

Helical Piles

Helical piles, also known as screw piles, are constructed using steel shafts with helical flights of various sizes to suit the loading required and ground conditions present

Roxborough install Helical Piles with Excavators ranging from 3T- 20T, depending on project size and access. All piles are installed with a torque motor attachment which monitors the torque achieved during installation to verify the design criteria is met. Multiple piles can be added via a bolted connection to complete the total pile depth.

Helical flights along the shaft penetrate the soil without auguring, displacing the soil, whilst the torque is carefully monitored as the pile is installed. The final torque reading is taken over the last 2m of Installation to ensure the pile is achieving the required design before terminating at the correct bearing strata.

Larger loads can be restrained by simply increasing the pile diameter and wall thickness, size of helix plates and helix quantity on each pile. Each project is individually analysed to ensure the local conditions are adequate for the project specifics. Keller will assist the client to propose the most economical solution for their project in line with the client's requirements for programme and budget.

On completion, the top of the pile can be connected in various ways to the structure by a direct steel flange plate connection or plate/rebar connection to concrete.



Advantages of Helical Piling

- ✓ No noise or vibration during installation
- ✓ Can be installed in most soil conditions including contaminated soils
- ✓ Piles can be reused if a temporary application
- ✓ Loads can be applied Instantly, reducing programme time and cost
- ✓ Is not weather depending
- ✓ No spoil from the process



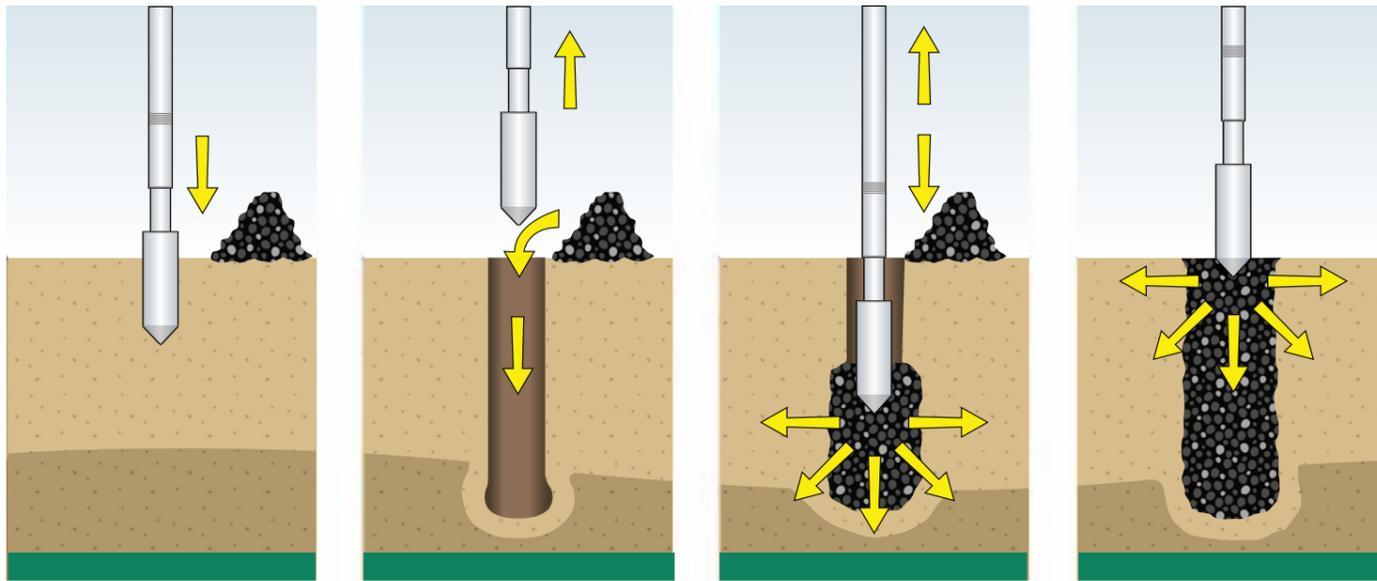
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Vibro Stone Columns

Vibro stone columns (**VSC's**) are a ground improvement technique which improves weak soils with the installation of densely compacted columns made from stone or aggregate via vibration.



