



API WELDING PROCEDURE SPECIFICATION

WPS: API 1000-8 REV. NO.: 0 PROCESS: SMAW DATE: 9/9/2004

API-1104 QUALIFIED RANGES

Diameter: 2.375" o.d thru 12.75" o.d. to all **Filler Metal Group:** API Group 1

Thickness: Less than 0.187" to 0.187" thru 0.750" **Joint Type:** Branch / Fillet

Material: Yield less than or equal to 42,000 KPI

Positions: **Fixed:** **Rolled:** N/A **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:** Branch / Fillet **Class:** Full Penetration

Joint Description: Open Butt single V/Branch Tee 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):**

3/32	1/8		
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Number of Beads: See pg. 2 for typical number and bead sequence

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

Thickness Welded: 0.145" thru 0.186" **to** 0.187" thru 0.750"

Pipe Diameter: 2.375" o.d. thru 12.75" o.d **to Pipe Diameter** All

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

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

Progression: Down **Temperature Range ° F:** N/A

PREHEAT: Minimum Temp ° F: 200 **GAS: Shielding:** N/A **Backing:** N/A

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

INTERPASS TEMP.: 200 – 600 ° F **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 passes or maintain strict preheat temperature.

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WELDING TECHNIQUE:

Line-Up Clamp: None Fit-up on this joint is critical to successful welds.

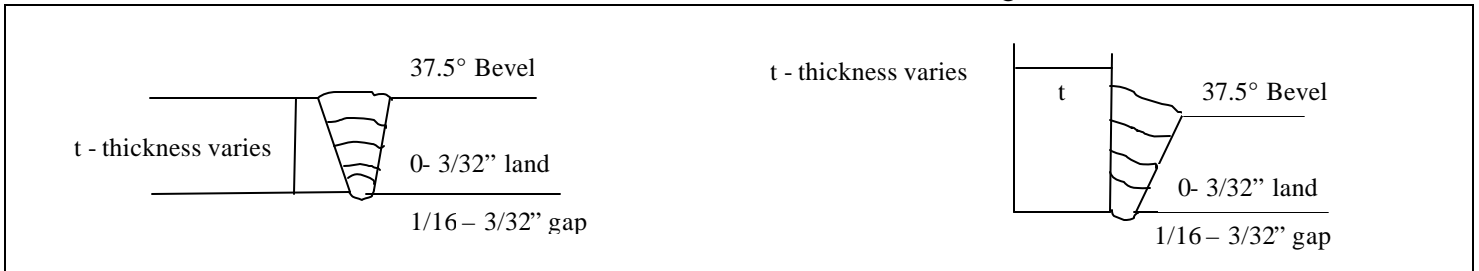
Stringer or Weave Bead: (S) Y (W) Y **Single Pass** N/A **Multi Pass** Y

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	3/32	55-70	22-26	4-9	
2	E-6010	3/32	55-80	22-26	4-9	
3	E-6010	1/8	60-90	22-26	5-10	
4						
5						
6						
7						
8						

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

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

**API WELDING SPECIFICATION PROCEDURE
TEST PARAMETERS**

Point Type: Full Penetration Branch **Diameter:** 2.3/5 o.d. to 6.625 o.d.

Thickness: 0.154" wall to 0.280" wall **Filler:** 3/32 & 1/8 E-6010 (6P+)

Material: ASTM A-106 gr B **Preheat:** 250 °F

Position: 5G Fixed **Current:** DCEP **Amps:** 55-70

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

GUIDED BEND TESTS

No.	Type	Result	No.	Type	Result
1.			5.	N/A	
2.			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 11	Acc. One minor pore
2.	Figure 11	Acc. Break is clean, partial in HAZ
3.	Figure 11	Acc. Break is clean, partial in HAZ & Base metal
4.	Figure 11	Acc. Break is clean, HAZ & base metal

Welders Name: William McIntosh

Z No.: 86261

Stamp: PF009

Tests Conducted By: Merel Johnson

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

Authorized By: Kelly Bingham

Date: 09/30/92