

TUBULAR STEEL SCREWPILES

Prepared by Screwpile Australia

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TUBULAR STEEL SCREWPILES

GENERAL

000.01 SCOPE

1. The work to be executed under this Specification consists of:-
 - a) Supply of steel screw piles
 - b) Installation of steel screw piles
 - d) Design and certification of steel screw piles.

000.02 REFERENCES

Australian Standards

AS 1579	Arc Welded Steel Pipes and Fittings for Water and Waste Water
AS 2159	Piling Design and Installation
AS 2177	Non Destructive Testing – Radiography of Welded Butt Joints in Metal
AS 2203.1	Cored Electrodes for Arc-Welding
AS 2207	Non Destructive Testing – Ultrasonic Testing of Fusion Welded Joints in Carbon and Low Alloy Steel
AS 1163	Structural steel hollow sections
AS 4100	Steel structures

Australian/New Zealand Standards

AS/NZS 1553.1	Low Carbon Steel Electrodes for Manual Metal-arc Welding of Carbon Steels and Carbon – Manganese Steels
AS/NZS 1554.1	Welding of Steel Structures
AS/NZS 3678	Structural Steel - Hot-rolled Plates, Floor plates and Slabs

MATERIALS

000.03 STEEL SCREWPILES

000.03.01 STEEL SCREWPILES REQUIREMENTS

1. The steel screwpile shaft shall be made from circular hollow section structural steel of Grade 350 or higher to AS 1163 manufactured in accordance with AS/NZS 1554.1
2. The steel screwpile helix shall be made from structural steel Grade 250 or higher to AS/NZS 3678 manufactured in accordance with AS/NZS 1554.1
3. Certification of materials - Test certificates shall be issued with the screwpiles for the steel used in the manufacture of in accordance with AS/NZS 3679.1 relating to tests performed by the manufacturer to establish compliance with the Standard.
4. Dimensions and Tolerances – The steel hollow sections shall conform to the manufacturing tolerances specified in AS 1163-1991.
5. The use of unidentified or second hand steel is not to be used. All steel shall comply with AS 4100.
6. Once manufactured screwpiles are to be visually inspected and approved prior to hot dip galvanising if required.

000.03.02 CORROSION PROTECTION TO SCREWPILES

1. Steel screwpiles to be designed in accordance with AS 2159 Section 6.3 with an allowance for sectional loss based on the site corrosion classification and design life.

DESIGN

000.04 DESIGN OF STEEL SCREWPILES

2. The steel screwpiles shall be design by a practising professional structural engineer with previous experience in the use and design of steel screwpiles.
3. The steel screwpiles shall be designed in accordance with AS 4100 and AS 2159 to carry the working loads as shown on the Drawings, along with any additional loads due to installation misalignment, soil movement or pile settlement as applicable. Suitable geotechnical information will be supplied and used for design purposes.
4. Screwpile design calculations shall be supplied to project engineers for there approval prior to the manufacture of the screwpiles.
5. Screwpile design calculations shall include a load eccentricity of 50mm and a realistic allowance for effective length for the particular soil conditions
6. The maximum settlement of the screwpiles under design working load shall be as detailed in AS 2159 Table 8.2 unless noted otherwise on the Drawings.
7. The screwpile connection to the footing or structure over shall be designed and submitted with the calculations for approval by the project engineer.

INSTALLATION

000.05 SCREWPILE INSTALLATION

000.05.01 SCREWPILES INSTALLATION REQUIREMENTS

1. The Screw piles shall be installed using specialised equipment correctly calibrated to allow torque reading to be monitored and recorded during installation.
2. The Screw piles shall be installed by an experienced accredited screwpile contractor and supervised by the piling contractor.
3. Details of the proposed screwpile installation equipment and operator proficiency shall be submitted to the project engineers for approval.
4. During the storage, transportation, lifting and installation the screw piles shall be correctly supported. Any steel screw piles damaged or distorted in excess of the specified tolerances in AS 1163-1991 shall be replaced at the sole expense of the Contractor.
5. The piling contractor shall submit for approval a record of the installation torques and pile depths achieved once completed for approval prior to the concrete foundation being completed.

000.05.02 SCREWPILES INSTALLATION TOLERANCES

1. The maximum variation shall be no more than 75mm from the plan position as shown on the Drawings.
2. The screwpile shaft shall be installed vertically with a variation of not more than 4% from the vertical.
3. The maximum variation of the cut-off level shall be ± 25 mm from that shown on the Drawings.

CERTIFICATION

000.06 SCREWPILE CERTIFICATION

1. At the completion of the screwpiling works the piling contractor shall issue the following certification to the project engineer and Principle.
 - Screw piles have been designed to carry the design loads as shown on the Drawings.
 - Screw piles have been installed in accordance with the design.
 - Screw piles satisfy all the requirements of AS 4100 and AS 2159.
2. Design certification is to be issued by a practising professional structural engineer as defined by the building code of Australia and is competent and experienced in screwpile design and approved by the project engineers prior to the installation of the screw piles.