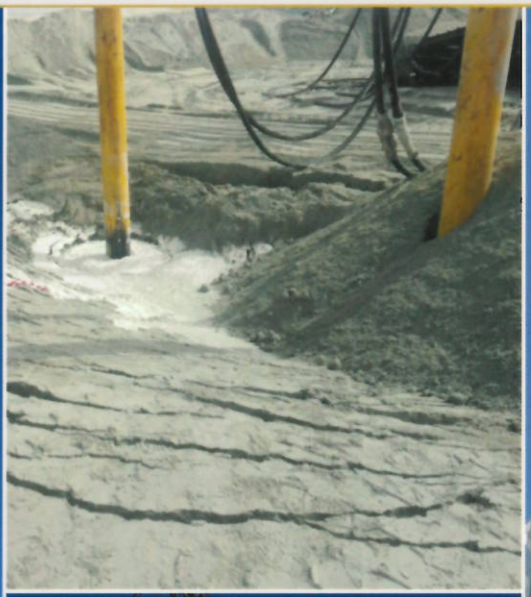

GROUND IMPROVEMENT
USING VIBRO TECHNIQUES

Ammico

Passion for Excellence

Introduction

Ammico has developed its own state of the art Vibroflots which can treat soils to almost any depth .

Ammico is a specialist geotechnical contractor with forty eight years international experience. Over these years, we have developed expertise that is second to none in the areas of ground engineering and installation of deep foundations.

Ammico's Ground Improvement Division serves the customers who are looking to improve properties of weak soils. We carry out soil improvement using following techniques:

- Vibro Compaction
- Stone Columns
- Dynamic Compaction
- Dynamic Replacement
- Jet Grouting

About Ammico

Ammico is a leading specialist geotechnical contracting company having forty eight years international experience and the GCC region has been the focus of its activities since Year 2000. During this period, Ammico has established unmatched reputation for speedy and timely execution of major foundation engineering projects to world class quality and safety standards.

Ammico owns significant state of the art plant which includes over three hundred units of heavy equipment comprising of diaphragm wall cutters, hydraulic rotary rigs, micro-piling and anchoring rigs, crawler and mobile cranes up to 250 Tons capacity, excavators, dump trucks, grouting plants and pumps, piling vibratory hammers, impact hammers, large diameter RCD drilling rigs and various types of Vibroflotation and other ground improvement plant and equipment. It invests heavily every year in maintaining this plant in prime working order and in procuring additional equipment as per upcoming requirements.

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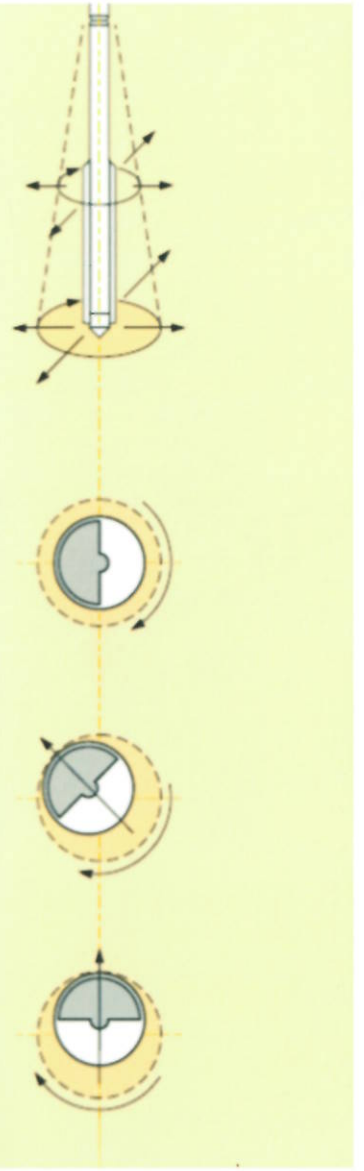
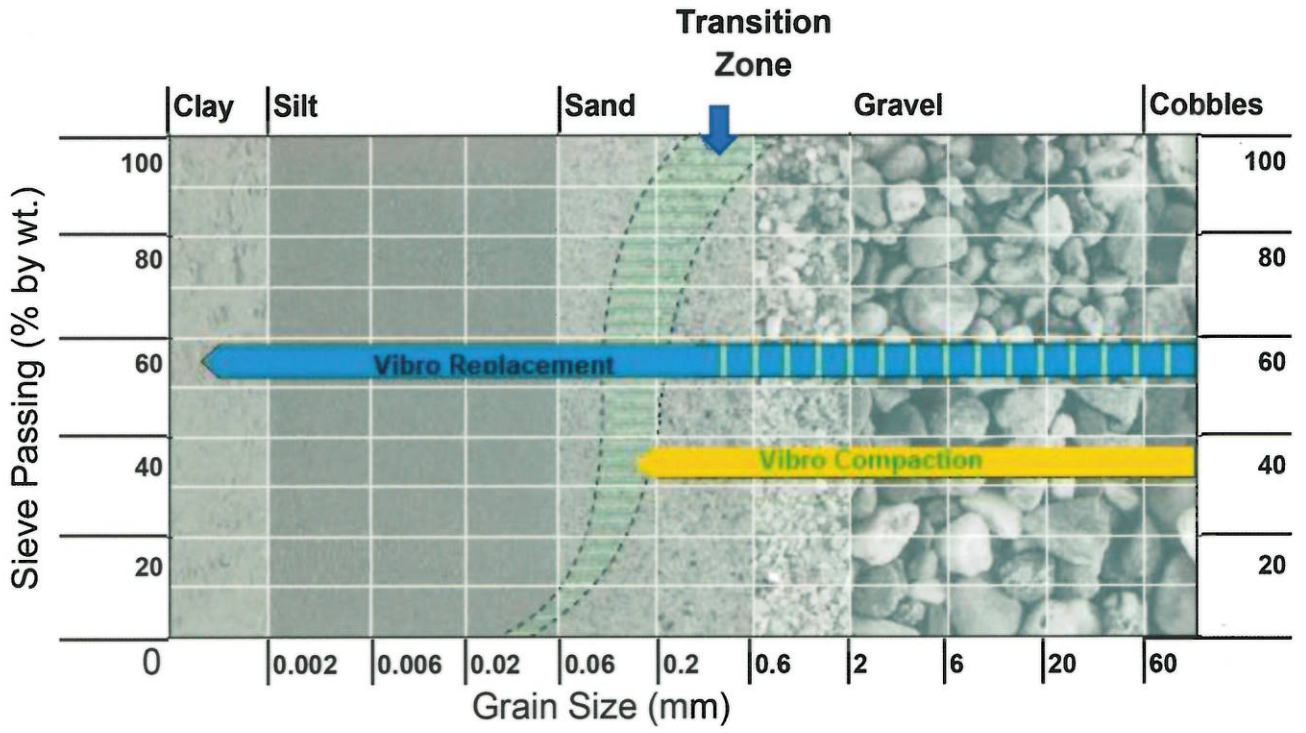
Ground Improvement

