

SYSTEM FOR ESTIMATING THERMALLY INDUCED VOLUME CHANGE (TIVC) OF SOILS

Soil mass experiences temperature variation during several situations that arises out of natural phenomenon such as daily and/or seasonal temperature cycles or by virtue of various anthropogenic activities such as utilization of usage of energy piles for geothermal energy recovery by construction of energy geo-structures, deep disposal of nuclear waste, design of satellite launching pads, underground explosions during mining/oil exploration, laying of electrical cables and pipelines etc. In all of these situations, determination of behavior of soils, when subjected to elevated temperatures is critical. It is not only the mechanical loading, but also the thermal loading, as a result of temperature variation, that affects the engineering properties such as compressibility, shear strength and hydraulic conductivity of the soil mass. Hence, it becomes essential to quantify the effect of mechanical loading coupled with thermal loading on the engineering properties of soil, in order to predict its 'true' response.

Our invention provides a test setup, for establishing thermal deformations in terms of thermally induced volume change (TIVC) of soils and its measurement, wherein the soil sample gets exposed to elevated temperatures for a prolonged period, and the volumetric deformations undergone by it under these conditions can be recorded/monitored.