SOLMAX

SLOPE AND WALL REINFORCEMENT

Solmax solutions for slope and wall reinforcement

Solmax geosynthetics offers effective solutions for the reinforcement of slopes and walls with **MIRAGRID**® GX geogrids and **MIRAFI**® Polyfelt® PEC composite geotextiles (geocomposites). Both products are engineered from high tenacity polyester yarns which offer the required criteria critical for effective reinforcement of slopes and walls.

High tenacity polyester yarns have high tensile strengths, low creep characteristics and are inert to chemical degradation–making them suitable for long term (>100 years) reinforcement applications.

The polymer coated flexible structure of **MIRAGRID** GX geogrids ensures high interlock and high soil interaction. It is suitable for granular soil used in the reinforcement of slopes and walls.

MIRAFI Polyfelt PEC geocomposites combine reinforcement with superior filtration and drainage functionality to enable finer-grained soils to be reinforced. The rapid release of pore water along the geotextile significantly reduces horizontal earth pressure and increases structural stability.

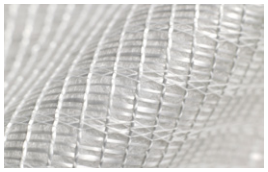
Back to back mechanically stabilized earth wall at bridge abutment

Both **MIRAGRID** GX and **MIRAFI** Polyfelt PEC are quick and easy to install and work effectively with various types of facing systems. Practical green-facing systems can also be easily adopted to blend in with the surrounding environment.

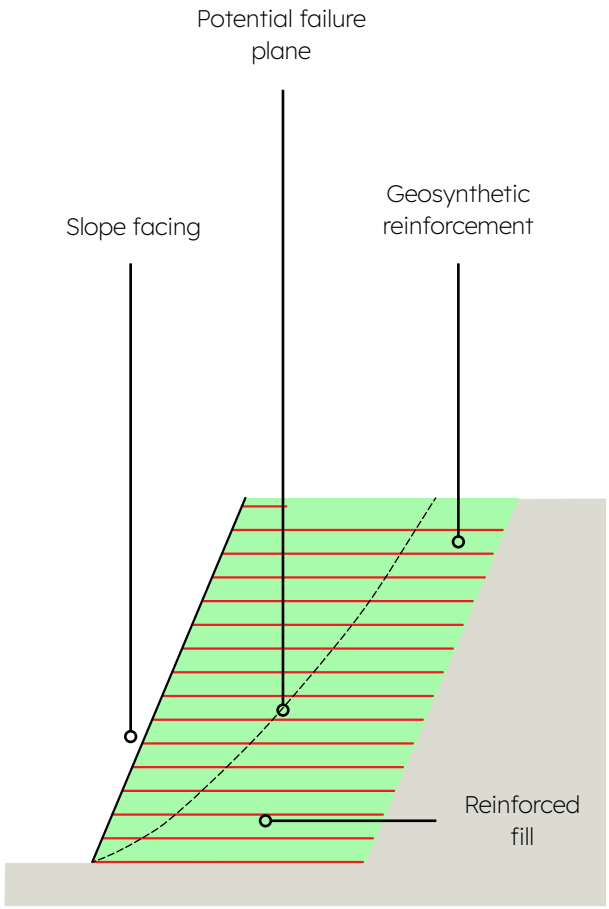
Reinforced fill slopes and soil walls

Multiple layers of geosynthetic reinforcement are placed in the slope to provide stability and limit deformations while placing and compacting the reinforced fill. The presence of the geosynthetic reinforcement enables stable slopes to be constructed to any height and at any slope angle. Similarly, geosynthetic reinforcement enables stable walls to be constructed to a wide range of heights. Both reinforced slopes and walls work effectively with a wide choice of facings.

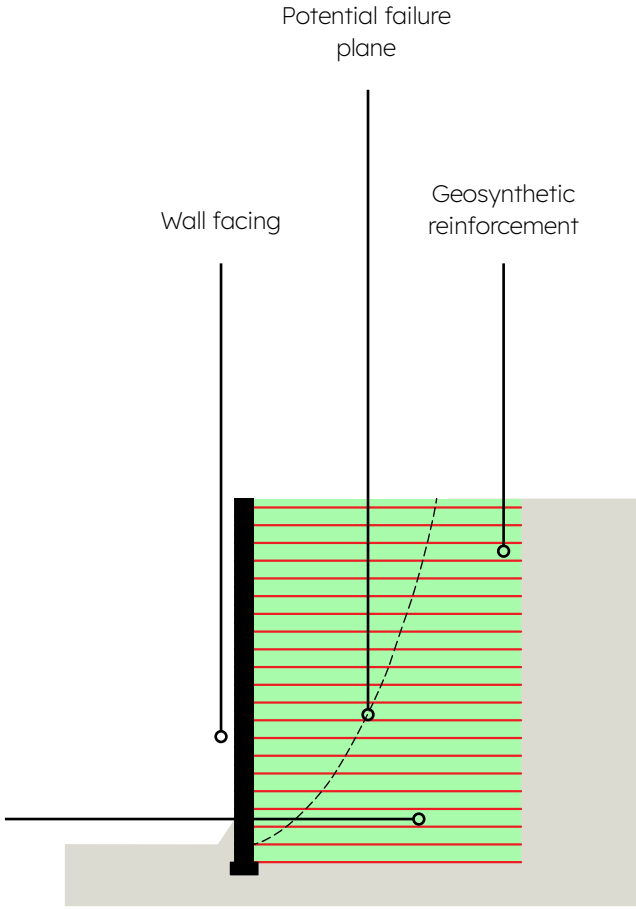
MIRAGRID Polyfelt PEC



MIRAGRID GX



Reinforced fill slopes



Reinforced soil walls

Reinforced walls with segmented block facing

Reinforced segmental block wall systems consist of precast concrete blocks stacked to form the wall facing, with the soil backfill behind reinforced with either **MIRAGRID** GX geogrids or **MIRAFI** Polyfelt PEC geocomposite. The blocks are molded with an interlocking mechanism that allows them to be firmly interconnected. Geosynthetic reinforcement, laid horizontally in the soil backfill, is connected to the concrete blocks via the interlocking mechanism at specific design heights of the wall. The construction of the reinforced segmental block wall system provides a relatively flexible structure that can tolerate differential settlement without causing distress to the structure.

