****THIS IS A NEW IM. – PLEASE READ CAREFULLY.****

Welded and Seamless Steel Pipe Piles

HEADER

Steel Pipe Piles shall be made by the seamless, electric resistance welding or fusion welded process.

Steel Pipe Piles shall be made of materials melted and manufactured in the United States.

Steel Pipe Piles shall meet the requirements of Article 4167 of the standard Specifications and the physical and chemical requirements of ASTM A252, Grade 2 or Grade 3.

Steel Pipe Piles shall not be accepted in the field without a Mill Test Certification. The contractor shall also furnish a certificate of compliance stating that the pipe pile was manufactured, tested and inspected in accordance with the requirements of ASTM A252 for the specified grade and was found to meet such requirements and shall furnish test results from at least one random sample taken from pieces furnished to the project containing the results of the applicable heat analysis, product analysis, tensile strength and elongation.

Steel Pipe Piles shall be free of injurious defects, discontinuity or irregularity. Shall be uniform in wall thickness and shall not be at any point more than 12.5% under the specified nominal wall thickness. For pipe pile sizes that are not listed in table 3 of ASTM A252, the weight per unit length shall be calculated as follows:

$W = 10.69 (D-t)t$
Where W = Weight per unit length, lb / ft (kg / m)
D = Specified outside diameter, in (mm)
t = Specified nominal wall thickness, in (mm)
Note: 1.0 inch = 25.4 mm
1.0 lb / ft = 1.49 kg / m

Weights per unit length for various sizes of pipe piles are listed in table 3 of ASTM A 252.

Pipe piles shall be furnished with plain, smooth, flat ends

The steel for the pipe piles shall contain no more than 0.05% phosphorous.

The steel for pipe piles shall have a tensile strength of 60,000 psi (415 MPa) minimum for Grade 2 and a tensile strength of 66,000 psi (455 MPa) minimum for Grade 3.

Yield Strength for Grade 2 shall be 35,000 psi (240 MPa) and 45,000 psi (310 MPa) for Grade 3.

Elongation for Grade 2, in 8 - inches (203.2 mm) is 14% (min) and in 2 - inches (50.8 mm) 25% (min).

Elongation for Grade 3 in 2 – inches (50.8 mm) is 20% (min).

Only field welding shall be permitted in accordance with the requirements of IM 558 and no welding shall be permitted when the ambient temperature of the air is below 32^{o} F (0^{o} C). Surfaces of the pipe being welded must be preheated (preheat ahead of welding) to a minimum temperature of 50^{o} F (10^{o} C) and this temperature shall be maintained throughout the welding process.

The weld joint shall be pre-qualified and pre-approved AWS Joint B-U2a. The electrode used for manual shielded metal arc welding shall be E 7018. A back-up ring shall be required and shall be used of the same grade steel as that of the pipe.

All welding shall be done by field welders certified by the Iowa Department of Transportation.

Pre-approved weld procedures (WPS) shall be required.

Each length of steel pipe pile shall be legibly marked showing brand name, heat number, nominal wall thickness, outside diameter, weight per unit length, specification designation and grade.

Pile welds shall be air cooled for not less than 15 minute prior to being driven into the ground.

Quenching in water shall not be allowed.