

GEOSYNTHETICS

TenCate Solutions for basal reinforcement



Protective Fabrics
Space Composites
Aerospace Composites
Advanced Armour

Geosynthetics
Industrial Fabrics
Grass

 **TENCATE**
materials that make a difference

EMBANKMENTS ON SOFT SOIL

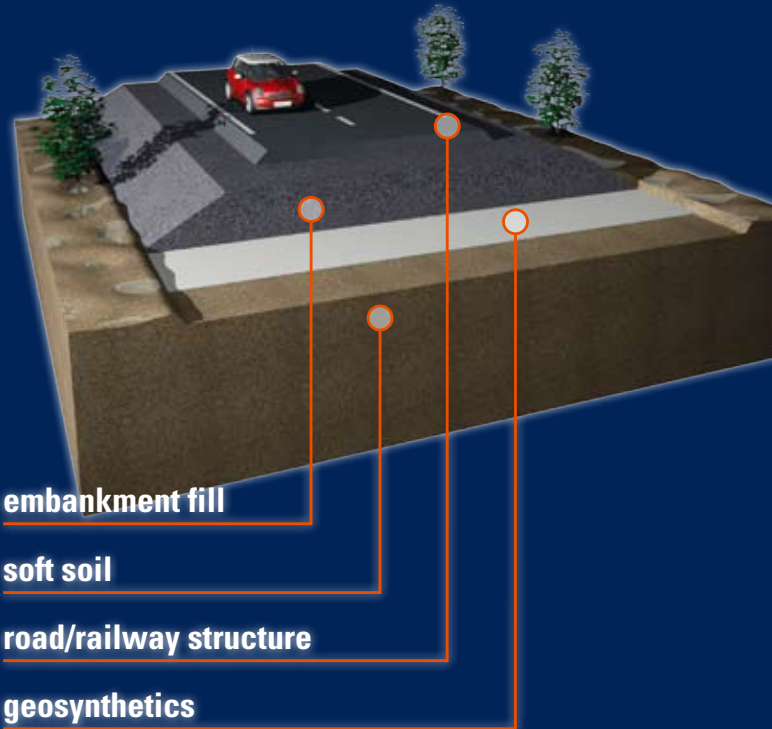
Reinforcement over soft soil

Geosynthetics reinforce the shear stresses of the fill material leading to an increase of the foundation bearing capacity.

High strength geosynthetics provide a cost effective solution to achieve a greater and quicker stability of embankments constructed on soft foundations. Geosynthetics allow:

- Optimum embankment height over a minimum area
- Steeper side slopes
- Increase in construction speed with no loss of stability
- Resistance to outward movement of the embankment

Geosynthetics reinforce the embankment foundation



TenCate Geosynthetics over soft soils

TenCate Geolon® and TenCate Rock, made from high tenacity PET, PP or PVA, meet the highest demands of the site:

- Strength up to 1600 kN/m to ensure embankment stability
- Long term properties to guarantee performance over the lifetime of the structure
- Adaptable rolls to suit site requirements:
 - Long and wide rolls
 - Rolls with steel cores (TenCate Geolon® range) to facilitate the installation
- For treated soil, TenCate Geolon® PVA provides the required chemical resistance (pH >9)

TenCate Solutions

The technical skills of our engineers ensures the most effective and economic solution:

- TenCate offers a reliable and comprehensive solution to the customer
- Design suggestions are proposed to the consultant using the most relevant and up-to-date design codes
- Installation support and advice helps the contractor place the geosynthetic correctly and efficiently