Installation of the block wall facing, geosynthetics and the soil backfill are all in one construction process. Thus, the construction is relatively fast without the need for special lifting equipment and highly skilled labor. Reinforced segmental block walls have become an accepted practice for a fast, durable, aesthetic and cost effective retaining wall. The system is suitable for applications ranging from landscape terraces, housing developments to major structural walls.

Reinforced slopes and walls with wrap-around facing

Geogrid-wrapped facings utilize soil-filled bags as the slope facing units with engineered soil backfill behind. They are especially suitable for the construction of steep slopes in areas where operations can be mobilised without incurring high costs. The use of soilbags to form the facing profile makes construction of complex shaped structures a relatively easy task while the soil fill encourages rapid vegetation growth of the system. The granular or finer-grained soil is reinforced with **MIRAGRID** GX geogrids. The geogrid reinforcement is wrapped around the soilbags to a specifc designed height and then laid back into the soil with sufficient anchorage length. Soil backfill is then placed and compacted, and the process is repeated until the slope height has been completed.

This facing system is suitable for slopes with angles about 80°. Ground water seepage is controlled by installing a geosynthetic wrapped stone drainage layer at the rear of the reinforced soil structure with the ground water discharged through drainage pipes into surface drains. The completed structure, when vegetated, blends easily with the surrounding environment. It is a proven and cost effective alternative to conventional concrete structures.

Reinforces slopes and walls with steel mesh facing

The combination of steel mesh formwork and **MIRAGRID** GX geogrids or **MIRAFI** Polyfelt PEC geocomposites effectively shapes and reinforces soil slope structures. The system consists of pre-formed galvanized steel mesh stabilised by restraining hooks to form a stable facing slope for the geosynthetic reinforced soil mass. Erosion control geosynthetics are inserted behind the steel mesh facing to prevent soil erosion and encourage vegetation growth.

MIRAFI Polyfelt PEC is most commonly used as the reinforcement when the soil mass consists of finer-grained backfill that has poor drainage properties. Alternatively, **MIRAGRID** GX is typically used to reinforce coarser-grained soil backfills. This system is ideal for slopes with angles about 80°. It provides a stable facing that blends with the surrounding landscape.

Reinforced slopes and walls with gabion facing

Reinforced slopes and walls with **MIRAGRID** GX geogrids or **MIRAFI** Polyfelt PEC geocomposites can be combined with gabion facings to provide enhanced strength and stability to soil movement. Geosynthetic reinforcement is an alternative to conventional steel reinforcement.

Gabions are wire mesh container facings filled with rocks or other suitable materials. It is fire-resistant and has better tolerance on differential settlement.

The gabion containers are connected to each other to form a stable facing in a wide range of angles along the structure. **MIRAGRID** GX or **MIRAFI** Polyfelt PEC is laid horizontally on the soil mass and is sandwiched between or wrapped around behind the gabion facing to create a composite structure. Multiple layers of soil and reinforcement are added, each well compacted before the next is placed for stepped configurations in slopes and walls.

Placing MIRAFI Polyfelt PEC geocomposite across reinforced soil wall

Reinforced slopes with vegetated facing

Construction of a slope with vegetated facing is made easy with the use of **MIRAFI** Polyfelt PEC and erosion control geosynthetics. Suitable for slope angles up to about 45° and multiple berm heights, this construction method uses **MIRAFI** Polyfelt PEC as the reinforcement in the soil backfill and erosion control geosynthetics placed on the surface of the slope. The system also allows the use of on-site soil backfills as **MIRAFI** Polyfelt PEC enables in-plane drainage.

PROPEX® range of erosion control mats are ideal for promoting vegetation growth. They retain topsoil and provide optimum conditions for seed germination that result in rapid vegetation coverage on the slope surface, protecting it against long term soil erosion.

This proven system is a preferred choice for designers and contractors alike because of the easy and rapid construction technique and, its cost effectiveness.

Installation of erosion control mats prior to vegetation

About Solmax

Solmax is a world leader in sustainable construction solutions, for civil and environmental infrastructure. Its pioneering products separate, contain, filter, drain and reinforce essential applications in a more sustainable way – making the world a better place. The company was founded in 1981, and has grown through the acquisition of GSE, TenCate Geosynthetics and Propex. It is now the largest geosynthetics company in the world, empowered by more than 2,000 talented people. Solmax is headquartered in the province of Quebec, Canada, with subsidiaries and operations across the globe. To find out more, contact infoasia@solmax.com.

Uncompromised quality

Our products are manufactured to strict international quality standards. All our products are tested and verified at our dedicated and comprehensive laboratories which maintain numerous accreditations. We offer our partners a wide scope of testing according to published standards to ensure products delivered to sites meet specified quality requirements.

Let's build infrastructure better

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