

## Geotextiles used as reinforcing

Over the last few years, the use of geotextiles has shown itself to be one of the most popular techniques for the improvement of soils and earth structures. Four roles, which may also be combined, are attributed to geotextiles: drainage, filtration, separation of layers with different grain size distributions and mechanical reinforcement.

This last aspect, which has been used after the other three, is now the source of a steadily increasing number of promising applications. The deformability and high strength of layers of geotextiles are, in effect, particularly well adapted to the mechanical properties of soil deposits. The design methods for structures reinforced in this manner are far from perfect and a sizeable research effort remains to be carried out. It is this aspect that the LSM decided to work on for over six years.

The research was initiated with tests on small-scale models using, in particular, the X-ray technique for the measurement of deformations inside the model. Then, large-scale tests on slopes reinforced with geotextiles were undertaken in the "halle fosses" test hall (Figure 1). These tests, carried out with layers of both woven and non-woven geotextiles, permitted the precise observation of deformation mechanisms and

failure of the reinforced slopes under loading cycles simulating roadway traffic (Figure 2). The analysis of the results of these tests will permit the improvement of design methods and the execution of more economical reinforcements than those constructed at the present time.

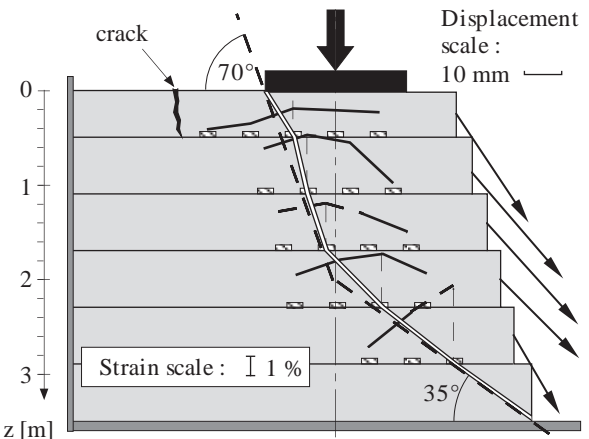


Figure 2: Deformations and failure mechanisms of a slope reinforced by layers of geotextiles

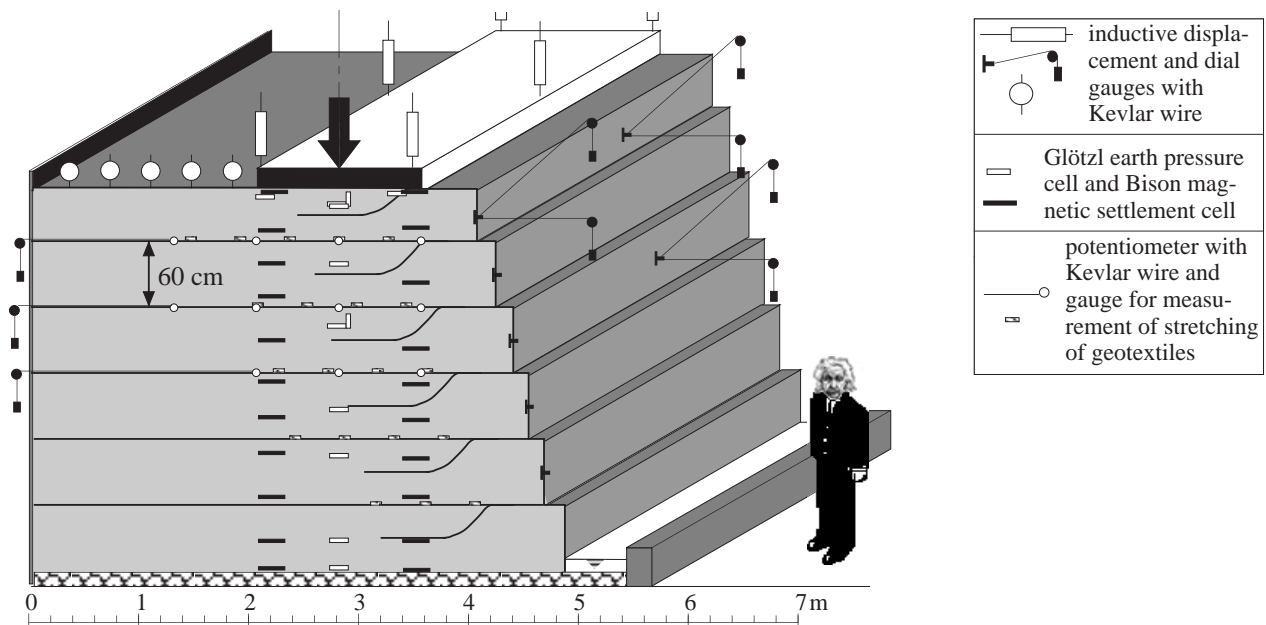


Figure 1: The large-scale model of a slope reinforced by layers of geotextiles

## Publications

Kharchafi M., Dysli M. - Mechanical performances of two experimental full-scale embankments reinforced by geotextiles. *5th Int. Conf. on Geotextiles, Geomembranes and related Products, Singapore, Sept. 1994.*

Kharchafi M., Dysli M. - Untersuchungen über geotextil-verstärkte Bauwerke. *K\_GEO92, Luzern, Mai 1992.*