



## Empirical equation for several Geotechnical and rock Mechanical characteristics

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### Abstract

A series of empirical equations between several Geotechnical and rock mechanical characteristics are determined on eleven-site executive Datum. Geologic notations and statistical discussions are used for arrangement and intermixture of datum (laboratory test results and tests in boreholes). Because of many parameters have an effect on soil and rock mechanical and chemical behaviors, there are tried to neglect less important parameters. By determination of empirical equation, we can suitably presume of other parameters. Empirical equations are obtained by Relating following parameters:

- 1- Percentages of Sulphat, chalk and PH in soil.
- 2- Dry unit-weight, specific gravity and normal unit-weight.
- 3- Water content (normal) and water content (optimum).
- 4- Standard penetration test (Nspt) and allowable bearing (Qu).
- 5- RQD and lugun (permeability coefficient).
- 6- RQD and sampling depth in rocks.
- 7- Coefficient of consolidation (Cv) and coefficient of compressibility (Cc).
- 8- Others.

**Keywords:** Geotechnic, Empirical Equations, Rock Mechanical, Chalk.

## 1. INTRODUCTION

Determination of Empirical equation is difficult because of there are very parameters that those define soil and rock characteristics and all of them change simultaneously.

The important factors which affect rock and soil characteristic are different. In addition to the impact of the quantity and quality of soil minerals on the soil characteristics, following parameters are also important:

1. Kind and concentration cations into soil or water.
2. Degree of saturation of soil.
3. Compression percentage of soil.
4. Consolidation percentage of soil.
5. Manner of supply stress on soil & hydraulic gradient.
6. PH for soil & water.

This is impossible that can be provided all of the parameters in an empirical equation. So, by neglecting less important parameters and present several special classification and definition empirical equations for every particular class is trying to simplify the formulas. For determination of behavior and estimating of Geotechnical parameters on the site, in situation tests are very important. Because of budget problems, limited time, and other problems for Geotechnical investigation, number of boreholes and laboratory tests often are limited unfortunately. Sometimes Geotechnical investigation (at the second phases) and execution in the great national sites are parallel Geotechnical investigation deficiency and especially a lot of the construction and building in the Khozestan plain (This important province has all of the kind of problematic soils) and other hands factors there are raising the importance of empirical equations for estimating parameters. Relationship between two Geotechnical parameters without any other parameter is faulty. Because of many parameters are effected together in the soil or rock. But we can produce some of the equation between them (parameters). These equations can be used in the special site. There are many Geotechnical reports in the K.W.P.A archives from 1960 to this time. A lot of them are used in this research. Relationships between many of datum aren't produced, as we expected.