



Breman Machinery B.V.
Sasdljk 20, 8281 AC, Genemuiden
Welding Procedure Specification (WPS)

MENDENHALL ENGINEERING, PLLC
CONSULTING STRUCTURAL ENGINEERS

WPS record number	160003-08	Revision 01	Qualified to
Date	3-2-2017		Company name
Supporting PQR(s)	GRO 1603972/18.PQR.AWS		
Reference docs.			

Scope	Groove, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: JOINTS section of this WPS

☒ REVIEWED

☐ REVIEWED EXCEPTIONS NOTED

☐ REVIEWED AND RESUBMIT

Review is provided as an aid to the contractor and is only to check for general conformance with the contract documents which have been produced by Mendenhall Engineering, PLLC. Responsibility for correctness rests solely with the contractor. Review includes only those structural elements noted on the contract structural drawings and does not include verification of material quantities, dimensions or construction or fabrication means and methods. Deviations from the contract structural drawings, omission of items or items shown incorrectly shall not be considered acceptable unless specifically noted by the Engineer.

BY GMF DATE 02/03/2017

REFERENCE:

BASE METALS

Type	S460ML	P-no. -	Grp-no. -
Welded to	S460ML	P-no. -	Grp-no. -
Backing:	With or without	P-no. -	Grp-no. -
Retainers	-		
Notes	-		

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Complete pen.	3	no max.	-	-
Impact tested	16	no max.	-	-
Partial pen.	3	no max.	-	-
Fillet welds	-	-	-	-

DIAMETER RANGE QUALIFIED mm

Pipe/Tube Diameter Range Qualified

	As-welded		With PWHT	
	Min.	Max.	Min.	Max.
Nominal pipe size	600	no max.	-	-

FILLER METALS

THICKNESS RANGE QUALIFIED mm

	SFA	AWS Classification	F-no.	A-no.	Chemical analysis or Trade name	As-welded		With PWHT	
						Min.	Max.	Min.	Max.
GMAW	5.28	E80C-Ni1 H4	6	10	Megafil 240M	-	-	-	-
FCAW	5.29	E80T5A1M H4	6	-	Megafil 735B	-	-	-	-
GMAW	5.28	E80C-Ni1 H4	6	10	Megafil 240M	-	-	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process	GMAW		FCAW		GMAW	
	Semi-automatic		Semi-automatic		Semi-automatic	
Type	Root		Fill 1		Cap	
Minimum preheat/interpass temp. °C	35		35		35	
Maximum interpass temperature °C	265		265		265	
Filler metal size mm	1.2		1.2		1.2	
Layer number	Root		Fill 1		Cap	
Position of groove	F(1G),H(2G)		F(1G),H(2G)		F(1G),H(2G)	
Weld progression	-		-		-	
Current/polarity	DC +ve		DC +ve		DC +ve	
Electrical output	Constant voltage		Constant voltage		Constant voltage	
Amperes	103-126		254-310		179-219	
Volts	16,2-18,6		27,2-31,4		23,7-27,3	
Travel speed mm/min	59-98		287-479		245-408	
Maximum heat input kJ/mm	1,54		1,69		1,01	
Wire feed speed m/min	-		-		-	
Metal transfer mode	-		-		-	
Shielding: Gas type	85% Argon, 15% CO2		85% Argon, 15% CO2		85% Argon, 15% CO2	
Flow rate l/min	15-18		15-18		15-18	
Trailing: Gas type	-		-		-	
Flow rate l/min	-		-		-	
Backing: Gas type	-		-		-	
Flow rate l/min	-		-		-	
String or weave	Stringer		Stringer		Stringer	
Orifice/gas cup size mm	15		15		15	
C.T.W.D mm	12-25		12-25		12-25	
Multi/Single pass per side	Multiple passes		Multiple passes		Multiple passes	
Maximum pass thickness mm	4		4		4	
Weld deposit chemistry	-		-		-	
Notes						