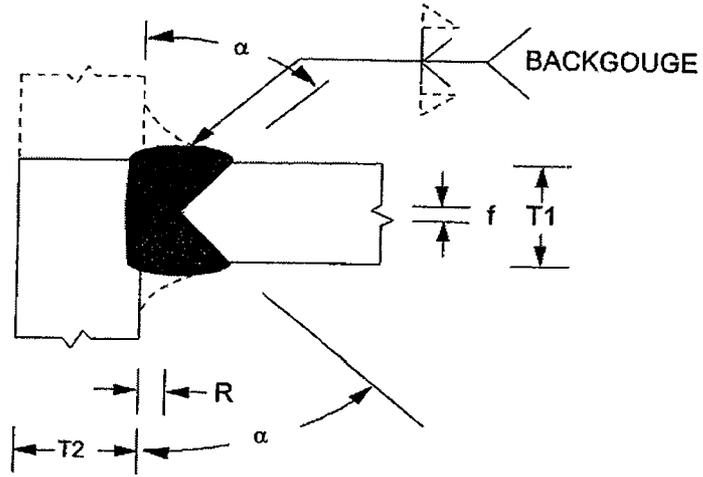
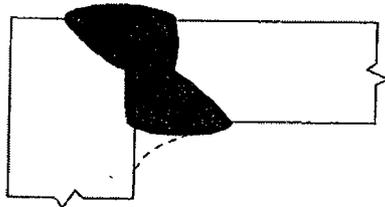
MAR 10 2006

CONTROLLED  
COPY # 2083-006B

Welding Procedure Specification

3279 FCM

Double-bevel-groove weld (5)  
T-joint (T)  
Corner joint (C)



Welding Process	Joint Designation	Base Metal Thickness (U=unlimited)		Groove Preparation			Permitted Welding Positions	Gas Shielding for FCAW	Notes
		T1	T2	Root Opening	Tolerances				
				Root Face Groove Angle	As Detailed (see 3.13.1)	As Fit Up (see 3.13.1)			
FCAW	TC-U5-GF	U	U	R = 0 to 1/8 f = 0 to 1/8 $\alpha = 45^\circ$	+1/16, -0 +1/16, -0 +10°, -0°	+1/16, -1/8 Not limited +10°, -5°	All	Not required	A C J M N V

MEMO

See attached Travel Speed table for PQR Number 396A

CONTROLLED COPY #7782-M10B

MAR 10

RELEASE FOR FABRICATION