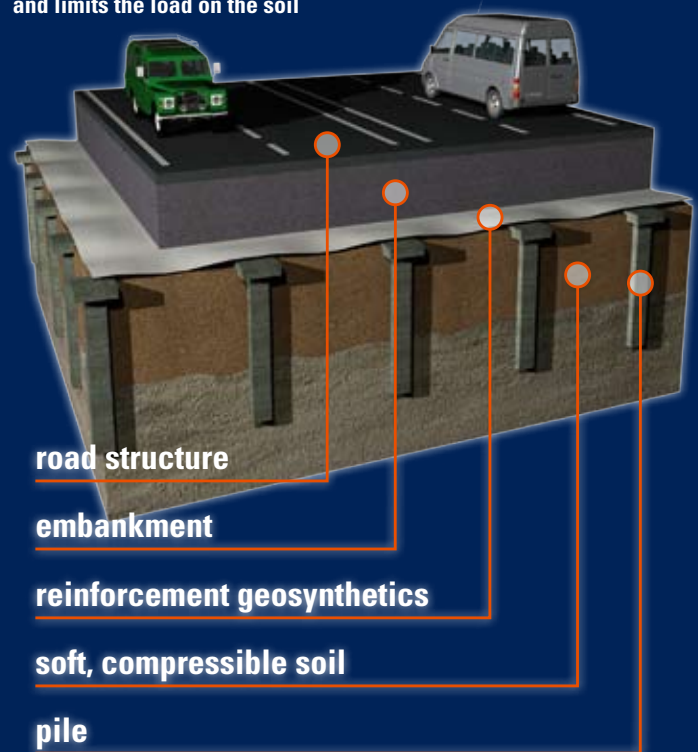
REINFORCED EMBANKMENTS ON PILES

Reinforcement of load transfer platforms

TenCate Geosynthetics provide a cost effective solution optimising load transfer platforms to achieve a greater stability and surface settlement control:

- Improved load transfer from the embankment through the piles into firmer soils
- The high strength of the geosynthetics allows the piles to be spaced further apart, therefore giving major cost benefits
- The size of the pile caps can be reduced: in a conventional embankment pile caps would cover 60-70% of the total area. This is reduced to 10-20% when using a geosynthetic allowing increase speed of earthworks and additional large cost benefits
- The horizontal thrust from the embankment is resisted by the geosynthetic which avoids the need for inclined or reinforced piles

The geosynthetic supports the embankment between the piles and limits the load on the soil



Reinforcement of working platform

The resistance of the working platform under traffic is an essential requirement. An inadequate bearing capacity may lead to severe problems of use and safety.

Geosynthetic reinforces the structure, ensuring stability and safety. It avoids the need of expensive granular fill material, saving on costs and limiting the environmental impact of using value mineral resources.

TenCate Geosynthetics for reinforcement purposes

When coarse -grained fill materials are used, optimum friction is achieved with TenCate Miragrid GX. In fine grained fill materials, optimum friction values are obtained with high strength geotextiles or geocomposites.

Made from the best performing polymers (PET, PVA, PP, Aramid) TenCate Geolon® (wovens), TenCate Miragrid (geogrids) and TenCate Rock (composites) provide the characteristics needed to reinforce load transfer platforms and working platforms:

- Strengths up to 1600kN/m to ensure embankment stability
- High stiffness to control the deformation and surface settlement

- Long term properties to guarantee performance over the lifetime of the structure
- Adaptable rolls to suit site requirements

TenCate Solutions

Thanks to an active participation in several research and construction projects along with the technical skills of their engineers TenCate is able to propose innovative, effective and economic solutions including:

- Comprehensive designs for the owner
- Design suggestions using the latest and appropriate design methods to the consultant
- Advice and installation support to the contractor



REINFORCEMENT OVER CAVITIES

Securing areas at risk of subsidence

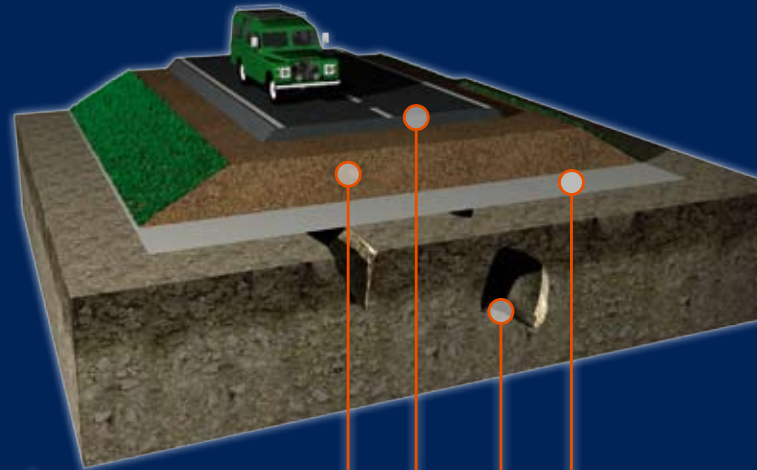
In areas prone to cavities, such as in carstic zones or old mines, sudden collapse can be prevented where high strength geosynthetics are used to reinforce road embankments or base courses.

