GEOTECHNICAL / REINFORCED SOIL WALLS
Product: Terramesh® System

Problem
Part of the Inanda Dam project included the development of the road infrastructure to access the dam. The geometry of the landscape required fill embankments for the new road surfaces along the mountainous terrain.

The remote location of the site added to the costs of importing materials and transportation of plant onto site. The predominant in-situ material consisted of a decomposed granite with a density of 2000kg/m³ making it suitable for the embankment fill. To minimise this fill, a near vertical retaining structure was required along the new embankment.

The consultant, Bradford Connin g, approached Maccaferri for assistance with the design of four retaining walls with average heights of 3m.

Solution
The initial designs by the consultant entailed a conventional mass gravity gabion structure with a large volume of rock - a quantity exceeding that available on site. The Terramesh® System, consisting of a gabion mesh cage with a continuous mesh tail as reinforcement, was chosen as it required less rock.

The final solution consisted of a 7m high Terramesh® structure with a 2m foundation depth. The mesh tails extended 4 metres into the earth embankment behind the gabion facing. The gabion front face consisted of horizontal steps of 220mm and vertical steps of 500mm up to a height of 2m followed by steps of 1,0m. The smaller units at the base reduced bulging and enhanced the stability of the structure.

Client name:
KWAZULU-NATAL DEPARTMENT OF WORKS
Main contractor name:
HORST PLANT
Consultant:
BRADFORD CONNING
Product used:
TERRAMESH® SYSTEM
Construction info:
Construction date: 1994
Completion date: 1994
Benefits
The incorporation of the Terramesh® system substantially reduced the quantity of rock needed. As a result, the total cost of the project was also reduced. Most of the rock suitable for the gabion filling was sourced directly from site thereby obviating the need to import fill material.

Construction was undertaken by Horst Plant with local labour being utilised for the rock packing, the lacing and bracing and laying of the units on site. The use of gabion related products reduced the need for heavy plant to construct the structure and provided a labour intensive solution - thereby empowering the local community.