



From: Frank Green, P.E.
Columbia River Crossing Project
700 Washington Street, Suite 300
Vancouver, WA 98660

Date: January 27, 2011

To: Washington State Department of
Transportation
Bridge and Structures Engineer
Construction Support
P.O. Box 47340
Olympia WA 98504-7340

Subject: Contract 8078, I-5, Columbia River
Bridge Temporary Pile Test Program
WA 0.3 to OR MP 308.0
State Project

Attention: John Olk

We are transmitting the following:

Copies	Description
1	Welding Procedure - Pile Splicing
1	Welding Procedure - Driving Shoe Attachment
1	Welder Certifications

These are transmitted:

- | | | | |
|--|--|---|--|
| <input type="checkbox"/> For Your Information | <input checked="" type="checkbox"/> For Review and Comment | <input type="checkbox"/> Resubmit | <input type="checkbox"/> Other(Specify below): |
| <input type="checkbox"/> For Action | <input type="checkbox"/> For Signature | <input type="checkbox"/> Correct and Return | _____ |
| <input checked="" type="checkbox"/> For Approval | <input type="checkbox"/> Per Your request | <input type="checkbox"/> Attach Material | _____ |

Comments:

Signature <i>Kurt A. Daly</i>	Title <i>Columbia River Crossing Project Assistant Business Manager</i>
----------------------------------	--

Distribution: White (Original) -
Canary (Copy) -
Pink (Copy) - Project Engineer

Farwest Fabrication Welding Procedure Specification

WPS-FWF-API-SHOE
Page 1 of 2

WPS No. WPS-FWF-API-SHOE Date 1/11/2004 By Shannon Tomex Type Manual Machine
 Authorized By G. Critch Date 1/11/2004 Revision 0 Semi-Auto Auto
 Welding Process(es) SAW Prequalified **SHANNON T. TOMEX**
 Supporting PQR(s) _____ CWI 88050191
 OCT EXP. 05/31/2012

JOINT
 Type Corner Single Double Weld
 Backing Yes No
 Backing Material SHOE FLANGE
 Root Opening PER DETAIL Root Face Dimension 0
 Groove Angle 38 DEG Radius (R) _____
 Back Gouge Yes No
 Method _____

BASE METALS
 Material Spec. API 5L to ASTM A148
 Type or Grade X42/X52 to Grade 60/60
 Thickness: Groove (in) .500 - .590
 Fillet (in) _____
 Diameter (Pipe, in) 8 - 24

FILLER METALS
 AWS Specification A5.17 A5.17
 AWS Classification ER70S3
EM12K

SHIELDING
 Flux _____ Gas CO2/ARGON
 ESAB 350 Composition 10/90
 Electrode-Flux (Class) Flow Rate 30-40 CFH
 F7A2-EM12K Gas Cup Size 3/4"

PREHEAT
 Preheat Temp., Min. 150 DEGF.
 Thickness Up to 3/4" Temperature 150 DEGF.
 Over 3/4" to 1-1/2" 150 DEGF.
 Over 1-1/2" to 2-1/2" 150 DEGF.
 Over 2-1/2" N/A
 Interpass Temp., Min. 150 DEGF. Max. 450 DEGF.

Joint Detail
(SEE PAGE 2 FOR DETAILS)

POSITION
 Position of Groove IG ROTATED Fillet _____
 Vertical Progression: Up Down

ELECTRICAL CHARACTERISTICS
 Transfer Mode (GMAW):
 Short-Circuiting Globular Spray
 Current AC DCEP DCEN Pulsed
 Other _____
 Tungsten Electrode (GTAW):
 Size _____ Type _____

TECHNIQUE
 Stringer or Weave Bead Stringer
 Multi-pass or Single Pass (per side) Multiple
 Number of Electrodes ONE
 Electrode Spacing: Longitudinal _____
 Lateral _____
 Angle 3 DEG.
 Contact Tube to Work Distance 1-1 1/4"
 Peening NOT ALLOWED
 Interpass Cleaning CHIPPING
 POSTWELD HEAT TREATMENT PWHT: Required
 Temp. _____ Time _____

