STOPDIGGING!

THE GROUND SCREW FOR SOLID FOUNDATIONS

Screw Pile Foundations within a Root Protection Area (RPA) - Method Statement

Introduction

Stop Digging Screw piles are widely regarded as a very localised, low impact option upon which to mount structures within an RPA.

The use of hand held hand portable equipment and a no dig approach ensures that any damage to tree roots is heavily mitigated. This not only protects the major roots (over 25mm) but also the important fibrous root system often found close to the surface.

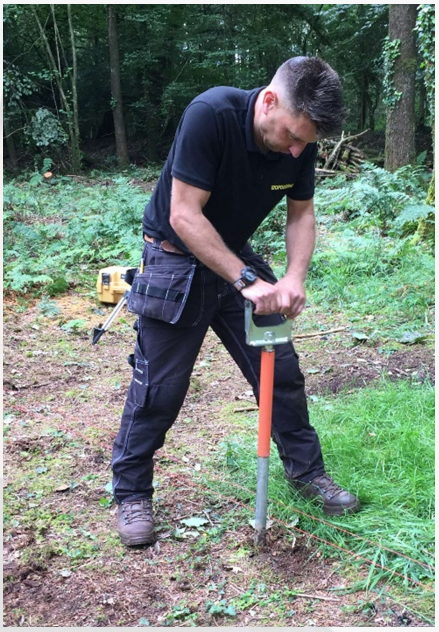
Construction Methodology

The location of the screw piles is important to provide adequate foundation support to the structure, whilst avoiding major tree roots above 25mm in diameter. The following procedure must be adhered to:

1. Mark out the proposed location of the structure, and the screw pile locations with shallow depth pegs.

2. Using a long metal bar such as a fencing bar or pin, drive a hole by hand into the proposed screw pile locations, rotating the bar to slightly enlarge the hole as it goes down in stages, to a depth of at least 500mm. The purpose of this is to ensure that there are no significant tree roots in that location. If roots above 25mm in diameter are discovered, then the screw pile pilot hole must be relocated to the nearest possible position that is free of roots.

3. The specialist hole punch tool can carefully be used to enlarge the start of the hole to 40mm, as part of the standard installation, paying attention to any obstructions that may be encountered. As the pointed tip is driven in, it will generally push any fibrous and small roots out of the way.



4. The pre drilling is carried out by a hand held SDS max drill with a 40mm masonry drill bit. This must be carefully and diligently undertaken by an experienced installer. The installer will be listening and watching for any indications that the drill tip has encountered a significant tree root. The feedback could include a change of speed, direction (plumb), sound and feel which the trained installer will be able to distinguish from normal drilling and from other ground obstructions such as stones.

5. If this occurs, then the screw pile must be relocated to the nearest possible position (no less than 3 times the diameter of the screw) with the process starting again from point 2. If this happens on a corner then an additional screw may be required to create a cantilever for the base frame.

6. The predrilling will continue down to suit the length of screw that will be installed. For structural integrity the predrilling should stop short of the final depth of the screw.

