

BASIC CORRELATIONS BETWEEN GEOTECHNICAL PARAMETERS

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The most important result of a geotechnical study is the set of geotechnical parameters that will be used in the final design calculations.

Some of geotechnical parameters are determined by easy, faster and cheaper methods simpler, faster, and cheaper, while others require a long time, more complicated methods and, therefore, are more expensive.

Because of this, the usual practice is the application of geotechnical correlations between geotechnical parameters. These correlations can be based on field investigations or can be made between parameters determined only in the geotechnical laboratory.

There are a very limited number of parameters which can be obtained directly from geotechnical testing (in situ or in the laboratory).

Correlations between two or more geotechnical parameters depend primarily on the type of rock, their homogeneity and methods of testing (involving here standards, procedures and equipment).

Although extremely used, the method of determining geotechnical parameters by correlation is not always the most correct, but it can give a useful picture to the person who analyses the geotechnical data.

For example, in Romanian engineering practice standard penetration test is a very common method of in situ testing, for non cohesive soils with very good results, but for cohesive soils may occur often errors (for loess deposits, were the test give us a very high no of blows, instead of intuitive analyses, based to the higher porosity of loess formations, you should get much lower.)

For comparing correlations were chosen values of geotechnical parameters, with the following characteristics:

- All samples were collected from the same area
- All standard dynamic penetration tests (SPT) were performed by the same team with the same equipment
- All laboratory tests were performed in the same laboratory testing in a short period of time, at the same time (not determining successively in different years), by the same team of technicians
- No corrections or statistical interpretations were applied on the values. All values are the values submitted by the laboratory.

Were chosen four geotechnical parameters, considered to be among the most important in the calculation of geotechnical parameters namely:

- Consistency index
- Linear deformation module
- The angle of internal friction for soft non cohesive soils
- Cohesion for cohesive soft cohesive soils

Correlations are chosen to be simple, easily applied in a regular laboratory, not necessarily a research laboratory, the ultimate goal being to implement those correlations, in common practice in a geotechnical laboratory.