WELDED AND SEAMLESS STEEL PIPE PILES

GENERAL

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 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 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.

Pipe Piles can be allowed as an option to H-Piles (if specified in the contract documents) and shall be of the specified dimensions.

WORKMANSHIP AND FINISH

Surface imperfections having a depth in excess of 25% of the specified nominal wall thickness shall be considered a defect and shall be rejected.

Steel Pipe Piles shall be free of injurious defects, discontinuity or irregularity and shall be uniform in wall thickness. Pipe piles shall be furnished with plain ends. Pipe piles can either be flame cut or machine cut with the burrs at the end of the pipe pile removed by grinding. 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, and shall not vary by more than 15% over or 5% under its theoretical weight.

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.

Outside diameter shall not vary by more than ± 1% from the specified diameter.

Wall thickness shall not vary by more than 12.5% under the specified nominal wall thickness.

Elongation for Grade 2, in 2.0 inches shall be 25% (min) for Grade 2 and 20% minimum for Grade 3.

Lengths shall be as specified with a permissible variation of ± 1.0 inch.

Only field welds shall be permitted in accordance with the requirements of IM 558 and only at air temperature above 0º F (-18ºC) 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 for semi-automatic flux core arc welding, use an E71T-X electrode. 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.

ACCEPTANCE

Steel pipe piling shall be accepted on the basis of mill test report and shall be from an approved source prior to the letting.

The manufacturer and / or contractor shall furnish an identification report for each shipment to a project. The identification report shall include the project number and the design number. The number of individual pieces in the shipment shall be identified by heat number, size, and length.

The following certification statement shall be included on each identification report and signed by a company representative:

Certification Statement
We hereby certify that the contents of this report are accurate. All test results and fabrication performed by this material manufacturer are in compliance with the requirements of ASTM A 252 We also certify that this material is melted and manufactured in the USA.

Signed _____
Authorized Representative

Signed _____
Notarized by Notary Public

Acceptance shall also be based upon a completed Steel Pipe Piling Identification Report (Appendix C) completed by the Project Inspector. Copies of the certified mill test report for each Heat No. shall be included with the report. One copy shall be forwarded to the District Materials Engineer.