Services provided

The Laboratories for Soil and Rock Mechanics offer various services in the following sectors:

- **Geotechnical laboratory testing**
  A separate technical sheet gives a list of the tests currently offered by the laboratories. The LMS is equipped with computer-controlled triaxial cells (GDS), including tests on unsaturated soils. In addition, the laboratory of soil mechanics provides a climate controlled room for consolidation and strength tests in a controlled atmosphere (temperature, relative humidity), an X-ray apparatus for photographing the positions of lead shot in a sample undergoing deformation tests and various physical models for the study of groundwater flow. The laboratory of rock mechanics provides a hall for model testing, especially equipped with a large triaxial press (see detailed description), a base friction apparatus to simulate the behaviour of rock masses and a reinforced concrete tank for modelling the excavation of shallow tunnels in reconstituted materials.

- **Tests in the pithall**
  This is a special test installation made up of a deep pit (h = 8m) and a shallower pit, the hydraulic and thermal conditions of which may be controlled (h = 2m), which permit the execution of large-scale pile tests, rockfall impact tests, thermal diffusion and road surface behaviour tests.

- **In situ geotechnical tests**
  The laboratory of soil mechanics can carry out plate loading tests, density and moisture tests using the sand cone or rubber balloon method or by neutron and moisture probes, as well as strain measurements using inclinometry, extensometry, laser distometers (DICLAS) and settlement meters. These strain measurements may be isolated or continuous. In addition, piezometers may be equipped for the continuous measuring of water level or pore pressure. The LSM also possesses a self-boring pressuremeter.
  The LRM is equipped to carry out loading tests in tunnels and stress measurements using a large flat Jack to place monitoring equipment in tunnels and to provide continuous interpretation of the measurements (inward movement, pressures and deformations of supporting structures, deformations of rock masses).

- **Calculation of structures**
  The laboratories are equipped to carry out calculations of geotechnical structures of soil and rock masses using computational finite and discrete element software and can define the behaviour of structures or unstable masses.

- **Consulting**
  Consulting, legal or otherwise, may be trusted to the laboratory directors. According to the complexity of the problem, these studies may also be carried out in collaboration with other experts at the EPFL.