MACCAFERRI

CASE HISTORY

Rev: 00, Issue Data 28.11.2003

SLOPE REPARARION IN A WASTE DISPOSAL

S.AGATA BOLOGNESE – BOLOGNA, ITALY

LANDFILLS

Product: Paragrid geogrids

Problem

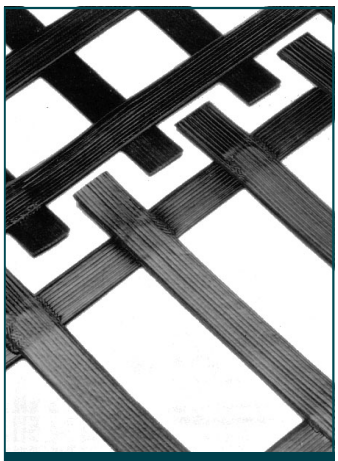
The landfill for AW and SUW at S. Agata Bolognese consists of disposal areas lying an average 4 metres below ground level and rising to a height of 20 m above ground level.
During the works for reconfiguration of one of the side slopes of the accumulated waste, a slip occurred over a length of approximately 150 m (photo 1). This instability was the result of the localised presence of a perched water table and materials with particularly poor mechanical characteristics, represented by lenses of mainly muddy components interbedded within the Solid Urban Waste.

During construction

Solution

Due to the limited size of the area in which to construct the works and relocate the waste involved in the landslide, the most suitable technique was found to be the construction of a compacted earth embankment reinforced with the high-strength polyester geogrid Paragrid 50/15S protected by a polyethylene sheath. The use of these geogrids enabled the embankment to be profiled with an internal face slope angle of 60°, thereby considerably reducing the base area of the embankment. In order to insert the works within the topography (photo 2) the slope angle of

During construction



Paragrid geogrids

During construction


Before construction


During construction

The embankment was made from silty-clay soils, placed in 0.30 m thick layers and compacted to the optimum density and moisture values in accordance with AASHTO T99-61 using a non-vibrating sheepsfoot roller. The geogrids were placed at 1.0 m vertical spacing, and are laid horizontally within the fill, which is compacted upon it. At the face of the structure, the grids are wrapped back upon themselves, encapsulating the backfill (photo 3). The final 0.60 m of the embankment facing the waste was made from gravel in order to form a sloping drainage layer against the embankment to avoid the formation of a leachate head (photo 4).
This drainage was connected to gravel-filled trenches immersed in the waste over the entire height (photo 5). As well as ensuring the removal of the leachate, these trenches reinforce the unstable materials which were re-located in-situ.
The drainage system described was connected to a drain, running along the toe of the embankment, which carries the leachate to a collection chamber and then on to the main chamber for removal of the leachate from the landfill.

Officine Maccaferri S.p.A.
Via JF Kennedy, 10 - 40069 Zola Predosa (BO) Italy
Tel. (+39) 051-6436000 - Fax (+39) 051-236507
E-mail: comes@maccaferri.com - Web site: www.officinemaccaferri.it