Geosynthetics reinforce and prevent the collapse of the structure, ensuring the safety of the users.

Depending on the size of the cavity and the thickness of the structure the reinforcement limits or avoids settlement at the surface for the design lifetime of the structure.

With geosynthetics the needed quantity of granular fill material decreases, providing cost reduction and limitation of the environmental impact

Geosynthetics keep the structure in place and take the load above the cavity



embankment

road/railway structure

soil prone to cavities

reinforcement geosynthetics



Reinforcement and monitoring

When using reinforcing geosynthetics to avoid surface settlement when voids collapse, it is difficult to know when this collapse has occurred. If the void were to grow over a long period, it would be in the interests of the engineer to be aware of the collapse and to be able to decide whether remedial action was required. To assist with monitoring these critical structures the installation of the TenCate GeoDetect® system is recommended. TenCate GeoDetect® is integral with the reinforcement and measures the direct strain in that reinforcement transmitting a warning signal once the geosynthetic reaches a preset elongation limit.

For further information on TenCate GeoDetect® visit the site: www.tencategeodetect.com

TenCate Geosynthetics for reinforcement purposes

TenCate Geolon® (wovens), TenCate Miragrid (geogrids) and TenCate Rock (composites), made from the best performing polymer (PET, PVA, PP, Aramid), are perfectly adapted to reinforcement over cavities:

- Strength up to 1600 kN/m to ensure the embankment stability

- High stiffness modulus to control the deformation and surface settlement
- Long term properties to insure the performance over the lifetime of the structure
- Form of supply adapted to the application:
 - Long and wide rolls
 - Rolls with steel core (TenCate Geolon® range) to facilitate the installation

TenCate Solutions

Thanks to the participation at the research project RAFAEL (1997-1998) and the use of the resulting method design in several guidelines over Europe, TenCate acquired a great knowledge in the use of geosynthetic spanning of voids. This experience was completed by numerous construction projects over cavities where TenCate geosynthetics were installed.

With the addition of TenCate GeoDetect®, TenCate offers a complete geosynthetic and monitoring system with all the related service for design and installation assistance.



GEOSYNTHETICS

TenCate Geosynthetics Austria GmbH

Schachermayerstr. 18
A-4021 Linz
Austria
Tel. +43 (0)732 6983 0
Fax +43 (0)732 6983 5353
service.at@tencate.com

TenCate Geosynthetics UK Ltd

Unit B2, Haybrook Industrial Estate Halesfield 9
Tel. +44 (0) 1952 588 066
Fax +44 (0) 1952 588 466
service.uk@tencate.com

BeNeLux
Central Eastern Europe
Czech Republic
France / Africa
Germany
Italy
Near Middle East
Poland
Russia/CIS
Scandinavia / Baltics
Spain / Portugal
Turkey

Tel. +31 546 544 811
Tel. +43 732 6983 0
Tel. +420 2 2425 1843
Fax: +33 1 34 23 53 48
Tel. +49 30 3435 02 10
Tel. +39 0362 34 58 11
Tel. + 971 (0)4 8103295
Tel. +48 12 268 83 75
Tel. +43 732 6983 0
Tel. +31 546 544 811
Tel. +34 607 499 962
Tel +43 732 6983 0

service.nl@tencate.com
service.at@tencate.com
service.cz@tencate.com
service.fr@tencate.com
service.de@tencate.com
service.it@tencate.com
service.nme@tencate.com
service.pl@tencate.com
service.ru@tencate.com
geonordic@tencate.com
service.es@tencate.com
service.tr@tencate.com



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www.tencategeosynthetics.com