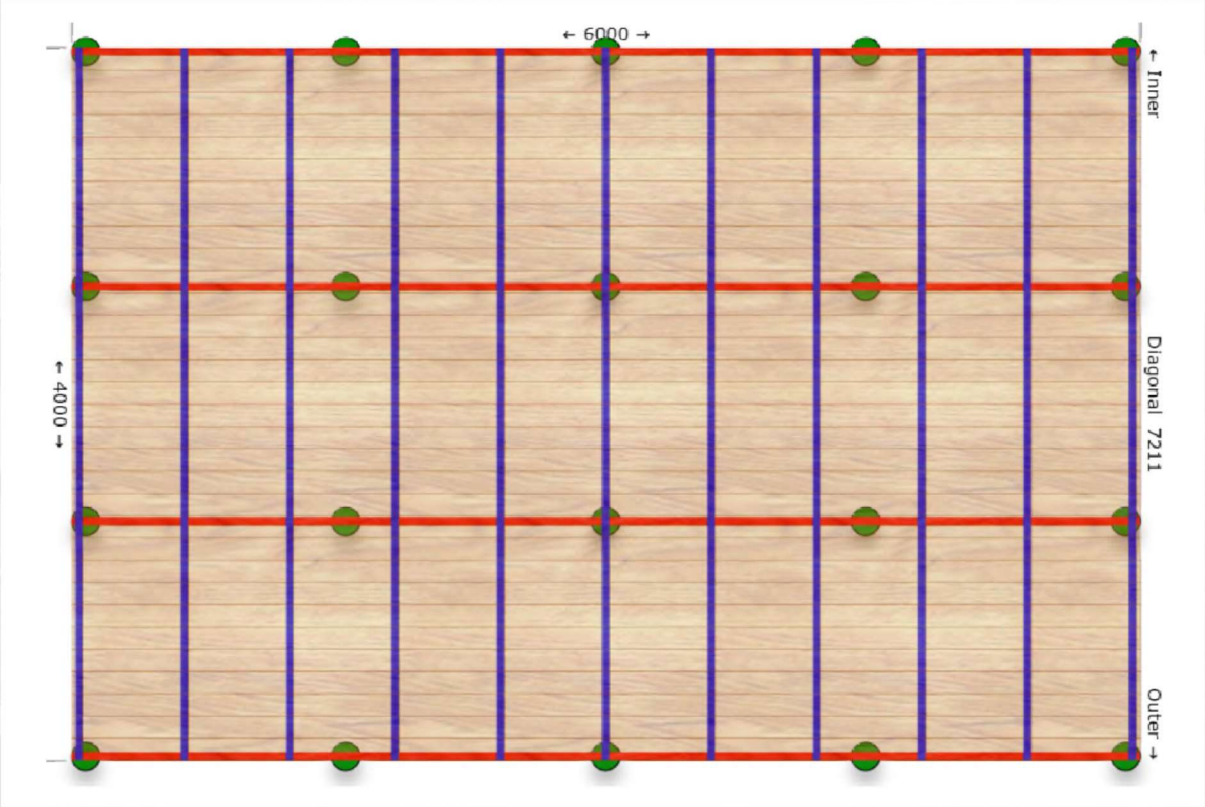
7. The screw is then installed, again using hand held and hand portable specialist equipment. The screw is wound in clockwise at a slow and steady rate and works on skin friction between the shaft/thread and the adjacent ground. The diameter of the screw is between 67mm – 76mm depending on which model is used.

8. There is a chance the ground screw shaft may affect a very small portion of the thin fibrous roots upon installation, however this should be minimal due to the threads being relatively blunt and the installation of the ground screws should act to move the roots out of the way rather than cut through them as with driven piles.

The result of following this method will ensure that all screw piles will be inserted into the soil without significant damage to any tree roots.

Example

An example structure would be a base for a garden room or similar as below. The spacings of the screw piles would typically be 1.2m – 1.8 m apart depending on the use and design of the structure.



Additional measures

In addition to the screw pile foundations it is advisable for the structure to be raised above ground level to allow air movement for root activity to a minimum of 150mm.

It is also advised that rainwater is captured from the roof and diverted into porous soakaway pipe which has been laid out underneath the base, to supply water to the roots below the shed. The piping will only be laid on the surface of the ground to avoid any excavation.

Suitability

Screw piles are suited to a wide range of soil types, with the main specification adaptation being the length of pile required for various soil types. Their site specific load capacities can be assessed by way of a pull, or load test. This involves installing a test screw(s) and assessing their performance. With the exception of the screw installation, the test is surface based and completely non-invasive. Please refer to the Stop Digging Design Specification Document for more information.

Consultation

Each project or site must be treated on its own merits and we would always advise that an Arboriculturist is consulted. Particular attention must be given if the site has trees with TPO's (Tree Preservation Order) and the local authority tree officer must be consulted.

Example Images

Screws installed ready for base frame

Base frame installed

New Build House

Decking in the woods

Log cabin

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Screws next to a tree ready for…..

…an amazing play house