When the in-situ soil cannot fulfil the requirements set by design loading conditions, ground improvement can provide an economical solution to obtain the desired parameters for carrying the load of the structure and/or for limiting settlements.

The depth vibrator comprises of an eccentric weight which is rotated with the help of an electric motor. The rotation of the eccentric weight causes vibrations in the Vibroflot body as a result of which the soil particles within the zone of influence are rearranged and compacted. The range of this zone depends on the power of the vibrator and the properties of the soil.

The Vibroflot is used for two different techniques of ground improvement namely Vibro Compaction and Vibro Replacement (also known as Stone Columns). The chart below shows the applicability of each of these methods to different soil types.





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Vibro Compaction

Vibro Compaction is a ground improvement technique used in granular soils such as loose sands, gravels and hydraulic fills. As the vibratory probe is inserted into soil, aided with water jetting, localized liquefaction is created which allows soil particles to re-arrange into a denser state due to vibrations of the Vibroflot. This technique is quite effective even for large depths.

Vibro Compaction increases the bearing capacity of soils, reduces total and differential settlements and mitigates the risk of liquefaction during earthquakes.

Stone Columns

Stone columns or Vibro Replacement is a technique for ground improvement which primarily enhances the performance of weak and organic soils. Stone columns reduce the potential for liquefaction of the soils during an earthquake. Vibro replacement or stone columns improve the resistance of soils to liquefaction by the following mechanism:

1.Vibro replacement or stone columns reinforce the original & weak soils.

2. Stone Columns improve the drainage of earthquake-induced pore water pressures

Thus stone columns increase the bearing capacity of soils, reduce total and differential settlement and mitigate the risk of liquefaction during earthquakes.

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Key Benefits

The deep vibro techniques present a very versatile ground improvement method that can be adjusted to a wide variety of ground conditions and foundation requirements. Its execution is comparatively fast even if large volumes of soil are to be improved. Consequently, subsequent structural works can follow very quickly. The soil improvement that is achieved enables the contractor to utilize standard shallow footings which, in turn, leads to additional savings.

Another advantage is the environmental friendliness of the deep vibro techniques as natural and in situ materials are used. In addition, only a relatively small quantity of soil is removed in the process .

Additionally, vibro techniques are having very low carbon footprint compared with other techniques.

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Vibrator Details

Model	HV-180	HV-260
Frequency	60Hz	60Hz
2xAmplitude	18.9mm	32mm
Drive	Electric Motor	Electric Motor
Motor Capacity	180KW	260KW
Rated Current	350A	500A
Centrifugal Force	276KN	520KN
Rated Voltage	380V	380V
Weight of assembly	2586Kg	3280Kg
Outer Dia	426mm	450mm

Contact

Ammico Foundations LLC
P.O Box 392260, Dubai
T: +971-4-224 89 42
F:+971-4-224 95 42
Email: uae@ammico.biz

Ammico Contracting Co. W.L.L.
P.O. Box 14330, Doha, Qatar
Tel.: +974 4488 6531
Fax: +974 4488 6507
Email: qatar@ammico.biz

Ammico Contracting Co. L.L.C
P.O. Box 898, Postal Code 116
Muscat - Sultanate of Oman
Phone: +968 2434 9916
Fax: +968 2434 9917
Email: Oman@ammico.biz

Ammico Int'l Contracting Co. Ltd.
P.O Box 9530, Jeddah 21423
T: +966-1267 11141
F: +966- 1267 111 56
Email: jeddah@ammico.biz