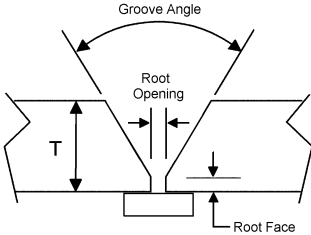


AWS D1.1 Procedure Qualification Record (PQR)

PQR No. PQR 231 Date 7/9/2008 WPS No. WPS 231
Welding Process FCAW Welding Method Semiautomatic

<p>Joint Design Used Weld Type <u>CJP Groove weld</u> Groove Type <u>Single-V groove</u> Double Welded <u>No</u> Backing <u>Yes</u> Material <u>Base Metal</u> Root Opening <u>1/4 in.</u> Root Face <u>0 in.</u> Groove Angle <u>52.5°</u> Radius <u>N/A</u> Back Gouging <u>No</u> Method <u>N/A</u></p> <p>Base Metals Base Metal <u>ASTM A 131, Grade A</u> Thickness <u>1.0 in.</u> Pipe Diameter <u>N/A</u></p> <p>Filler Metals AWS Specification <u>5.20</u> AWS Classification <u>E71T-1</u></p> <p>Shielding Gas <u>100% CO2</u> Flow Rate <u>45 CFH</u> Gas Cup Size <u>#4</u> Electrode-Flux (Class) <u>N/A</u> Flux Trade Name <u>N/A</u></p> <p>Preheat Preheat Temperature, Min. <u>75°F</u> Interpass Temperature, Min. <u>75°F</u> Max. <u>350°F</u></p>	<p>Joint Detail</p> <div style="text-align: center;">  <p>SINGLE VEE GROOVE</p> </div> <p>Position Weld Position <u>4G - Overhead</u> Vertical Progression <u>N/A</u></p> <p>Electrical Characteristics Current / Polarity <u>DCEP (reverse)</u> Transfer Mode <u>Globular arc</u> Tungsten Electrode: Type <u>N/A</u> Size <u>N/A</u></p> <p>Technique Stringer or Weave Bead <u>Stringer bead</u> Multi-pass or Single Pass (per side) <u>Multipass</u> Number of Electrodes <u>1</u> Electrode Spacing: Longitudinal <u>N/A</u> Lateral <u>N/A</u> Angle <u>N/A</u> Contact Tube to Work Distance <u>3/4-1"</u> Peening <u>none</u> Interpass Cleaning <u>Wire Brush</u></p> <p>Postweld Heat Treatment Temperature <u>None</u> Time (hr.) <u>None</u></p>
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Welding Procedure

Pass or Weld Layer(s)	Process	Filler Metal		Current		Volts	Travel Speed (in/min)
		AWS Classification	Size (in.)	Type & Polarity	Amps		
1	FCAW	E71T-1	0.045	DCEP (reverse)	180	26	8
2-8	FCAW	E71T-1	0.045	DCEP (reverse)	200	27	10
9-11	FCAW	E71T-1	0.045	DCEP (reverse)	200	27	11
12-15	FCAW	E71T-1	0.045	DCEP (reverse)	200	27	9
16	FCAW	E71T-1	0.045	DCEP (reverse)	200	27	11

Pyramid Corp.

AWS D1.1 Procedure Qualification Record (PQR)

PQR No. PQR 231

Test Results

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Tensile Test

Specimen No.	Width (in.)	Thickness (in.)	Area (in ²)	Ultimate Tensile Load (lb)	Ultimate Unit Stress (PSI)	Character of Failure and Location
231-1	0.75	1.0	0.75	52500	70000	Ductile - BM
231-3	0.75	1	0.75	52275	69700	Ductile - BM

Guided Bend Test

Specimen No.	Type of Bend	Result	Remarks
231-2	Side Bend 4G	Passed	
231-4	Side Bend 4G	Passed	Small (<1/16") opening acceptable
231-6	Side Bend 4G	Satisfactory	
231-5	Side Bend 4G	Satisfactory	

Visual Inspection

Appearance acceptable Undercut acceptable Piping Porosity none
 Concavity none Inspected By D. Davis Date 7/9/2008

Radiographic - Ultrasonic Examination

RT Report No. D231 Result passed UT Report No. _____ Result _____

All Weld-Metal Tension Test

Tensile Strength, psi 83110 Yield Point / Strength, psi 72600 Elongation in 2 in., % 28
 Laboratory Test Number pw 231

Welder's Name Smith, Goerge I.D. 12345 Stamp No. 12345

Test conducted by ACHME Welding Lab Test No. PQR 231

PQR was done and welding of coupon was witnessed by: Pyramid Corp.

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in conformance with the requirements of Section 4 of AWS D1.1/D1.1M, 2006 Structural Welding Code - Steel.

Prepared By: _____ 7/9/2008 Welding Engineer
 Date