



**API WELDING PROCEDURE SPECIFICATION**

WPS: API 1000-2 REV. NO.: 0 PROCESS: SMAW DATE: 9/9/2004

**API-1104 QUALIFIED RANGES**

Diameter: Less than 2.375" o.d. Filler Metal Group: API Group 1

Thickness: Less than 0.188" Joint Type: Butt/fillet/socket

Material: Yield less than or equal to 42kpi

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>3/32"</u>	<u>1/8"</u>		
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Number of Beads: See pg. 2 for typical number 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: Less than 0.188" to Less than 0.188"

Pipe Diameter: Less than 2.375" o.d. to Pipe Diameter Less than 2.375" o.d.

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. 2 hrs for all subsequent Beads or passes.

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**WELDING TECHNIQUE:**

**Line-Up Clamp:** Optional if line-up clamp is used, it will be left in placed until 50% of the root bead is complete.

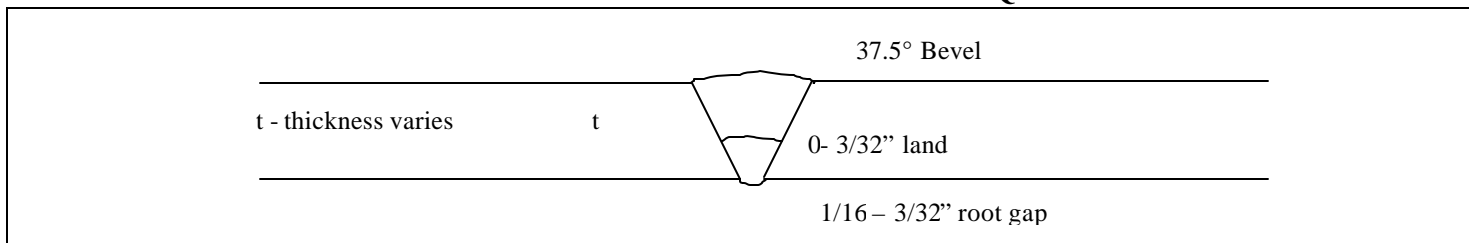
**Stringer or Weave Bead:** (S) Y (W) N/A **Single Pass** N/A **Multi Pass** Y

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

**PROCEDURE QUALIFIED FOR:** Charpy V Notch  NDTT  D.T.

**Maximum K/J Heat Input:** N/A

**JOINT SKETCH AND BEAD NUMBER AND SEQUENCE**



**NOTE: Weld layers are representative only <sup>3</sup>/<sub>4</sub> 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	3/32	55-80	18-22	4-8"	
2	E-6010	1/8	65-90	18-24	4-9"	
3						
4						
5						
6						
7						
8						

**PREPARED BY:** Kelly L. 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**

Two Coupons Tested

<b>Joint Type:</b>	<u>Full Penetration - Open Butt Single V</u>	<b>Diameter:</b>	<u>1.90 o.d.</u>
<b>Thickness:</b>	<u>0.145" wall</u>	<b>Filler:</b>	<u>3/32" &amp; 1/8" E-6010 (6P+)</u>
<b>Material:</b>	<u>ASTM A 106 gr B</u>	<b>Preheat:</b>	<u>70° F</u>
<b>Position:</b>	<u>5G Fixed</u>	<b>Current:</b>	<u>DCEP</u> <b>AMP:</b> <u>55- 90</u>
<b>Progression:</b>	<u>Down</u>	<b>Volts:</b>	<u>18-24</u>
<b>Max Time Between Passes:</b>	<u>5 Minutes</u>	<b>Travel Speed:</b>	<u>4-9</u>

**GUIDED BEND TESTS**

No.	Type	Result	No.	Type	Result
1.	Root	Acc. No indications	5.	N/A	
2.	Root	Acc. No indications	6.	N/A	
3.			7.	N/A	
4.			8.	N/A	

**TENSILE TESTS**

No.	Specimen Type	Area Sq./ in	Applied Load	Ultimate Tensile	Character of failure and location
1.	N/A				
2.	N/A				
3.	N/A				
4.	N/A				

**NICK-BREAK TESTS**

No.	Type	Remarks on Nick-Break tests
1.	Figure 5	Acc. Break was clean.
2.	Figure 5	Acc. One minor pore.
3.	N/A	
4.	N/A	

Welders Name: William McintoshZ No.: 86261Stamp: PF009Tests Conducted By: Max Goforth

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

Authorized By: Kelly BinghamDate: 09/30/92

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