WELDING PROCEDURE

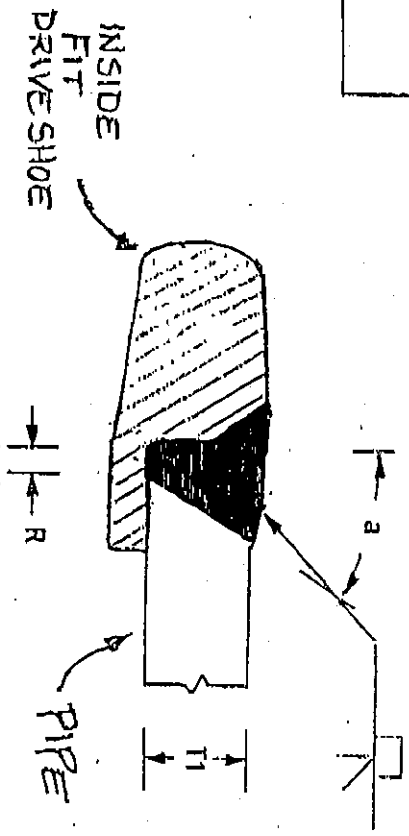
Welding Process _____ Electrode _____ Shielding Gas _____ Wire _____ Voltage _____ Travel Speed _____ Other Notes _____

Farwest Fabrication Welding Procedure Specification

WPS-FWF-API-SHOE
Page 2 of 2

Joint Detail

Single-bevel-groove-weld (4)
T-joint (T)
Corner joint (C)



Welding Process	Joint Designation	Base Metal Thickness (Unfinished)		Groove Preparation			Permitted Welding Positions	Notes	
		T1	T2	Root Opening	Groove Angle	Tolerances			
SAW	TC-U/a-S	U	U	R=3/8	a=30°	As Detailed (see 3.13.1)	As Fit Up (see 3.13.1)	F	J, N, V
				R=1/4	a=45°	R = +1/16, -0 a = +10°, -5°	+1/4, -1/16 +10°, -5°		

MEMO

Notes:

- A: Not required for gas metal arc welding using short circuiting transfer for GTAW. Refer to Annex A
- B: Joints welded from one side only.
- Brc: Cyclical bead application limits listed joints to the horizontal welding position (see 2.27.5).
- C: Back gouge root to sound metal before welding second side.
- D: SMAW detached joints may be used for prequalified SMAW (except SMAW-S) and FCWAW.
- E: Minimum weld size (E) as shown in Table 3.4, S as specified on drawings.
- F: If fillet welds are used in statically loaded structures to reinforce grooves in corner and T-joints, these shall be equal to 1/4 T₁, but need not exceed 3/16 in. (10 mm). Groove welds in corner and T-joints of cyclically loaded structures shall be reinforced with fillet welds equal to 1/4 T₁, but need not exceed 3/16 in. (10 mm).
- M: Double-groove welds may have grooves of unequal depth, but the depth of the shallow groove shall be no less than one-sixth of the thickness of the thicker part joined.
- Mp: Double-groove welds may have grooves of unequal depth, provided these conform to the limitations of Note E. Also the weld size (E) applies individually to each groove.
- N: The orientation of the two members in the joints may vary from 135° to 180° for butt joints, or 45° to 135° for corner joints, or 45° to

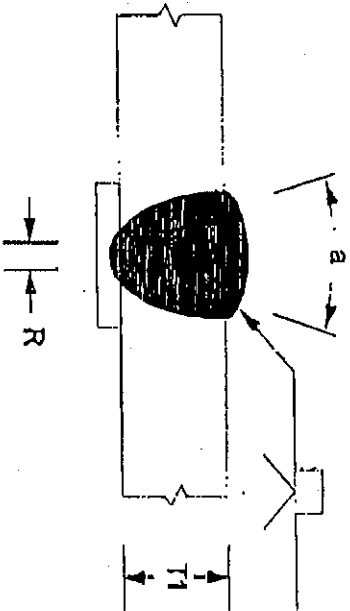
FARWEST FABRICATION

Welding Procedure Specification

WFS-FWF-AP-352
Page 2 of 2

Joint Detail

Butt joint (B)




Welding Process	Joint Designation	Base Metal Thickness (U=unfilled)		Root Opening	Groove Angle	Groove Preparation Tolerances		Permitted Welding Positions	Notes
		T1	T2			As Detailed (see 3.13.1)	As Fit Up (see 3.13.1)		
SAW	B-1/2-S	U	-	R=3/16	a=60°	R = +1/16, -0 a = +10°, -0°	+1/4, -1/16 +10°, -0°	F	N

