

OCTOBER 14 2009 MEETING

Wednesday, October 14, 2009
5:00 - 6:30 pm

TECHNICAL PROGRAM

Ground Improvement

Speaker: [Marty Taube](#), with [DGI-Menard, Inc.](#) in Metairie LA, Tel. No. 504-836-7412 x350

Mr. Taube has a BS degree in geophysics from Virginia Tech and an MS degree in Geotechnical Engineering from the University of Pittsburgh and is licensed as a professional engineer and professional geologist in Pennsylvania, and currently chairs the Deep Foundation Institute's Ground Improvement Committee.

PRESENTATION SUMMARY

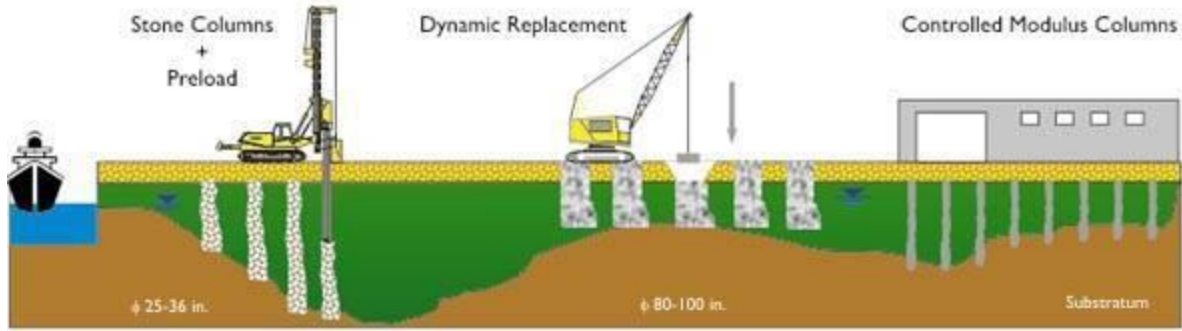
To an audience of about 75 people at the Hess Club, Marty Taube, Director of Business Development with DGI-Menard, Inc. presented "Ground Improvement".

Mr. Taube's presentation provided an overview of ground improvement issues and solutions. When possible, developers should select locations where the ground is sufficiently stiff and minimum work will be required to support their structures. However, many of the remaining areas that are available to build on have less than desirable ground conditions and the ground cannot adequately support the new construction. Historically, it was necessary to excavate and replace soft ground, or install deep foundation systems such as piles or shafts.

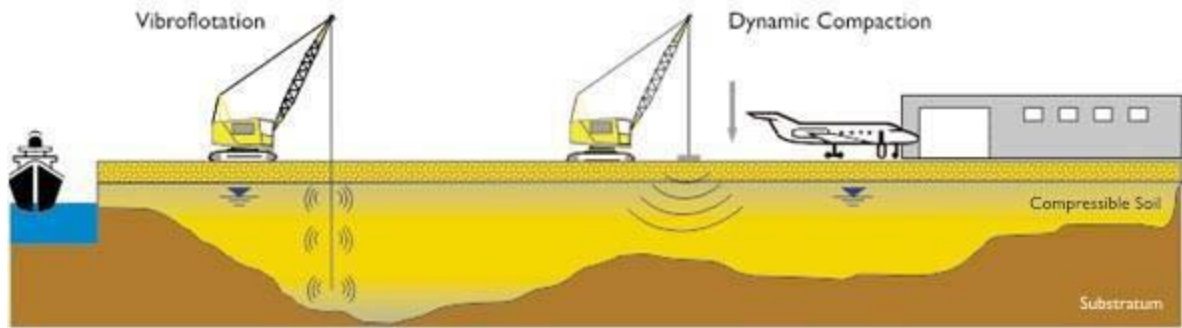
Ground Improvement is commonly used to support and expedite construction of earthen structures, storage tanks, and a wide variety of buildings and structures.

Today there are a wide variety of ground improvement techniques available for stiffening soft ground. Techniques suited for the soft clays that are prevalent throughout the Gulf Coast were discussed and include Wick Drains, Controlled Modulus Columns, Vibro Stone Columns, and Vibro Concrete Columns. DGI personnel pioneered Wick Drains (Prefabricated Vertical Drains) in the US and Menard further advanced the use of Wick Drains internationally with the introduction of [Menard Vacuum Consolidation](#). Wick Drains are typically used to accelerate the consolidation of fine grained soils. DGI-Menard has developed its own range of Wick Drain installation equipment to meet a wide variety of soil and site conditions. Some of these techniques are shown in the graphics below.





COHESIVE SOILS: Clays, Silts, Peats



GRANULAR SOILS: Gravel, Sand, Fill

These ground improvement technologies essentially involve two different approaches: improvement with or without additional material.

To improve granular soils (sand, gravel), without the use of additional materials, densification is primarily achieved by means of vibration. For cohesive soils (clay, silt), consolidation by pre-loading (constructing an embankment surcharge or applying a vacuum) can be significantly accelerated through the use of a drainage system.

The techniques of improvement with the use of additional materials consist of making flexible, rigid or semi-rigid vertical inclusions (columns) in compressible soil layers. These inclusions are laid out following a regular surface grid. The inclusion material is either dry and cohesionless (stone columns and dynamic replacement pillars) or grout based products (controlled modulus columns and vibro-concrete columns). The resulting consolidated soil layer behaves like a composite material with improved characteristics.

The following diagram indicates the selection of ground improvement technology based on soil type and the depth of the compressible ground

