Road construction applications have specific needs and objectives. No one understands that better than TenCate® Geosynthetics.

Developed to increase performance, reduce costs and enable engineers to achieve what was once unachievable, TenCate® Geosynthetics address the demands of large-scale DOT and commercial sites as well as smaller residential projects. Our advanced geosynthetics improve base strength and support of loads, leading to better pavement performance and added life.

Through extensive engineering and research, TenCate® Geosynthetics remains at the forefront of developing new approaches and solutions to road construction.

TenCate’s® industry knowledge, hands-on approach and commitment to advancement allow us to develop materials that significantly enhance your business cost-effectively and resourcefully. By looking beyond the obvious and thinking ahead rather than behind, TenCate® Geosynthetics delivers materials that make a tangible difference in our customer’s businesses.

Our products improve pavement base reinforcement and subgrade stabilization. Regardless of the road construction
Mirafi® geosynthetics make impossible projects attainable. We bring road construction projects you never thought achievable to life. Ordinarily, driving across sludge ponds, swamps and mudslides would seem unthinkable. But with Mirafi® geosynthetics, customers can achieve the project demands.

By providing the solutions you need, TenCate™ makes a difference in all geographical locations and varying road applications. Whatever your project requires, Mirafi® geosynthetics are designed to meet your specific needs.

- Pavement Base Reinforcement
  - Improves service life
  - Obtains equivalent performance with reduced structural section
  - Reduces undercut disturbance of subgrade
  - Reduces aggregate required for stabilization

- Subgrade Stabilization
  - Provides access and constructability over very soft surfaces
  - Establishes a well-compacted non-yielding platform with uniform support

Case Study

**application** | **Subgrade Stabilization**
---|---
**location** | Hydro One, Toronto, Canada
**products** | Mirafi® HP-Series Geotextiles & Mirafi® BXG Geogrid

When the foundation for a large transformer station contained much more moisture than anticipated, Hydro One in Toronto, Canada needed a thin stable platform over the saturated and silty foundation soils. The platform would allow large off-road trucks to carry the excavated soils with minimal rutting and maintain the granular base. Hydro One was also concerned with the long-term performance of the transformer station yard.

In order to solve the problem, TenCate™ designed a 3⁄4-inch minus granular base material with a Mirafi® geotextile for the entire site. A Mirafi® geogrid was also added at the main entrance to provide reinforcement during heavy traffic loads.

Following installation of TenCate’s™ Geosynthetics system, Hydro One’s transformer station successfully supported heavy construction loads, prevented pumping, allowed drainage of the saturated foundation soils and provided a stable platform.

TenCate™ provided a solution for Hydro One by providing geosynthetics that increased their performance, reduce costs and delivered measurable results. The Hydro One project is another example of how TenCate™ Geosynthetics provides highly useful solutions to complex construction needs.
Mirafi® geosynthetics cost significantly less than conventional road construction products, and their rapid, simple installation process greatly shortens construction schedules. We provide the most complete selection of geosynthetics, which allows them to be used in a variety of road construction projects with proven performance in separation, confinement, reinforcement, filtration and drainage.

We use our extensive knowledge of geogrids and geotextiles to make a difference in your business. How? By creating materials that allow your road construction projects to be constructed more efficiently and effectively.

At TenCate™, we continue to explore new materials and engineering methods for existing road construction applications, while actively seeking new applications for current products. We are exploring how advanced geotextiles can solve situations in which geogrids were thought to be the sole solution. TenCate™ continues to make a difference in geosynthetics by providing:

- Increased tensile strength
- Unique filter and drainage capability
- Highly exceptional separation factors
- Improved ease of use
The City of Wichita needed to replace the existing lime stabilization subgrade with a quicker, more dependable solution and material. The city previously used cement and fly ash treated subgrades, which became brittle, cracked and caused failure in the pavement above. Wichita needed a solution with limited cost and construction.

TenCate™ Geosynthetics provided a solution that featured Mirafi® BXG 11 geogrids and Mirafi® HP370 geotextiles. The geosynthetics were rolled out onto the subgrade, and then the base course was placed directly above the geosynthetics. As an efficient way to recycle old concrete, the city used crushed concrete as a base due to a lack of available rock. This useful solution ended up reducing Wichita’s cost and construction time.

Today, Wichita remains a prime example of how Mirafi® geosynthetics make a difference by increasing performance, reducing costs and delivering measurable results. TenCate™ exceeded the city’s expectations by installing Mirafi® BXG 11 and Mirafi® HP370 geosynthetics that achieved stabilization and prevented unnecessary pumping.
Creating ease in installation and durability remains a top priority at TenCate™ Geosynthetics. We want our materials to work for you and with you. Our design process focuses and revolves around your project specifications. And we make a difference by providing products that are:

- Easily implemented
- Extremely damage resistant
- Highly cost-efficient
- Efficiently distributed and supported nationally

Case Study

**application** | Pavement Base Reinforcement
---|---
**location** | Nellie Gale Ranch, Laguna Hills, CA
**products** | Mirafi® Geotextiles

Nellie Gale Ranch realized that continual lawn irrigation would put the long-term performance of its roads in jeopardy. The city’s minimal amount of required base material in the structural section of roads created an even more complex problem. The ranch needed a solution that added strength to the pavement section and prolonged the life of the road.

The project engineer recognized that the subgrade soil needed to be moisture conditioned and a geotextile needed to be placed directly on the subgrade. The project engineer then selected TenCate’s™ Mirafi® HP570 geotextile for its high modulus at low strain and high tensile capabilities. The project work crew bottom dumped six inches of base material and leveled over the geotextile without adding cost to the installation of the base material.