MEMO

- Notes:**
- A: Not prequalified for gas metal arc welding using short circuiting transfer nor GTAW. Refer to Annex A.
 - B: Joint is welded from one side only.
 - BC: Cyclic load application limits these joints to the horizontal welding position (see 2.27.5).
 - C: Back gouging root to sound metal before welding second side.
 - D: SMAW defected joints may be used for prequalified SMAW (except GMAW-S) and FCAW.
 - E: Minimum weld size (E) as shown in Table 3.4.5 as specified on drawings.
 - F: Fillet welds are used in statically loaded structures to reinforce groove welds in corner and T-joints, these shall be equal to 1/4 T₁, but need not exceed 3/8 in. (10 mm). Groove welds in corner and T-joints of cyclically loaded structures shall be reinforced with fillet welds equal to 1/4 T₁, but need not exceed 3/8 in. (10 mm).
 - M: Double-groove welds may have grooves of unequal depth, but the depth of the shallower groove shall be no less than one-fourth of the thickness of the thicker part joined.
 - MP: Double-groove welds may have grooves of unequal depth, provided these conform to the finalities of Note E. Also the weld size (E) applies individually to each groove.
 - N: The orientation of the two members in the joints may vary from 135° to 180° for butt joints, or 45° to 135° for corner joints, or 45° to

Farwest Fabrication Procedure Qualification Record

PQR-FWF-API-X52
Page 1 of 3

PQR No. <u>PQR-FWF-API-X52</u>	Revision <u>0</u>	Date <u>12/30/2008</u>	Date <u>12/30/2008</u> by <u>Shannon Tomek</u>
Authorized By <u>C. Gries</u>	Welding Process(es) <u>GMAW</u>	Reference WPS No. <u>FWF-WPS-01X52</u>	Type <input type="checkbox"/> Manual <input type="checkbox"/> Machine <input checked="" type="checkbox"/>
Joint <u>Butt</u>	Backing <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Single <input checked="" type="checkbox"/> Double Weld <input type="checkbox"/>	Semi-Auto <input checked="" type="checkbox"/> Auto <input type="checkbox"/>
Backing Material <u>A36</u>	Root Opening <u>3/16"</u>	Root Face Dimension <u>0</u>	
Groove Angle <u>50 DEG.</u>	Radius (J-U) _____	Back Gauging Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Method _____	BASE METALS Material Spec. <u>API 5L</u> to <u>API 5L</u> Type or Grade <u>X52</u> to <u>X52</u> Thickness: Groove (in) <u>.500</u> Fillet (in) _____ Diameter (Pipe, in) <u>8</u>	POSITION Position of Groove <u>180 ROTATED</u> Fillet _____ Vertical Progression: Up <input type="checkbox"/> Down <input checked="" type="checkbox"/>	ELECTRICAL CHARACTERISTICS Transfer Mode (GMAW): Short-Circuiting <input type="checkbox"/> Globular <input type="checkbox"/> Spray <input checked="" type="checkbox"/> Current: AC <input type="checkbox"/> DCEP <input checked="" type="checkbox"/> DCEN <input type="checkbox"/> Pulsed <input type="checkbox"/> Other _____ Tungsten Electrode (GTAW): Size _____ Type _____
FILLER METALS AWS Specification <u>A5.18</u> <u>AS.17</u> AWS Classification <u>ER70S-3</u> <u>EM12K</u>	SHIELDING Flux <u>350</u> Gas <u>AR/CO2</u> Composition <u>90/10</u> Electrode-Flux (Class) _____ Flow Rate <u>35 CFH</u> F7A2-EM12K Gas Cup Size <u>3/4</u>	TECHNIQUE Stringer or Weave Bead <u>Stringer</u> Multi-pass or Single Pass (per side) <u>Multiple</u> Number of Electrodes <u>ONE</u> Electrode Spacing: Longitudinal _____ Lateral _____ Angle <u>3 DEGREES</u> Contact Tube to Work Distance <u>1" - 1 1/4</u> Peening <u>NOT ALLOWED</u> Interpass Cleaning <u>CHIPPING</u>	PREHEAT Preheat Temp., Min. <u>70 DEG. F</u> Interpass Temp., Min. <u>70 DEG. F</u> Max. <u>500 DEG. F</u>
POSTWELD HEAT TREATMENT Temp. _____ Required <input type="checkbox"/> Time _____	WELDING PROCEDURE		
Eye Protection _____ Respiratory Protection _____ Hearing Protection _____ Fall Protection _____ Fire Protection _____ PPE _____ Safety _____ Other _____	Filler Metal Glass _____ Diameter _____ Cup Type _____ Amps of WPS _____ Volts _____ Travel Speed _____ Other (Notes) _____	ONE GMAW ER70S-3 .035 DCEP 215 A 28 V 15 IPM	

