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Planning Department  
Reading Borough Council  
Civic Offices, Bridge Street  
Reading, RG1 2LU  
For the attention of Ms Huimin Chen, Case Officer

**Re: Revised Screw Pile Foundation Installation Methodology - 2 Lancaster Close, Reading, RG1 5HB**

*Steel screw or helical piles with above-ground steel pile caps and structural steel beams*

Dear Ms Chen,

## 1 - Purpose and Scope

This methodology describes the proposed installation of steel screw or helical pile foundations. The system has been selected because retained trees constrain conventional foundation construction and the works must minimise excavation, soil disturbance, compaction and potential damage to the rooting environment.

The proposed foundation system comprises:

- screw or helical piles with an anticipated 73 mm or 89 mm outside-diameter circular hollow section shaft;
- an anticipated installation depth of approximately 4 m to 6 m below ground level;
- above-ground steel pile head plates or pile caps connected to structural steel beams; and
- a continuous steel wall-support plate, anticipated to be 275 mm to 300 mm wide and 10 mm thick, welded to the top of the steel beam to support the wall construction above.

The pile shaft diameter, wall thickness, steel grade, helix configuration, pile depth, installation torque, pile spacing, corrosion allowance, beam size, plate size, welds and all connections are preliminary and shall be confirmed by the final structural and geotechnical design.

The pile heads and suspended steelwork shall maintain a minimum clearance of 150 mm above the existing ground level, unless a greater clearance is shown on the approved drawings. No conventional excavated strip foundation, reinforced concrete ground beam or below-ground concrete pile cap is proposed within the Root Protection Areas.

## 2 - Supporting Documents

The reference drawings **JP7750-0011-Screw Piles Layout** and **JP7750-0012 - Screw Pile & Beam Connection** - revised structural package, September 2026 issues, including a full cross-section showing the existing ground level (EGL), the finished floor level (FFL) and the relationship to the existing dwelling.

## 3 - Pre Commencement Requirements

Before piling starts, the contractor shall have the approved Pile Layout (Option 2), Pile & Beam Connection drawing, Tree Protection Plan, Arboricultural Method Statement, underground-services information, final pile design, steel connection details and testing requirements.

The piling contractor, principal contractor, structural or pile designer and project arboriculturist shall review the pile positions, access route, working area and tree-protection controls before work commences

## 4 - Tree and Ground Protection

All activities shall follow the approved Tree Protection Plan and Arboricultural Method Statement. Within a Root Protection Area:

- existing ground levels shall be retained, with no general excavation, trenching or soil stripping;
- no concrete, spoil, fuel, chemicals or construction materials shall be placed or stored on the ground;
- plant shall not travel over unprotected soil and no unauthorised access shall occur;
- approved load-spreading ground protection shall be installed before unavoidable plant access; and
- cement washout, fires and changes to drainage shall not be permitted.

The installation plant shall be the smallest suitable equipment and shall operate from outside the Root Protection Area wherever practicable. Where entry is unavoidable, it shall use only the approved protected route or working platform. The suspended steelwork shall remain at least 150 mm above existing ground to preserve ground levels and the movement of air and water through the rooting environment.

## 5 - Piles Within Root Protection Areas

Certain screw pile positions shown on Pile Layout (Option 2) are located within the Root Protection Areas of retained trees. These pile locations shall be clearly identified on the drawing and reviewed with the project arboriculturist before installation.

Each affected pile position shall be locally investigated where required using hand tools or compressed-air excavation under arboricultural supervision. If a significant root is identified, the pile shall not be installed through or used to sever the root. The pile may be relocated locally only after the revised position has been approved by both the project arboriculturist and structural or pile designer.

The assessment shall consider the complete pile geometry and installation path. The 73 mm or 89 mm CHS dimension relates to the shaft only; the helical bearing plate will have a larger diameter varying between 200 mm to 300 mm to be confirmed by the final design. Plant within the Root Protection Area shall remain on approved load-spreading ground protection, and no general excavation, concrete placement or alteration of existing ground level shall be undertaken.

## 6 - Pile Position Investigation

Pile positions shall be set out from Pile Layout (Option 2) and checked against the Root Protection Areas, retained trees, structural layout and known services. Where a pile lies within or immediately adjacent to a Root Protection Area, the location shall be inspected before installation.

Where required by the project arboriculturist, a limited local investigation shall be undertaken using hand tools or compressed-air excavation under arboricultural supervision. Mechanical excavation shall not be used to search for roots. Exposed roots shall be protected against drying, frost and physical damage and shall not remain exposed longer than necessary.

## 7 - Screw Pile Installation

The proposed piles are anticipated to use 73 mm or 89 mm outside-diameter CHS shafts installed to approximately 4 m to 6 m below ground level. These dimensions are preliminary and shall be confirmed by the final pile design.

