

DRIE BRUGGIES
DRIE BRUGGIES, WESTERN CAPE

HYDRAULIC & EROSION CONTROL / CULVERTS

Product: Reno Mattresses®

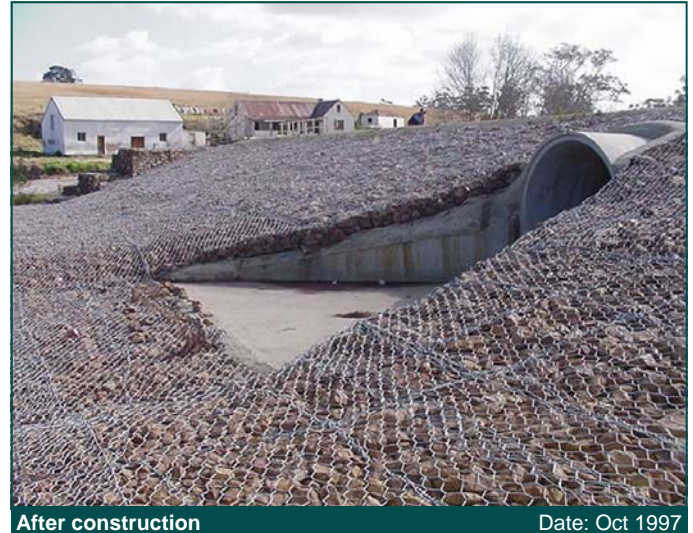
Problem

Ninham Shand, Consulting Engineers, were approached and appointed by the Provincial Administration, Western Cape Branch Transport, to repair a section of road approximately 300m in length, damaged during the flooding of the Southern Cape area in 1996. The portion of the road in question is situated along divisional road 1599 and consists of a dyke-type embankment, built across the floodplain of the Witels River, linking the George-Blanco area with the Great Brak River. This road has three bridge structures, hence the name, "Drie Bruggies" and two pipe culvert structures.

The extent of the damage involved a substantial portion of the road fill to be washed away and some of the bridge foundations to be undermined. The repair of the Drie Bruggies road was of critical concern to the community because the road is situated within an intensive agricultural area in the Southern Cape, and the accessibility of this route is vital to the economic well being of the community.

Another cause for concern was that it was determined that another flood of the same or greater magnitude to that of 1996 would result in similar damage to structures of a conventional nature.

The solution had to be economically efficient, conform to the Minister of Transport's policy of utilising local labour, and was to be accomplished with an allocated budget of R750 000,00.



After construction

Date: Oct 1997



After construction

Date: Oct 1999



After construction

Date: Oct 1999

Client name:

PROVINCIAL ADMINISTRATION, W CAPE

Main contractor name:

SOUTH CAPE DISTRICT COUNCIL

Consultant:

NINHAM SHAND

Product used:

RENO MATTRESSES®

Construction info:

Construction date: 1997

Completion date: 1998

Solution

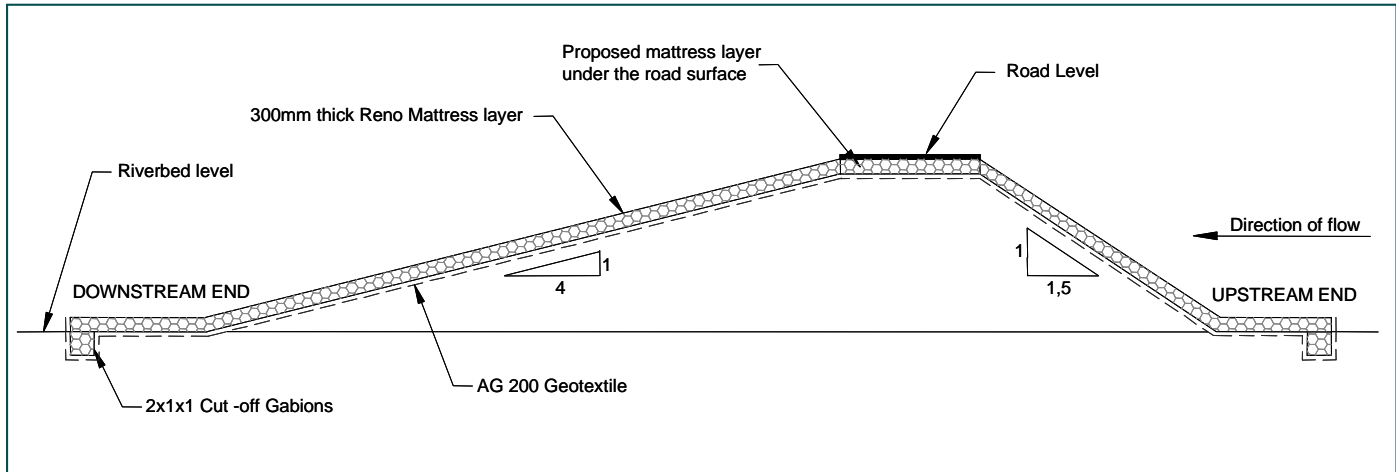
A spillway solution was considered the best option.

This was constructed of Reno mattresses® at an angle of 1:1,5 for the upstream slope, then extending under the road surface and down the downstream side of the embankment at a slope of 1:4.

The Reno mattresses® were secured on the upstream and downstream sides by means of 2x1x1 cut-off gabions extending into the river bed. As the existing culverts along the road did not have wing walls or return walls, as would normally be required for such structures, the wing walls and the return walls were also constructed in 2x1x1 gabion baskets.

Benefits

- The solution was labour intensive thus providing jobs for the local labour.
- The use of gabions was a more environmentally friendly solution than what could have been accomplished using any other method, such as concrete retaining walls.
- Because of the depth of the alluvium, ongoing settlement is expected and the inherent flexibility of a gabion solution provides the flexibility to accommodate the movement.
- By adding the mattress layer under the road, future repairs following floods can be carried out in the shortest of time, with the least possible effort and cost.



Typical Section

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