Farwest Fabrication Procedure Qualification Record

PQR-FWF-APP-X52
Page 2 of 3

TEST RESULTS TENSILE TEST

Specimen no.	Width	Thickness	Area	Ultimate tensile load, lb	Ultimate unit stress, psi	Character of failure and location
T1	.747	.484	.362	23,850	66,000	BASE MATERIAL
T2	.740	.484	.358	23,650	66,000	BASE MATERIAL

GUIDED BEND TEST

Specimen no.	Type of bend	Result	Remark
1	SIDE	ACCEPTABLE	
2	SIDE	ACCEPTABLE	
3	SIDE	ACCEPTABLE	
4	SIDE	ACCEPTABLE	

VISUAL INSPECTION

Appearance ACCEPTABLE
 Undercut ACCEPTABLE
 Piping porosity ACCEPTABLE
 Convexity ACCEPTABLE
 Test date 12/30/2008
 Witnessed by Shannon Tompek
 Other Test _____

Radiographic-ultrasonic examination

RT report no: 85099 Result ACCEPT
 UT report no: _____ Result _____

FILET WELD TEST RESULTS

Minimum size multiple pass _____ Maximum size single pass _____
 Macroetch _____ Macroetch _____
 1. _____ 3. _____ 1. _____ 3. _____
 2. _____ 2. _____



SHANNON T. TOMPEK
 CWI 89030191
 OCT EXP. 05/01/2012

All-weld-metal tension test
 Tensile strength, psi _____
 Yield point/strength, psi _____
 Elongation in 2 in., % _____
 Laboratory test no. _____

Welder's name Mike Kress Clock no. MK Stamp no. MK
 Test conducted by Northwest Laboratories Laboratory _____

Fairwest Fabrication
Procedure Qualification Record

PQR-FW/API X52
Page 3 of 3

Joint Detail



MEMO

NORTHWEST LABORATORIES of Seattle, Incorporated

ESTABLISHED 1896

Technical Services for Industry, Commerce, Legal Profession & Insurance Industry

241 South Holden Street • Seattle, WA 98108-4359 • Phone: (206) 763-6252 • Fax: (206) 763-3949 www.nwlab51896.com

Report For: Farwest Fabrication

Date: January 13, 2009

Report On: Weld Procedure Qualification

Lab No.: E82737-1

IDENTIFICATION:

Procedure Qualification Tests Per AWS D1.1 06

Base Material: 8" API 5LX52 - API 5LX52 -Pipe
 Welder: Michael Kress, ID #MK
 PQR No. FWF-01-X52
 Process: GMAW/SAW
 Filler: EM12K
 Position: 1G Rotated

TRANSVERSE TENSILE TEST

Sample #	T1	T2	Specified
Pipe OD (in.)	8.625	8.625	
Width (in.)	0.747	0.740	
Thickness (in.)	0.484	0.484	
Area (sq. in.)	0.362	0.358	
Ultimate Load, Lbs.	23,850	23,650	
Tensile Strength (psi)	66,000	66,000	66,000 min.
Fracture Location	Base Material	Base Material	

TRANSVERSE BEND TEST (180° COLD BEND)

No.	Type of Bend	Results
1	Side	Pass - No Visual Defects
2	Side	Pass - No Visual Defects
3	Side	Pass - No Visual Defects
4	Side	Pass - No Visual Defects

This report applies only to the actual samples tested. Northwest Laboratories does not certify, warrant, or guarantee any products manufactured by others. Samples discarded within thirty (30) days unless otherwise requested in writing by you.

NORTHWEST LABORATORIES, INC.

WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

Type of Welder WELDING OPERATOR
 Name ADAM GREEN Identification No. AG
 Welding Procedure Specification No. FWE-WPS-37-X70 Rev. 0 Date 11-16-2007

Variables
 Process/Type [Table 4.10, Item (1)] GMW/SW
 Electrode (single or multiple) [Table 4.10, Item (5)] SINGLE
 Current/Polarity DCRP
 Position [Table 4.10, Item (4)] 1G ROTATED
 Weld Progression [Table 4.10, Item (6)] AS TESTED

Backing (YES or NO) [Table 4.10, Item (7)] YES
 Material/Spec. APL 5L X70 10 X 70
 Base Metal N/A
 Thickness: (Plate) N/A
 Groove N/A
 Fillet N/A
 Thickness: (Pipe/tube) 500 WALL
 Groove N/A
 Fillet N/A
 Diameter: (Pipe) 17" PIPE
 Groove SAME
 Fillet SAME
 Fillet Metal [Table 4.10, Item (3)] N/A
 Spec. No. AUSA 5.17 / A 5.18
 Class ER70S3/ESH12K
 F-No. [Table 4.10, Item (2)] N/A
 Gas/Flux Type [Table 4.10, Item (3)] AR/CO2
 Other AS TESTED

Type	Result	Type	Result
VISUAL INSPECTION (4.B.1)			
Acceptable	YES or NO	YES	
Guided Bend Test Results (4.30.5)			
SEMENTAL TEST REPORT #			
	113505	11/16/07	
Fillet Test Results (4.30.2.3 and 4.30.4.1)			
Appearance	N/A	N/A	
Fracture Test Root Penetration	N/A	N/A	
(Describe the location, nature, and size of any crack or tearing of the specimen.)			
Inspected by	<u>William J. Judd</u>		
Organization	<u>FAE WEST FABRICATORS</u>		
Test Number	<u>037X70</u>	Date	<u>11-15-07</u>
RADIOGRAPHIC TEST RESULTS (4.30.3.1)			
Film Identification Number	Results	Remarks	

Film Identification Number	Results	Remarks

1400 3rd AVENUE SOUTH
 Kent, Washington 98032
 Phone (253) 813-5972 Fax (253) 813-5971
 (800) 280-1376

Farwest Fabrications
 5521 184th St E
 Puyallup WA 98373
 Shannon Towek
 LAB 113505 11/16/2007
 PO# 5395
 MATL API 5L, Grade X70
 SPEC AWS D1.1/D1.1M:2005
 SIZE 24" Dia. X .500" Wall

TEST REPORT Page 1 of 1
 Weld Procedure Qualification

ID 1 FWF-PQR-37-X70 Qty : 1 Welded Pipe
 Process : GRAM/SAW Position : IG Rotated
 Welder : Adam Green

Tension Tests Figure 4.14

ID	Size	Area	Tensile (lbs)	Yield	Fracture Location
113505-1T	Thick / Width .434 / .752	.326	28,400	87,100	Weld
-2T	.434 / .756	.328	28,900	88,200	Weld

Min. Req.: 82,000

Note : Acceptance criteria per API 5L 42nd Edition. Jan 2000 and AWS D1.1 Section 4.8.3.5.

Bend Tests Figure 4.13

ID	Type	Results
113505-1SB	Side	Satisfactory
-2SB	Side	Satisfactory
-3SB	Side	Satisfactory
-4SB	Side	Satisfactory

Bend sample thickness: 0.375" Bend angle: 180° Bend Diameter: 2" Ha

Note 1 Acceptance criteria per AWS D1.1 Section 4.8.3.3.
 Note : Results conform to specification requirements.

