Hydraulic & Strength of Soil in Contaminated Environments

At Alliance, our triaxial permeability and triaxial strength setups have the capability to perform Contaminated and Non-Contaminated tests.

Many different proposed research methods and standards may be used, or alternatively, Alliance can customise the test method to suit our clients' requirements with respect to soil strength, pore water extraction with applied confining pressures, permeability and chemical composition of liquid outflow.

Capabilities

1. Permeability with chemical solution
2. Effluent pH/EC measurement
3. Consolidation inundated in chemical solution
4. Triaxial tests with chemical saturation
5. Porewater extraction
6. Chemical compatibility of reactive clays

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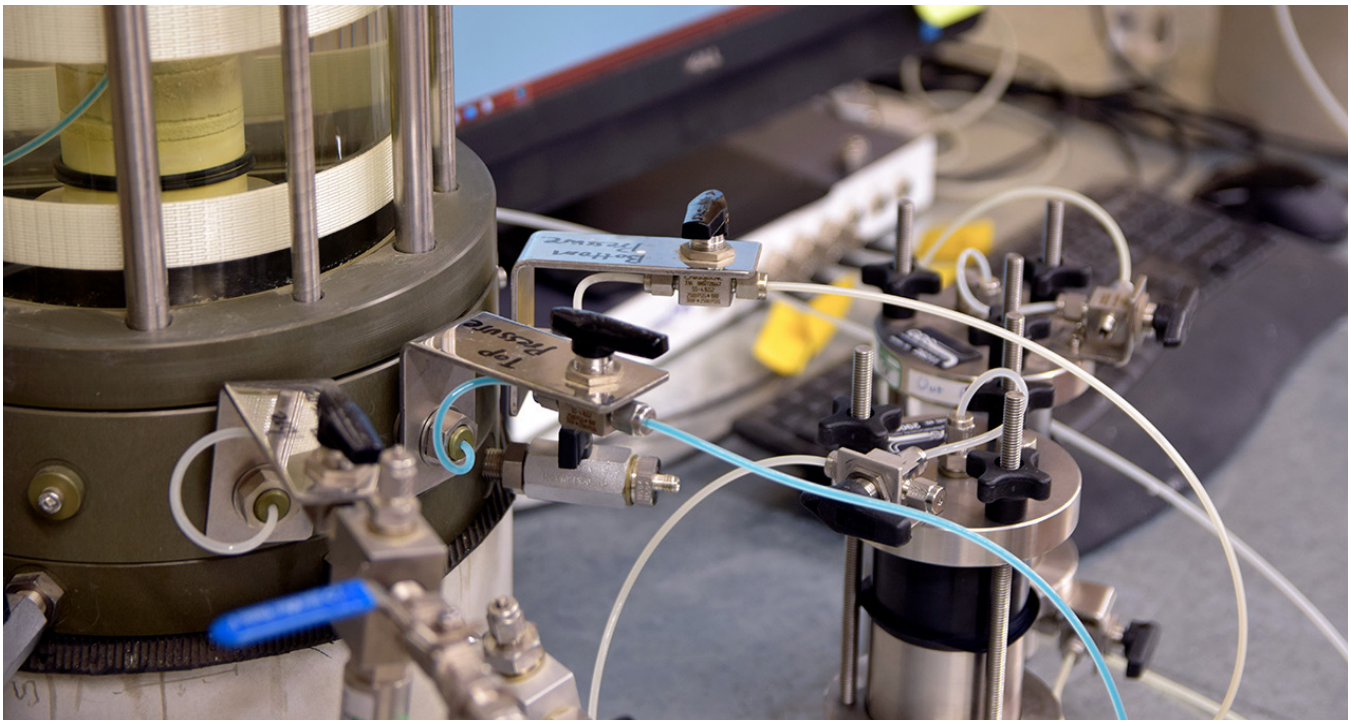
Conventionally, engineering characteristics of soils (e.g., shear strength, permeability, etc.) are tested without considering the influences of the in-situ environments. One of the factors that can affect soils' engineering behaviours is the chemical composition of the soil pore water or the groundwater. Researchers and engineering practices have been indicating that soils, especially clayey soils, can show very different strength and permeation characters while exposed to liquids with high chemical concentrations. Those liquids are commonly observed in landfills, tailing dams, coastline groundwaters, and industrial sites.

Similar conclusions can be made for stabilised soils as well. In modern civil engineering or road engineering, the stabilisation of soft or swelling clays using lime, cement, or other cementitious materials is widely adopted. However, most of the tests that are used to generate design indices, neglect the potential influences of the internal and external chemistry environments by using (a) short-term test schemes, and (b) tap water or distilled water. Meanwhile, in the real world, pH environment changes and attack of leachates (sea water intrusion in the coastal highway for example), may all pose a great danger on the strength and durability characters of those stabilised materials.



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