1. Position the pile at the approved coordinates and check its alignment.
2. Install the pile by controlled rotation using suitable equipment, avoiding excessive crowd force, vibration or ground disturbance.
3. Monitor and record installation depth and torque throughout installation.
4. Continue until the specified minimum depth, final torque, torque-over-penetration and alignment criteria have been achieved.
5. Stop and refer the matter to the pile designer if the criteria cannot be achieved or unexpected ground conditions are encountered.
6. Leave or cut the pile head to the required level, anticipated to be approximately 150 mm above existing ground, ready for the approved pile-head connection.

Final depth may vary from the anticipated 4 m to 6 m range to suit actual ground conditions and the final design. A pile shall not be accepted on depth alone. The design installation criteria, including the specified torque requirements, shall also be satisfied. Any relationship used between installation torque and capacity shall be defined by the specialist pile designer and verified by testing where required.

## 8 - Roots and Obstructions

If a significant root is identified at or immediately adjacent to a pile location, work at that location shall stop. The pile shall not knowingly be forced through or used to sever a significant root. No root shall be cut without the written agreement of the project arboriculturist.

The arboriculturist and structural or pile designer shall review the location. A pile may be relocated only after approval, and the revised position shall avoid or reduce root disturbance while maintaining adequate pile spacing, structural performance, beam connection geometry and clearance from services. The installer shall not move a pile solely at the operative's discretion.

If a buried obstruction is encountered, repeated rotation against the obstruction shall be avoided. The pile designer shall determine whether the pile should be relocated or whether another approved solution is required.

## 9 - Installation Records and Verification

The piling contractor shall prepare an installation record for each pile, including:

- pile reference, design coordinates and as-installed coordinates;
- shaft size, helix configuration, extensions and couplings;
- installation date, final depth and torque with depth;
- final termination torque, alignment and positional deviation;
- ground conditions, roots or obstructions encountered; and
- any approved relocation or other departure from the design.

As-installed positions shall be checked against the approved layout. Deviations outside the specified tolerance shall be assessed by the structural or pile designer before the steelwork is installed. Load testing or other verification testing shall be completed where required by the design, specification or Building Control.

## 8 - Pile Beam and Wall Connections

Following installation and acceptance, the pile heads shall be prepared to receive the steel pile caps or head plates shown on the Pile & Beam Connection drawing. The structural steel beams shall then be positioned and connected in accordance with the final approved details.

A continuous steel plate, anticipated to be 275 mm to 300 mm wide and 10 mm thick, shall be welded to the top of the structural steel beam to support the wall construction above. The structural engineer shall confirm the plate dimensions, steel grade, weld size and length, connection bolts, stiffeners and fabrication requirements.

The complete assembly shall provide a continuous load path from the wall and building structure through the wall-support plate, steel beam, pile-head connections and screw piles into the supporting ground. The final design shall consider vertical compression, uplift, horizontal load, shear, bending, torsion and any eccentricity between the wall, beam and pile centreline. Local bending of the wall-support plate beyond the beam flange shall also be checked.

The steelwork shall not bear on the existing ground. A minimum 150 mm clear void shall remain beneath the pile-cap, beam and wall-support arrangement. Existing ground within the Root Protection Areas shall not be raised to close the void. Any enclosure, floor or decking shall maintain the required ventilation, drainage, inspection access and arboricultural controls.

## **11 - Corrosion Protection and Completion**

All pile shafts, pile caps, connections, beams and wall-support plates shall receive corrosion protection appropriate to their exposure and required design working life. The final design shall define the corrosion allowance and protective system. Coating or galvanising damaged by handling, cutting, welding or installation shall be repaired using an approved system in accordance with the manufacturer's requirements.

Before loading the structure, the following shall be confirmed:

- installation records and test results have been reviewed and accepted;
- as-installed pile positions and levels comply with the approved design;
- pile caps, welds, bolts and steel connections have been inspected;
- corrosion protection is complete; and
- the minimum 150 mm clearance above existing ground is maintained.

Temporary ground protection shall be removed carefully without disturbing the underlying soil. The arboriculturist shall review any affected area where required and specify remedial action.

## **12 - Conclusion**

The proposed screw pile and suspended steel beam system provides a low-disturbance alternative to conventional excavated concrete foundations. Discrete pile locations, controlled installation, above-ground steelwork and an agreed procedure for roots are intended to minimise excavation, compaction and disturbance around the retained trees.

All works within Root Protection Areas shall remain subject to the approved Tree Protection Plan, Arboricultural Method Statement, final structural and geotechnical design, and instructions of the project arboriculturist.