Respectfully,
 Wayne Langley
 Laboratory Supervisor

Farwest Fabrication

Welding Operator Qualification Test Record

FG-01

WQTR No. FG-01

Welder Name Fernando Gonzales

Welder Id FG

WPS No. FWF-WPS-31-252GR3

Revision 0

Date 12/12/2010

Variables Record Actual Values Used in Qualification

Process (Table 4.10, Item (1)) SHAWMISAW

Transfer Mode (GMAW): Short-Cir Globular Spray

Type Manual Machine Semi-Auto Auto

Number of Electrodes Single Multiple

Current/Polarity AC DCEP DCEN Pulsed

Position (Table 4.10, Item (4)) 1G ROTATED

Weld Progression: (Table 4.10, Item (6)) Up Down

Backing (Table 4.10, Item (7)) Use Backing

Consumable Insert (GTAW) Use Insert

Material/Spec ASTM A257 GR3 to A257 GR3

Thickness (Plate): Groove () _____

Filet () _____

Thickness (Pipe/Tube): Groove (in) .500

Filet () _____

Diameter (Pipe): Groove (in) 3

Filet () _____

Notes _____

Filler Metal (Table 10, Item (2)) _____

Spec AWS A5.18T5.17

Class ER70S3/ER612K

F-No. N/A

Gas/Flux Type (Table 4.10, Item (3)) CO2/AR-EM12K

Other _____

Qualification Range

AS TESTED

Short-Circuiting Globular Spray

Manual Machine Semi-Auto Auto

Single Multiple

AC DCEP DCEN Pulsed

AS TESTED

Up Down

With Backing Without Backing

With Insert Without Insert

_____ in _____

_____ in _____

_____ in _____

_____ in _____

_____ in _____

_____ in _____

AS TESTED

AS TESTED

AS TESTED

AS TESTED

VISUAL INSPECTION (4.8.1) Acceptable Yes

GUIDED BEND TEST RESULTS (4.30.5)

Type	Result	Type	Result
SHAWMOR T. TOWER			



SHAWMOR T. TOWER
CMT 83350191
OC1 EXP 04/01/2012

Final Test Results (4.30.2.3 and 4.30.4.1)
Fillet Size _____

Macroetch _____

Fracture Test Root Penetration _____ Description _____
Inspected By Shannon Tomrek Test No. FG-01 Organization Farwest Fabrication Date 12/12/2010

Filet Identification No. _____ Result _____ Remark _____
RADIOGRAPHIC TEST RESULTS (4.30.3.1)
Interpreted By William Mace

PM TESTING LABORATORY INC.
RADIOGRAPHIC TECHNIQUE - TUBES
 FORM QC-03A, 01/11/08

CUSTOMER Emmett Ford PART NUMBER Waco 2011
 ALLOY 05 PART NAME _____
 SPECIFICATION AS 201 Rev. 10 ACCEPTANCE AS 201 Div. _____ Rev. 10
 INSPECTION CLASS: GRADE: _____ MODEL # _____ STATE OF MFG. USA
 RT INSPECTIONS PERFORMED PER PMT 003-3 REVISION 12 NDT CONTROL # 93572

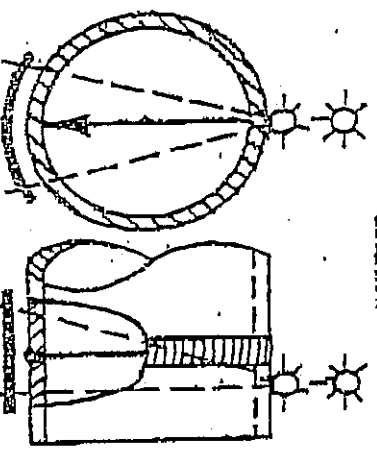
ISOTOPE _____ EXPOSURE DEVICE X-RAY
 Iridium 192 Cobalt 60 Kv Rating _____
 Manufacturer: 12c Model: LA 100 Source/Focal Spot Size: 1" X 1"

Number of Views(s) 3 (6-1) (1-1) (0) Angle(s) 90° Area of Interest Thickness: .5"
 Source to Film Distance: 9" Angle of Beam: _____ Type: A57M Size: 13
 Penetrator - Film Side Source Side Alloy: _____ Thickness: _____ Quality Level: 2/1E
 Penetrator Shim - Alloy: _____ Film Type: h7 Film Size: 7.5" X 7.2" No. Of Films: 1
 Film Brand: AGFA Thickness: .145" Back Screen - Material: fc Thickness: .020"
 Front Screen - Material: pl Thickness: .053 Exposure Time: 50 Density range: 2.0 - 4.0
 Kv: _____ Ma / Curies: _____

GEOMETRIC UNSHARPNESS MEETS THE MINIMUM REQUIREMENTS OF PMT-003-3 TABLE I @ 1/2 in.
 Radiographic Contrast (According to TABLE 2 PMT 003-3) @ 1/2 in. 5/8
 Maximum distance from source side of object to the film (part distance + 1/8" cassette): 2.5"
 Minimum source to object distance: _____
 Single or double wall exposure. Single or double wall viewing.
 Development: Automatic Manual Time: 11 min Temp: 89 F.

