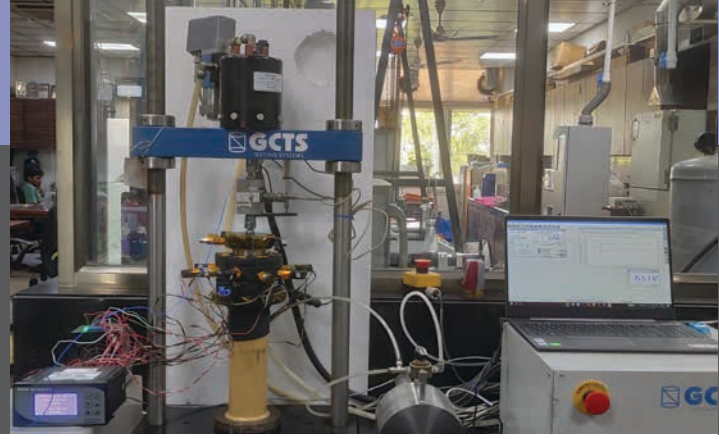
ThermCon-P: Thermal Consolidometer With Pore-Pressure Profiling



Problem Statement: Whether it is an underground utility such as cable wire or the design of a satellite launching pad, these activities generate heat near or surrounding the soil region. It will impact soil temperature and moisture, in turn impacting the soil ecosystem. The other contemporary activities of immense interest to researchers and professionals are the utilisation of geothermal energy, deep disposal of nuclear waste, pipelines and others. In any of these situations, soils get exposed to elevated temperatures resulting in the building up of pore-water pressure and suction in soil. Looking into the overall engineering properties of the soils change, it becomes essential to quantify them for the construction of these structures. The present study setup helps to determine these parameters and subsequently to design its foundation.

Uniqueness of the Solution: The invention of the thermal Consolidometer With Pore-Pressure Profiling facilitates the estimation of thermo-mechanically induced consolidation of soils. The uniqueness of the setup is that the pore-water pressure and suction that builds up in the soil specimen are recorded appropriately. Data and analysis required to compute the consolidation of the soil under various thermo-mechanical testing conditions can be determined precisely. The setup is also capable of simulating various thermo-mechanical stress loadings on the soil specimen.

Current Status of technology: The setup is calibrated, and preliminary results obtained are promising.

Societal Impact: The overall engineering properties of the soils change, and it becomes essential to quantify them for the construction of these structures. The present setup helps to determine these parameters and subsequently to design its foundation.

Patent(s): Filed

Relevant Industries: Environment, Geology, Construction (Geotechnical).

Faculty: Prof. D. N. Singh, Civil Engineering.