

March 2014

Public strategy – Geotechnical Engineering Research Group

Research focus

Experimental characterisation and constitutive modeling of geomaterials

Subject explanation

The overall focus of the group is to improve our understanding of the engineering properties and behaviour of geomaterials in general and Danish soils in particular, and to develop constitutive models to better represent the observed strength and deformation behavior of these materials. The research is currently focused in the following areas;

- i) characterisation of the strength and deformation behavior of very high plasticity stiff clays,
- ii) correlations between geophysical, geological and geotechnical properties in Danish stiff clays,
- iii) influence of time, strain rate, structure and destructuration in stiff clays and artificially structured soils and
- iv) development of constitutive models to include these effects.

The research is conducted using a combination of experimental (laboratory and field tests) and numerical (FEM and DEM) methods and will be carried out in close cooperation with partners from industry, research institutes and other universities.

Applications

The research, though focused on Danish soils, is expected to be generally applicable to soils, and will therefore be of major interest internationally. Ultimately the aim of the research is to improve our ability to understand, simulate and predict how soils interact with structures in order to achieve a more economical design of engineering structures in contact with soil and to avoid unintentional failures resulting from a lack of knowledge of the engineering properties of the soils.

Disciplines

- Soil Mechanics
- Experimental Geotechnics
- Characterisation of geomaterials
- Constitutive modeling
- Laboratory testing
- In-situ testing
- Field monitoring
- Finite Element modeling
- Soil-structure interaction
- Strength and deformation behaviour of geomaterials