MUST BE VERIFIED ON THE RADIOGRAPHIC REPORT FOR EACH LOT. ANY DIFFERENCES REQUIRE REVISION.
 SKETCH

Optional
 Source
 Location



copy

WELDING QUALIFICATION TEST
 Project Number: 689-06014
 WPS Number: PNB-PQR-03

Tested For: P.N. Best & Co., Inc. Date: January 7, 2010
 Spec. Code: AWS D1.1-08 Report No: 689-06014-1a
 Welders Name: Dennis Garrity SSN: —
 Filler Metal: AWS A5.18/A5.17, Class ER70S-6/EM12K Flux: 90% Argon/10% CO₂
 Base Metal Spec.: ASTM A252 GR 3 Preheat: 70°F
 Plate or Pipe: Pipe Thickness: 1/2" Inches: 8" Sch 80
 Type of Joint: V-Groove Fig. No.: 4.21 Backing: Yes
 Single/Double Welded: Single Process: GMAW/SAW
 Single/Multiple Pass: Multiple Amp: 160/475-500 Current: DC
 Progression: N/A Volt: 30/30-33 Polarity: Reverse

GROOVE WELD TESTS

Position Tested	Radiographic Test	Bend Tests			Positions Qualified	Thickness Qualified	Diameter Qualified	Process Qualified
		Root	Face	Side				
1G				Passed	1G, 1-2F	3/16"-1/4"	4" & Up	GMAW/SAW

Visual Inspection (4.8.1) Acceptable: YES NO City of Portland# 5303

Welding Test Conducted/Witnessed By: P.N. Best & Co., Inc. — Mr. Shannon Tomer-CW/# 88050191

Mechanical Tests Conducted By: Professional Service Industries, Inc.

Steve Moore Date: January 27, 2010

Steve Moore, Lab Supervisor, Mechanical Testing Services

PSI and its subsidiaries are not responsible for the accuracy or content of the test printouts were prepared

copy

WELDING QUALIFICATION TEST
 Project Number: 689-06014
 WPS Number: PNB-PQR-03

Tested For: P.N. Best & Co., Inc. Date: January 7, 2010
 Spec. Code: AWS D1.1-08 Report No: 689-06014-1b
 Welders Name: Jeffery Hobbs SSN: —
 Filler Metal: AWS A5.18/A5.17, Class ER70S-6/ EM12K Flux: 90% Argon/ 10% CO₂
 Base Metal Spec.: ASTM A252 GR 3 Preheat: 70°F
 Plate or Pipe: Pipe Thickness: 1/2" Inches: 8" Sch 80
 Type of Joint: V-Groove Fig. No.: 4.21 Backing: Yes
 Single/Double Welded: Single Process: GMAW/ SAW
 Single/Multiple Pass: Multiple Amp: 160/ 475-500 Current: DC
 Progression: N/A Volt: 30/ 30-33 Polarity: Reverse

GROOVE WELD TESTS

Position Tested	Radiographic Test	Bend Tests			Positions Qualified	Thickness Qualified	Diameter Qualified	Process Qualified
		Root	Face	Side				
1G				Passed	1G, 1-2F	3/16" - 1/4"	4" & Up	GMAW/ SAW

Visual Inspection (4.8.1) Acceptable: YES NO City of Portland# 5304

Welding Test Conducted/Witnessed By: P.N. Best & Co., Inc. — Mr. Shannon Tomer CWI# 88050191

Mechanical Tests Conducted By: Professional Service Industries, Inc.

Steve Moore
 Steve Moore, Lab Supervisor, Mechanical Testing Services Date: January 27, 2010

I hereby certify that the statements in this report are correct and that the test coupons were prepared

American Welding Society



Certifies that Welding Inspector
Shannon T Tomek

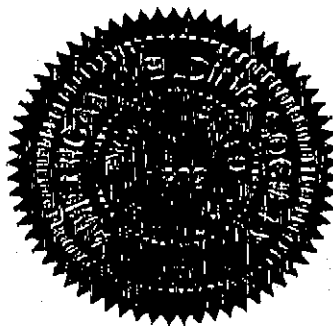
*has complied with the requirements of AWS QC1,
Standard for AWS Certification of Welding Inspectors*

88050191

CERTIFICATE NUMBER

May 1 2012

EXPIRATION DATE



Victor J. Matthe
PRESIDENT AWS

Paul P. Egan
CHAIR, QUALIFICATION COMMITTEE

Lee K. Williams
CHAIR, CERTIFICATION COMMITTEE