



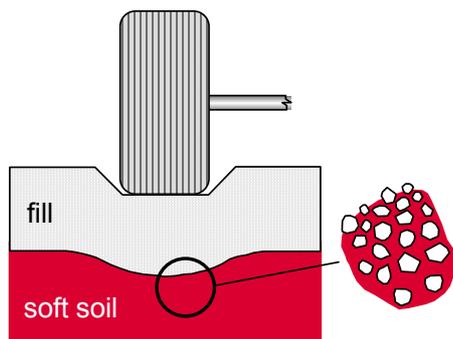
Geosynthetics in Unpaved Roads

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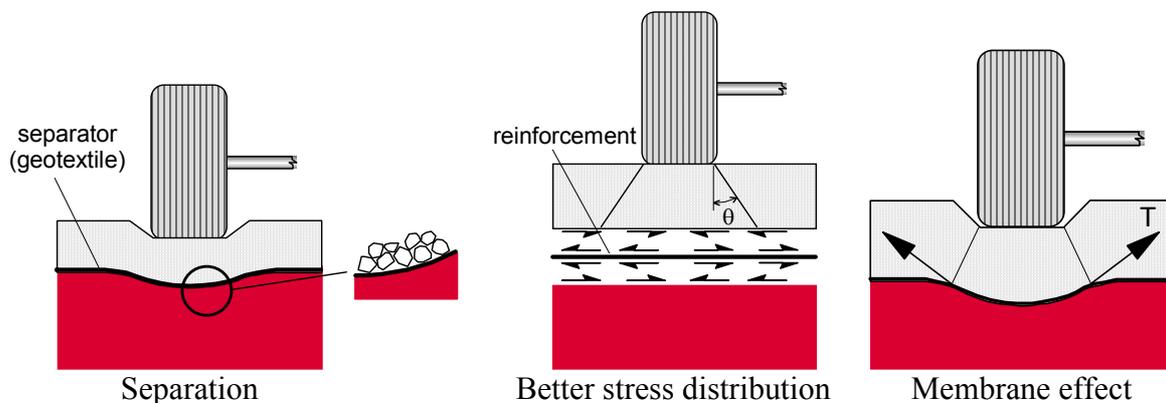
Geosynthetics can be effectively used to reinforce unpaved roads and working platforms on soft soils. If well specified, a geosynthetic can have one or more of the following functions: separation, reinforcement and drainage. Geotextiles and geogrids are the most commonly used materials in such works.

Compared to the unreinforced unpaved road, the presence of geosynthetic reinforcement can provide the following benefits:

- Reduction of fill thickness;
- Separates aggregate from soft soil if a geotextile is used;
- Increases soft soil bearing capacity;
- Reduces fill lateral deformation;
- Generates a more favourable stress distribution;
- Widens the spreading of vertical stress increments;
- Reduces vertical deformation due to membrane effect;
- Increases the lifetime of the road;
- Requires less periodical maintenance;
- Reduces construction and operational costs of the road.



Typical degradation mechanisms in unreinforced unpaved roads on soft soils

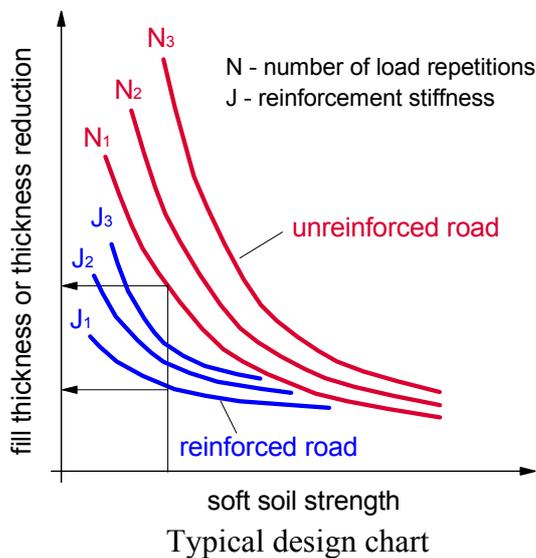


Influence of geosynthetic reinforcement on unpaved road behaviour

As the depth of the ruts increase the deformed shape of the geosynthetic provides further reinforcement due to the membrane effect. The vertical component of the tensile force in the reinforcement reduces further vertical deformation of the fill.

Several researches in the literature have shown that in a reinforced road a given rut depth will be reached for a number of load repetitions (traffic intensity) larger than in the unreinforced case. This will yield to a greater life time and less periodical surface maintenance.

A draining reinforcement material will also accelerate soft soil consolidation, increasing its strength. Drainage of the soft soil can be achieved by using a geotextile, a geogrid and a geotextile or a geocomposite as reinforcement. The stabilisation of the top region of the soft foundation will be beneficial if the road is to be paved in the future reducing construction costs and minimising pavement deformations.



Construction of a reinforced unpaved road on soft organic clay

Design methods are available in the literature, including simple ones involving the use of charts for preliminary analyses. These methods require conventional soil and reinforcement parameters for design purposes under routine conditions. Some design charts have also been developed by some geosynthetics manufacturers specifically for preliminary design using their products.

About the IGS

The **International Geosynthetics Society (IGS)** is a non-profit organization dedicated to the scientific and engineering development of geotextiles, geomembranes, related products and associated technologies. The IGS promotes the dissemination of technical information on geosynthetics through a newsletter (IGS News) and through its two official journals (Geosynthetics International - www.geosynthetics-international.com and Geotextiles and Geomembranes - www.elsevier.com/locate/geotextmem). Additional information on the IGS and its activities can be obtained at www.geosyntheticsociety.org or contacting the IGS Secretariat at IGSsec@aol.com

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