The vibrating vibroflot on the purpose built rig penetrates the ground until reaching the required design depth for the columns.

The vibroflot is then raised out of the hole and aggregate is poured in via a hopper on the rig.

The vibroflot is then lowered again compacting the stone within the soils around it. This process is repeated until there is a densely compacted column created.

The stone columns and the confining soils form an integrated foundation support system having low compressibility, improved load bearing capacity and decreased settlement. In cohesive soils the columns act as reinforcement and provide a drainage path for excess pore water.

Advantages of Vibro Stone Columns:

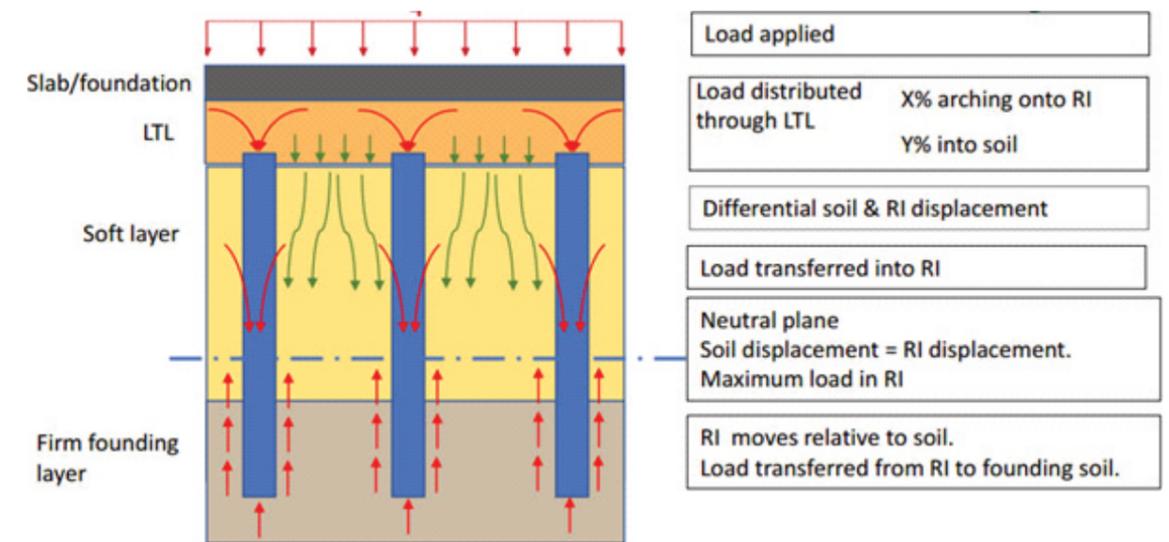
- ✓ A **very versatile** Ground Improvement method that can be adjusted to a wide variety of soil conditions and foundation requirements.
- ✓ A **time and cost-effective** solution when dealing with poor ground. As there is no spoil this ensures there is no expensive waste to landfill. The method enables the contractor to utilise standard shallow footings which, in turn, leads to additional savings.
- ✓ Vibro Stone Columns require no cement, concrete or steel, along with being spoil free, this considerably reduces the carbon footprint to make Vibro Stone Columns a very **sustainable ground improvement solution**. Recycled aggregates can also be used for installation when available.
- ✓ **Lower noise and vibration** compared to traditional piling methods makes it an ideal method for works near existing buildings or environments.

Rigid Concrete Inclusions (RCI's)

Rigid Concrete Inclusions (RCI's) are a Ground Improvement method using unreinforced, concrete columns installed in very soft soils to meet settlement criteria and improve bearing capacity for support of shallow foundations and a ground bearing slab of a structure.

They are considered ground improvement because they are not structurally connected to the building they support.

In addition to the RCI's, an essential element of rigid inclusion ground improvement is the load transfer platform, or LTP/LTL. This is a layer of granular, structural fill that bridges the load between the RCI's and prevents too much point stress on the footing.



Where do Concrete Rigid Inclusions Fit In?



Cohesive soil – undrained shear strength

