

Ground Improvement Specialists

Vibrocompaction

Introduction

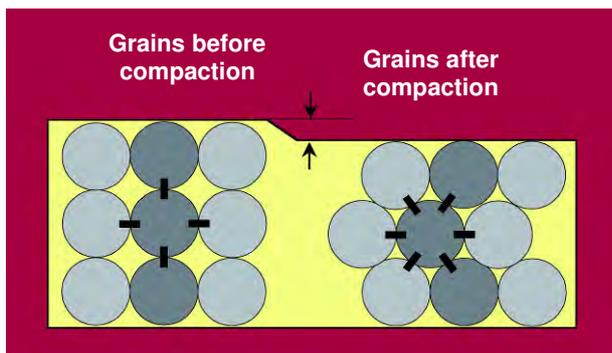
A loose soil or non-homogeneous granular fill can be compacted to depth by the penetration of vibrating probes or vibroflots. The main purpose of Vibrocompaction is to increase the density of the insitu soils by vibration.

The maintained vibrations and the addition of water via jets along the probe lead to localised liquefaction of the soil, allowing the grains to rearrange in to a denser arrangement.

The grid and depth of compaction points will depend on the initial characteristics and the design criteria to be reached. A flexible design approach can then deliver a uniform result.



Vibro Compaction works at London Gateway Port



Vibro Compaction of marine caissons

In non-cohesive granular soils, such as sand and gravels, the passage of the vibrating probe causes a localised liquefaction and an almost immediate densification and settlement. In cohesive soils, the vibrating probe after withdrawal leaves a hole which is then filled with granular aggregates.

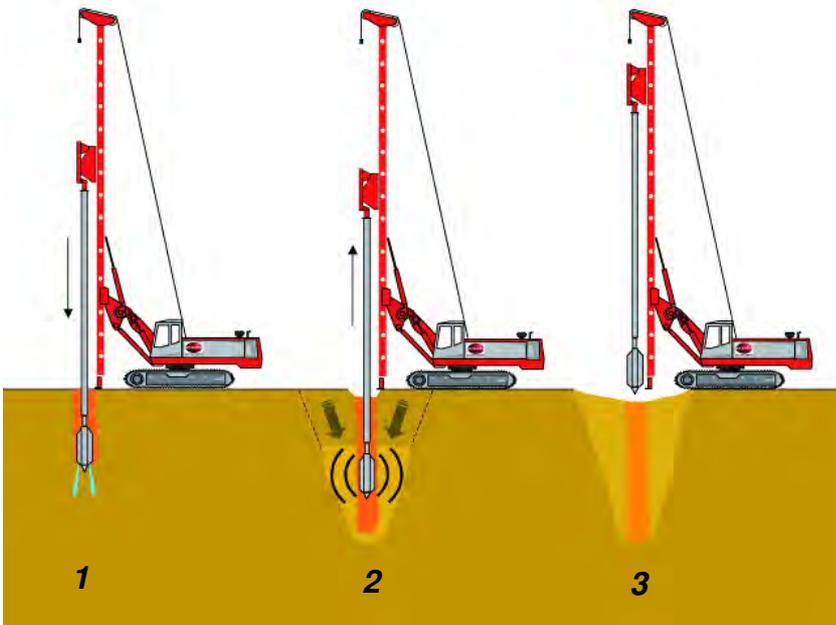
Advantages

- Effective treatment at depths 2m to >20m.
- Optimised and localised treatment offering flexible solution for differing soils.

Applications

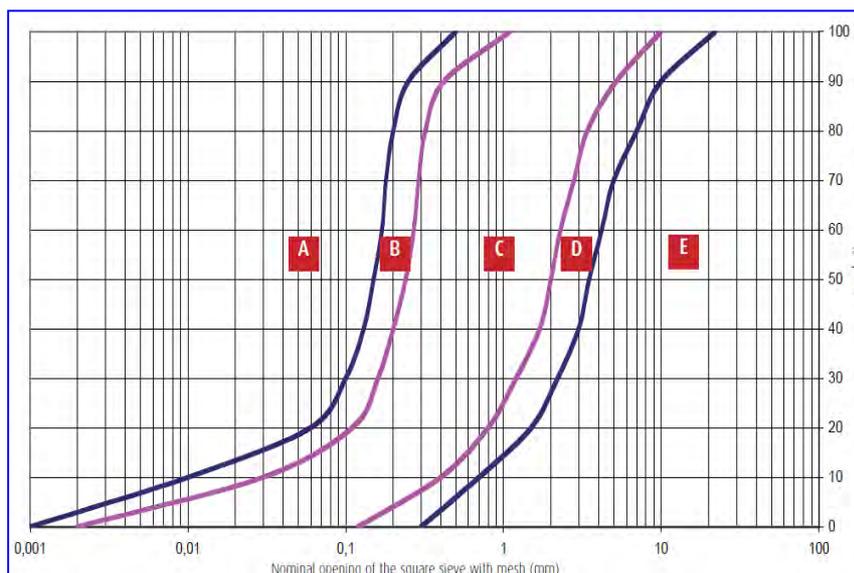
- Improvement of hydraulic fills and dredged fills for platforms, embankments, & foundation
- Anti-liquefaction treatment of soils

Vibrocompaction



1. Using the rigs pull down force, water jetting and sustained vibration allows the probe to penetrate to the design depth.
2. Water jetting is then decreased, and the resulting soil cone facilitates the re-arrangement of the soil particles. Granular fill can then be incorporated at the surface (top feed) into the created void. The water flow down the vibrating probe assists in the transportation of the backfill down to the compaction zone at the vibrating probes base
3. The vibrating probe is gradually lifted to produce a cylinder of compacted ground of 2-4m diameter, depending on the soil and vibroflot used. This densification creates a conical crater, that is then filled with the granular backfill, as the probe is removed

SOILS SUITABLE FOR VIBROCOMPACTION



Grading of Granular Soils suitable for Vibro Compaction

Zone A

These soils unsuitable for Vibrocompaction.

Zone B

Suitable for Vibro Compaction, but settlement time may be relatively long.

Zone C

Soils ideal for Vibrocompaction, fines content <12%.

Zone D

Vibrocompaction may be possible, but operational difficulties may arise.

Zone E

Generally not suitable for Vibrocompaction as larger sized boulders may resist the penetration of the Vibrocompaction probe.