Mirafi® geosynthetics alleviated potential problems of an unknown moisture content in the subgrade and strengthened the pavement section long-term. Following the success at Nellie Gale Ranch, nearby California area road and highway applications added TenCate™ Geosynthetics road construction system to solve their road problems economically and efficiently.
Determining the Reduction in Aggregate Gravel Level Thickness

Road Stabilization Design Curve for 10,000 lb Wheel Load, 50 psi Contact Pressure

Road Stabilization Design Curve for 20,000 lb Wheel Load, 50 psi Contact Pressure
The changing world continues to present new challenges and opportunities. Opportunities to make a difference. At TenCate™, we develop geosynthetic materials that increase performance, reduce costs and deliver measurable results to our customers.

Mirafi® geosynthetics have the ability to solve construction problems that seem impossible. Our ability to challenge conventional thought and seek out new, more innovative solutions has made TenCate™ the global leader.

Road construction remains a top priority for TenCate™ Geosynthetics. We have the product insight and engineering capability to confront the most complex road problems and deliver the right solution for you. From aerospace, apparel and environmental to medical, sports and construction, TenCate™ continues to enhance performance and deliver results.
High Separation Factor

Separation Factor and Aperture Size or AOS vs. Coefficient of Interaction

- High Separation Factor

Aperture – AOS (in) vs. Coefficient of Interaction (CI)

High Interaction

Coefficient of Interaction (CI) vs. Normal Load (PSF)

- MIRAFI HP570
- Type 2 Geogrid
The following tables help determine the right solution to your road construction needs. As always, our engineers and sales representatives are available to consult with you and discuss how TenCate’s™ Mirafi® products can make a difference in your road construction projects.

### TenCate™ Geosynthetics Selection Guidelines

<table>
<thead>
<tr>
<th>Function/Product</th>
<th>HP 570</th>
<th>BG 12</th>
<th>HP 370</th>
<th>BG 11</th>
<th>HP 270</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separation</td>
<td>Excellent</td>
<td>Poor</td>
<td>Excellent</td>
<td>Poor</td>
<td>Excellent</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>Very High</td>
<td>Very High</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Water Flow Capacity</td>
<td>High</td>
<td>N/A</td>
<td>High</td>
<td>N/A</td>
<td>High</td>
</tr>
<tr>
<td>Survivability</td>
<td>Very High</td>
<td>Very High</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

### TenCate™ Geosynthetics Product Selection Guide for Subgrade Stabilization

**Traffic Loading <18 kip single axle/40 kip dual axle**

**Subgrade Condition**

- **Very Weak CBR < 0.5**
  - Saturated: Yes
- **Weak 0.5 < CBR < 1.5**
  - Saturated: Yes
  - Partially Saturated: Yes, 2
  - Moderate: 1.5 < CBR < 3.0
    - Saturated: Yes
    - Partially Saturated: Yes
- **Firm: CBR > 3.0**
  - Saturated: Yes
  - Partially Saturated: Yes
  - Optimum Moisture: Yes
  - CBR: Yes

**NOTES:**
1. Project specific evaluation required. Contact your local Mirafi representative.
2. Separators are needed with a geogrid in partially saturated conditions.
3. Separators should be considered with a geogrid in partially saturated - firm subgrades conditions.

**Cars and Light Trucks**

<table>
<thead>
<tr>
<th>Subgrade Condition</th>
<th>HP 570</th>
<th>BG 12</th>
<th>HP 370</th>
<th>BG 11</th>
<th>HP 270</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Weak CBR &lt; 0.5</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Saturated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Weak 0.5 &lt; CBR &lt; 1.5</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Saturated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Partially Saturated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Moderate: 1.5 &lt; CBR &lt; 3.0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Saturated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Partially Saturated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Firm: CBR &gt; 3.0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Saturated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Partially Saturated</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Optimum Moisture</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CBR</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Project specific evaluation required. Contact your local Mirafi representative.
2. Separators are needed with a geogrid in partially saturated - firm subgrades conditions.
At TenCate™ Geosynthetics, we take road construction engineering to the maximum level, a level where challenges are met with confidence and success. And we do this not just in transportation construction, but also in marine structures, waste and water management, MSE and erosion control. We know how to make a difference that increases your performance, reduces your costs and delivers the measurable results you need. For more information on TenCate’s™ Mirafi® geosynthetics, contact us.

### Case Study

**application** | Pavement Base Reinforcement  
**location** | Hwy 67 & 28, Theresa Station, WI  
**products** | Mirafi® BXG Geogrid

In Theresa Station, WI 40 percent of State Highway 28 was constructed over marshland. In addition, the soil borings showed that a wooden log road had been buried six to eight feet below the failing road. The road’s poor subgrade needed a cost-effective solution that would provide extremely solid base reinforcement.

Engineers decided that a geogrid would be placed on top of the existing subgrade, followed by 16 inches of compacted breaker rock. Then 12 inches of crushed aggregate would be placed followed by 6.25 inches of asphalt.

The Mirafi® BXG 11 geogrid was rolled out in three sections with overlapped edges to provide full coverage and full joint closure. Initially, the project design only featured a geogrid over the marshland. However, the project engineer saved a potential $100,000 by utilizing Mirafi® geogrid over the entire reconstruction area.

TenCate’s™ Mirafi® geosynthetic material solved the problems at Hwy 67 & 28 by successfully reinforcing the extremely soft subgrade in this protected wildlife preserve. The project required materials that saved considerable money and construction time, and TenCate™ Geosynthetics was able to make a difference by meeting those specific needs.
TenCate develops and produces materials that increase performance, reduce costs or enable people to achieve what was once unachievable. Our goal is to contribute significantly to progress in the industries in which we work.