

CASE HISTORY

Landslide consolidation in Boscaccia, Sondrio, Italy

PRODUCT	TENAX TT 400 SAMP geogrids
LOCATION	Boscaccia, Sondrio, Italy, 1990
OWNER	Office of Public Works Lombardy Region
PROJECT	Dr. Ing. Del Simone, Dr. Azzola
ENGINEER	PAC SpA, Capo di Ponte (BS)



PROBLEM

In July of 1987, following heavy rainfall and exceptionally large quantities of melting snow, the Adda river disastrously overflowed leading to both floods and the bursting of river banks. The rain and floods also led to numerous landslides through the Valtellina valley. One such landslide occurred in Boscaccia, in the municipality of Sondalo, in the province of Sondrio. The landslide in question involved gravely sandy soil which formed part of an alluvial cone; the total volume of the landslip was approximately 1.1 million cubic meters and the total height of the slope was approximately 50 meters. The problem involved both the stabilisation of the slope and the protection against erosion at the base of the slope: both of these tasks to be carried out taking into account the great scenic and tourist value of the area.



SOLUTION

The erosion protection at the base of the slope was achieved through the construction of a reef of large boulders extending 160 meters, and a reinforcing wall allowing the passage of water. In addition to the drainage trenches, the slope was stabilised by constructing 5 large terraces, each measuring 4 metres in height, 12.5 metres in depth and 130 metres in length, which were reinforced with TENAX TT 400 geogrid.



CONCLUSIONS

The construction of earth terraces reinforced with TENAX TT400 geogrids allowed:

- The construction of a 25 m high geogrid reinforced structure for stabilising the slope providing an overall slope safety factor of 1.9.
- The greatest simplicity in setting up the structure by re-using and improving the soil located on the site. During the project a team of 4 workers installed 33,000 m² of geogrids in 60 days.
- The creation of a 1:1 gradient terraced slope which is completely stable and grassed, achieving the maximum protection of the area's scenic attraction.

