

HARRISON ROAD WASHAWAY

Kwa-zulu Natal

MECHANICALLY STABILISED SLOPES**Product: Green Terramesh™, MacGrid® WG05****Problem**

A water mains beneath Harrison Road and adjacent to the N3, in Cato Ridge in KwaZulu-Natal, burst causing a sudden saturation of the 9m high embankment which stood at a natural angle of 45degrees. The additional loading on the bank resulted in a slip which extended to the middle of the gravel top road. The large slip adjacent to the road was highly visible to the passing traffic from N3. Only half the road was accessible to the traffic which included the construction vehicles used during Ethekewini Municipalities water supply upgrades project in the area.

Solution

Maccaferri was approached by the client to provide advice and design assistance for this project. Preliminary designs were prepared and submitted to the municipality. Following the clients request for design indemnity, one of Maccaferri's preferred sub-consultants - GAPCON was appointed to undertake the final design.

The solution comprised the repair of the pipe as well as the reinstatement of the road embankment to the pre-failure embankment angle. Ethekewini municipality undertook the pipe design and repair, whilst GAPCON designed the new embankment.

The embankment design entailed a Terramesh™ toe on which Green Terramesh™ units were placed along the embankment profile. The Green Terramesh™ units were stepped back to provide the required angles of the embankment. In addition to the double twist wire mesh tails, the tails were further extended using MacGrid® WG06.

The structural fill comprised a 95% MOD Granular backfill with vegetated topsoil immediately behind the front face of the 70 degree front face. The front face was allowed to vegetate naturally. Additional drains and sumps were created to carry storm water from the road down the 9m high embankment.

Client name:

ETHEKEWINI MUNICIPALITY WATER SERVICES

Main contractor name:

WK CONSTRUCTION

Consultant:

GAPCON

Product used:

GREEN TERRAMESH UNITS, MACGRID WG05

Construction info:

Construction date: FEBUARY 2010

Completion date: APRIL 2010



PHOTO 1 - Slip failure showing the pipe failure



PHOTO 2 - Slip failure showing the impact on the road



PHOTO 3 - Slip failure as seen from the N3

Benefits

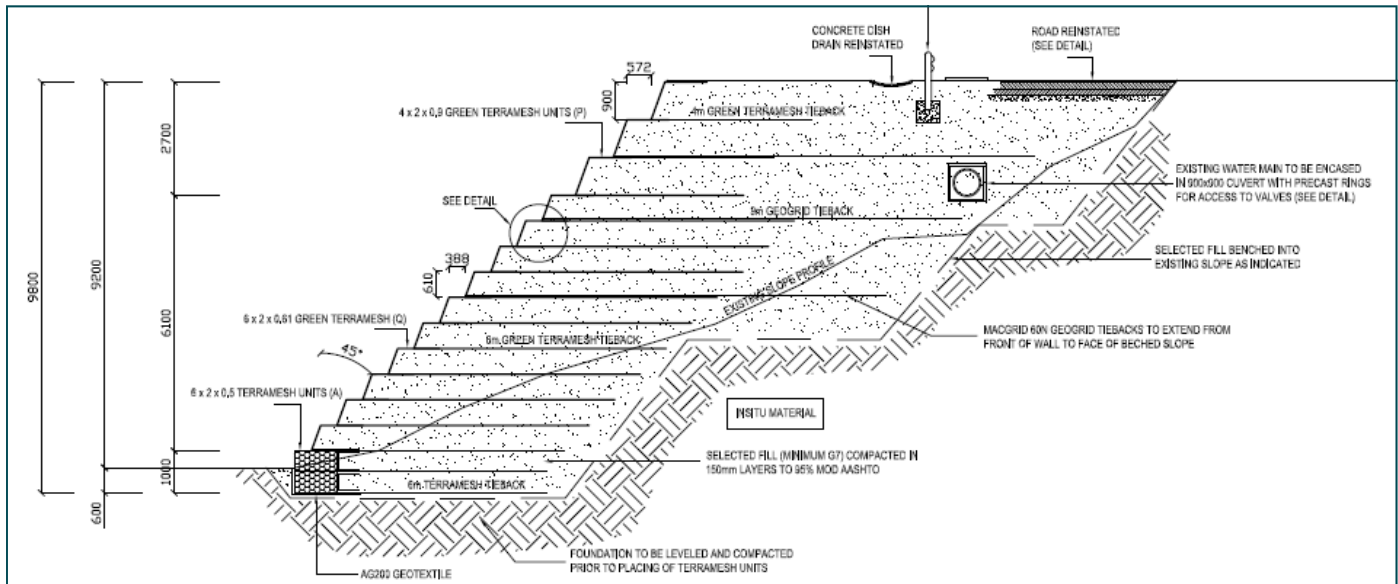
- The highly visible slip surface was to be repaired so as to minimize aesthetic impact. Green Terramesh™ reinforced slopes were vegetated using local vegetation to allow the “blending in” of the engineered solution.
- As a fill exercise, the soil reinforcement option, best supported the repair.
- The installation of the units is quick and easy with no formwork required for the front face. This ease of installation meant that the construction speed was governed by the earthworks rather than the installation of the front face.



PHOTO 4 - Vegetation establishing naturally



PHOTO 3 - Front View of the completed structure



Typical cross section

Maccaferri SA (Pty) Ltd

HEAD OFFICE—DURBAN
P O Box 815, New Germany, 3620
Tel: +27 31 705 0500
Fax: +27 31 705 0585
e-mail: dbnsales@maccaferri.co.za

JOHANNESBURG
P O Box 2285, North Riding, 2162
Tel: +27 11 704 0160
Fax: +27 11 704 0159
e-mail: jhbsales@maccaferri.co.za

CAPE TOWN
P O Box 22150, Fish Hoek, 7974
Tel: +27 21 788 1210
Fax: +27 21 788 1204
e-mail: cptsales@maccaferri.co.za

EAST LONDON
P O Box 5481, Greenfields, 5208
Tel: +27 43 731 1580
Fax: +27 43 731 1584
e-mail: ecsales@maccaferri.co.za

MADAGASCAR
BP 168 Antananarivo 101, Madagascar
Tel: +261 20 22 231 02
Fax: +261 20 22 553 90
e-mail: maccaferri@moov.mg

