



API WELDING PROCEDURE SPECIFICATION

WPS: API 1000-10 REV. NO.: 0 PROCESS: SMAW DATE: 9/9/2004

API-1104 QUALIFIED RANGES

Diameter: 12.75" o.d. & larger Filler Metal Group: API Group 1

Thickness: 0.188" - 0.750" Joint Type: Butt/fillet/socket

Material: Yield less than or equal to 42 kpi

Positions: Fixed: Rolled: Progression: Down

NOTE: This WPS shall be used in conjunction with the applicable sections of the Los Alamos National Laboratories Welding Standards Manual (GWS)

WELD JOINT: Type: Butt Class: Full Penetration

Joint Description: Open Butt single V- welded from one side only.

Sketch Number: See pg. 2 for typical sketch and bead sequence.

FILLER MATERIALS: API Group No.: 1 AWS Class: E-6010

SFA Class: 5.1 F No.: 3 Sizes (s):

<u>5/32"</u>			
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Number of Beads: See pg. 2 for typical number and of beads

BASE MATERIALS: Spec: ASTM A 53 or A 106 A/B to Spec: ASTM A 53 or A 106 A/B

Thickness Welded: 0.188" - 0.750" to 0.188" - 0.750"

Pipe Diameter: 12.75" o.d. and larger to Pipe Diameter 12.75" o.d. and larger

ASME P No.: 1 Group: 1 to P No.: 1 Group: 1

POSITIONS: Fixed: Rolled: PWHT: Time @ ° F Temp.: N/A

Progression: Down Temperature Range ° F: N/A

PREHEAT: Minimum Temp ° F: 70 deg. GAS: Shielding: N/A Backing: N/A

NOTE: See time between passes. Composition: N/A

INTERPASS TEMP. ° F: N/A Flow Rate: CFH N/A

ELECTRICAL CHARACTERISTICS:

Current: DC Polarity: EP Ranges Amps: See pg. 2

Transfer Mode: N/A WFS/IPM: N/A Volts: See pg. 2

Electrode size and Type See pg. 2 Travel/IPM See pg. 2

MAX. TIME BETWEEN PASSES: 5 minutes between root pass and second pass.

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WELDING TECHNIQUE:

Line-Up Clamp: Full encirclement line-up clamp shall be used: line-up clamp shall be left until 50% of root bead is complete

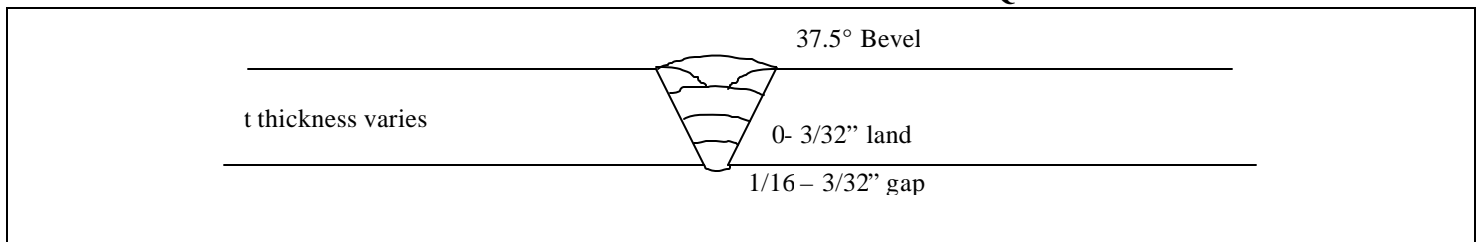
Stringer or Weave Bead: (S) Y (W) Y **Single Pass** N/A **Multi Pass** Y

Cleaning and/or Grinding: Stiff wire brush or power grinder. Grind tacks & stringer bead to a smooth contour.

PROCEDURE QUALIFIED FOR: Charpy V Notch N/A NDTT N/A D.T. N/A

Maximum K/J Heat Input: N/A

JOINT SKETCH AND BEAD NUMBER AND SEQUENCE



NOTE: Weld layers are representative only ³/₄ actual number of passes and layer sequence may vary due to variation in joint design, thickness and fit-up.

TYPICAL WELDING PARAMETERS

Pass Number	Filler/ Electrode	Size	Amps	Volts	Travel Speed in/min.	Other
1	E-6010	5/32	120-132	18 -25	5-10	
2	E-6010	5/32	135-160	18 -25	5-10	
3	E-6010	5/32	135-160	18 -25	5-10	
4	E-6010	5/32	135-160	18 -25	5-10	
5	E-6010	5/32	135-160	18 -25	5-10	
6	E-6010	5/32	135-165	18 -25	5-10	
7						
8						

PREPARED BY: Kelly Bingham **DATE:** 9/9/2004
Signature on File

APPROVED BY: Tobin Oruch **DATE:** 9/9/2004
Signature on File

**PROCEDURE QUALIFICATION TEST REPORT
TEST PARAMETERS**

Point Type: Open Butt Single V Full Penetration **Diameter:** 14.00" o.d.

Thickness: 0.375" wall **Filler:** 5/32" E-6010

Material: ASTM A 106 gr B **Preheat:** 70 ° F

Position: 6G Fixed **Current:** DCEP **Amps:** 125-165

Progression: Down **Volts:** 22-26

Max Time Between Passes: 5 Minutes **Travel Speed:** 6-13

GUIDED BEND TESTS

No.	Type	Result	No.	Type	Result
1.	Face	Acc. One indication	5.	Face	Acc. no indications
2.	Root	Acc. No indications	6.	Root	Acc. One indication
3.	Face	Acc. No indications	7.	Face	Acc. no indications
4.	Root	Acc. No indications	8.	Root	Acc. no indications

TENSILE TESTS

No.	Specimen Type	Area Sq./ in	Applied Load	Ultimate Tensile	Character of failure and location
1.	Figure 4	.402	37231 lbs.	92,614 psi	in base metal –cup & cone
2.	Figure 4	.389	34521 lbs.	88,742 psi	in base metal –cup & cone
3.	Figure 4	.446	32197 lbs	72,190 psi	in base metal –cup & cone
4.	Figure 4	.423	38601 lbs	91,255 psi	in base metal –cup & cone

NICK-BREAK TESTS

No.	Type	Remarks on Nick-Break tests
1.	Figure 5	Acc. One minor pore
2.	Figure 5	Acc. One minor indication.
3.	Figure 4	Acc. Break is clean
4.	Figure 4	Acc. Break is clean

Welders Name: William McIntosh

Z No.: 086261

Stamp: PF009

Tests Conducted By: Kelly Bingham

We certify that the statements herein are correct and that the tests were conducted in accordance with API-1104.

Authorized By: Kelly Bingham
Signature on File

Date: 09/30/92