

**WELDING PROCEDURE SPECIFICATION (WPS)**  
**PREQUALIFIED  QUALIFIED BY TESTING**   
**or PROCEDURE QUALIFICATION RECORDS (PQR) Yes**   
**AASHTO/AWS D1.5 Qualification Type 5.12.1  - 5.12.2  - 5.12.4**

Contractor/ Organization Boretech, LLC  
 Welding Process(es) SMAW  
 Type: Manual  Semiautomatic   
 Mechanized  Automatic   
 Tandem  Parallel

Identification WPS - 2 Fillet Field Welding of Cutting Shoe  
 Revision NA Date NA By NA  
 Authorized by Boretech, LLC Date NA  
 Supporting PQR No.(s) NA

Lap Joint  
**JOINT DESIGN USED**  
 Single  Double Weld   
 Backing: Yes  No  Material NA  
 Root Opening NA Root Face Dimension NA  
 Groove Angle NA Radius (J-U) NA  
 Backgouging: Yes  No  Method NA  
 Root Treatment Remove grease and oil with solvent.  
Surface will be cleaned with wire brush and grinder. Joint shall be dry prior to welding.

**POSITION**  
 Position of Groove NA Fillet Vertical 5G  
 Vertical Progression: Up  Down   
**ELECTRICAL CHARACTERISTICS**  
 Transfer Mode (GMAW): Globular  Spray   
 Current: AC  DCEP  DCEN  Pulsed   
 Electrical Stick Out NA  
 Other NA

**BASE METALS**  
 Material Spec. ASTM A252  
 Type or Grade Grade 3 Spiral Weld Steel Pipe  
 Thickness: Groove NA Fillet NA  
 Diameter (Pipe) 72"

**TECHNIQUE**  
 Stringer or Weave Bead Either  
 Multi-pass or Single Pass (per side) Either  
 Number of Electrodes 1  
 Electrode Spacing: Longitudinal NA  
 Lateral NA Angle NA  
 Interpass Cleaning Clean slag with chipping hammer and wire brush

**FILLER METALS**  
 AWS Specification AWS A5/A5.1M  
 AWS Classification E7018  
 Manufacturer Trade Name NA

**PREHEAT**  
 Preheat Temp., Min. 50 degrees F  
 Interpass Temp., Min. 50 degrees F  
 Interpass Temp., Max. 500 degrees F

**SHIELDING**  
 Flux NA Mfg. Trade Name NA  
 Electrode-Flux (Class) NA  
 Gas Composition NA  
 Flow Rate NA Gas Cup Size NA

**POSTWELD HEAT TREATMENT**  
 Temp. None Hold Time NA  
 Heating/Cooling Rate 15 minutes minimum

**HEAT INPUT**  
 Calculated Heat Input Value: kJ/in  kJ/mm   
 Max. Heat Input NA Min. Heat Input NA

**WELDING PROCEDURE**

Pass or Weld Layer(s)	Process	Filler Metals Diam.	Current		Volts	Travel Speed	Joint Details
			Type & Polarity	Amps or Wire Feed Speed			
1	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
2	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
3	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
4	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
5	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
6	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
7	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	
8	SMAW	1/8"	DCEP	115	21-25	4-8 ipm	

Form N-2

Max Layer Thickness will be 3/16" for all passes

Welding Procedure Specification

3/8" FILLET WELD, CONTINUOUS  
 CUTTING SHOE-PLATE ADDED TO END OF PIPE FOR REINFORCING