Geosynthetics for Stabilization and Reinforcement

Mechanical Stabilization for Soft Subgrades

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Tencate Geosynthetics- Rocky Mountain Region

GEOSYNTHETICS

Tencate materials that make a difference
Different Applications for the Use of Geosynthetics

Overlays, vertical structures, dewatering, and stabilization
Soft Soils
Soft Soils
Soft Soils
Soft Soils
Soft Soils
16 Geogrid Companies

>140 products

23 Geotextile Companies

>250 products
Common Products Utilized for Stabilization and Reinforcement

Geogrids and high-strength woven geotextiles
FUNCTIONS THAT ALLOW GEOSYNTHETICS TO PERFORM

- Separation
- Confinement
- Reinforcement
- Filtration and Drainage
Separation

Maintains integrity & functioning of two dissimilar materials

"10 lbs of stone placed on 10 lbs of mud = 20 lbs of mud"
Confinement

Prevents lateral movement of aggregate

- Geotextiles: Friction
- Geogrids: Interlock
Reinforcement

- Introduce a tensile element
- Improve bearing capacity
- Fine-grained silts & clays
Filtration & Drainage

Filtration: Movement of liquid **through** the geotextile

Drainage: Movement of liquid **within the plane** of the geotextile
Newer Products
TenCate Mirafi® RSi-Series
Mirafi RSi High-strength Geotextiles
What sets it apart

1. High tensile modulus
2. High water flow rate
3. Better separation
4. Highly confining
When to use a Wicking Geotextile

Enhanced Drainage Applications

1. Frost heave
2. Expansive clay
3. Lateral drainage
4. Minimize moisture in fill material before saturation is reached
Stabilization Design Methodology
Design Method for Geosynthetic Reinforced Unpaved Roads

Giroud-Han (2004)

- Traffic volume
- Wheel loads
- Tire pressure
- Subgrade strength
- Allowable rutting
Stabilization Design Tools
TenCate MiraSpec Road Design Software

Using TenCate’s MiraSpec Design Application, you can estimate the potential savings in cost and materials of geosynthetics and their potential environmental benefits. Log in now to get started.

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www.miraspec.com
Unpaved Road/Subgrade Stabilization Module
Giroud-Han Methodology
Independent Research
Independent Corroboration
Western Transportation Institute – Montana State University

- Sponsored by 9 US state agencies
- 12 geosynthetics by 8 companies
- Very soft subgrades (CBR < 2%)
- Understand behavior & performance
- No input from manufacturers
Advantages of Mechanical Stabilization

- **Immediate stable platform** once aggregate is installed- no cure time
- **No special equipment** required
- **Inert** to all soil types
- Added tensile **reinforcement** and confinement
- Can provide long-term **separation** and **flexibility in aggregate** gradation
- Often **cost savings** vs. conventional methods
Installation Basics
What to do and what not to do

✓ 1 to 3 feet of overlap- no pins or zip ties required
✓ Minimum of 6-inch cover
✓ Can drive directly on geosynthetic if little yielding in subgrade
✓ Avoid vibratory compaction if subgrade is wet
✓ Do NOT store wicking geotextile in a ditch!
Questions?
Check out our design software at www.miraspec.com

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