

**DRIE BRUGGIES**  
**DRIE BRUGGIES, WESTERN CAPE, SOUTH AFRICA****Excavation Consolidation and Reinforcement****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.

**Solution**

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.

A Sloping Reno mattress solution was adopted around the Pipe culvert openings and the trapezoidal slopes of the river geometry.

Gabion mass gravity wing walls protected the sides of the bridge structures.

All the different products tied into each other to form one monolithic structure enhancing the longevity of the solution.

**Client:** PROVINCIAL ADMINISTRATION, W CAPE**Designer / Consultant:** NINHAM SHAND**Contractor:** SOUTH CAPE DISTRICT COUNCIL**Products used (Qty.)**

- Reno Mattress unknown

**Date of construction:** 01/1997 - 01/1998**After construction****After construction**



After construction



Typical Section