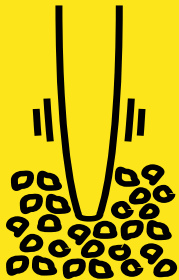


Vibro Stone Columns

Vibro Stone Columns are densely compacted aggregate columns installed in soft cohesive or loose granular ground to improve the load bearing capacity and to control settlement. They are commonly used on low rise residential, commercial projects for foundations and ground bearing floor slabs as well as infrastructure project for embankments, tanks, or silo bases and anywhere else an improved bearing capacity is required.



DESCRIPTION

Vibro Stone Columns are a popular method of enhancing geotechnical properties of poor soils. This technique improves weak soils by the installation of densely compacted columns made from stone or similar materials. Columns are constructed using a vibrating steel poker to create a void which is backfilled with compacted aggregate. The displacement process reinforces all soils in the treatment zone and densifies surrounding granular soils.

There are two installation methods for Vibro Stone Columns; top feed and bottom feed.

Columns can be installed in groups under isolated loads or directly under linear loads such as strip footings. Treatment depths of up to 8m are possible. Column diameters are between 400mm to 600mm and are constructed from either quarried stone or washed, screened recycled aggregate. Columns can be arranged in a grid pattern to provide support to uniformly loaded structures such as ground floor slabs and embankments.

APPLICATIONS



Residential sites



Commercial sites



Infrastructure

ADVANTAGES



Minimal spoil



Quick process



Versatile



Reduced total and differential settlement



Improved bearing capacity



INSTALLATION

During the top feed process, the 'probe' is checked to ensure verticality, the vibrated probe penetrates to the design depth. The probe is withdrawn and charges of stone or graded aggregate is tipped into the bore using a side tipping loading shovel from the surface.

After the introduction of each charge of stone the 'probe' is reintroduced into the cavity to compact the stone and force it into the surrounding soils. This process is repeated to build up a compacted stone column terminating at working platform level.

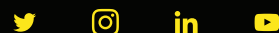
The bottom feed system is used where ground water is present and there is an increased risk of the hole collapsing when the poker is withdrawn. The method is similar to the top feed method except the stone is fed to the base of the hole through the hollow poker effectively lining the hole during column construction.

The tip of the bottom feed poker has a non-return gate that allows aggregate to flow into the base of the hole but prevents back pressure during compaction.

TECHNIQUE CAPABILITIES

SPECIFICATION	FROM	TO
Standard column diameter	400mm nominal	600mm nominal
Typical load capacity	Under floors 15-50kN/m ²	Under strip foundations and bases 100-150kN/m ²
Practical depth	2m	8m

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