Geosynthetics are becoming commonplace within the construction markets. They are used for countless applications including: to strengthen existing ground, improve its bearing capacity, make highways last longer, support embankments, stop landfill leachates contaminating the ground and limit erosion.

With defined technical characteristics and performance properties, geosynthetics are replacing the use of natural materials within construction. They are proven to reduce project cost and environmental impact compared with traditional construction methods.

Innovation and development has generated many product types; there is a significant difference in the performance of a simple geotextile to separate two construction materials and a high technology geogrid designed to support a railway embankment within a seismic zone. Clients should be aware of and select, solutions and products that are appropriate for their specific site conditions.

Maccaferri has over 30 years’ experience in the manufacture and supply of geosynthetics, and nearly 140 years with its world renown traditional products. The knowledge and capability to easily combine these products and solutions enables Maccaferri to offer clients tailored solutions, optimising value and reducing project cost.

Maccaferri works with its clients to develop, manufacture, design and construct solutions for the construction industry.

Our Range

Function

Reinforcement

Stabilisation & Asphalt Reinforcement

Drainage

Separation / Filtration / Protection

Barrier Systems

Erosion Control

MacTex® W Woven Geotextile

MacGrid® WG Geogrid Reinforcement

MacLine® Geomembrane

MacMat® R Reinforced Geomats

MacWeb™ Cellular Soil Containment
For over 30 years, geogrids have reinforced and strengthened soils, enabling the soil to perform better than it would in its unreinforced state, accommodating greater loads, standing at steeper angles and reducing settlement.

**Slopes and Walls**
Maccaveri has a wide range of geogrids (with a variety of polymers, configurations and strengths) to maximise the opportunity to reuse site won materials as backfill to reinforced soil walls and slopes.

Cost savings and “carbon footprint” reductions through the use of geogrids can be substantial when compared to traditional solutions. Additional improvements can be realised through re-using site won material as structural backfill, saving the transportation of materials to and from the project site, embracing sustainability and reducing polluting truck movements.

Whether geogrids are used for small retaining walls in housing developments, or reinforced soil megastructures on infrastructure projects, Maccaveri offers cost-effective, value engineered scalable solutions.

**Soil stabilisation and asphalt reinforcement**
Maccaveri geogrids are also used to extend the life of unbound and asphalt pavements; MacGrid® AR is a specific composite geogrid used to reduce reflective cracking within asphalt pavements and overlays.

MacGrid® EG or MacGrid® WG S biaxial geogrids are used (often in combination with MacTex® geotextiles) to strengthen unbound pavements, reducing rutting and the thickness of granular material required.
Excess, or uncontrolled water within soils can weaken them, causing numerous problems. The management of water behind retaining walls and civil engineering structures, beneath highways, inside tunnels or within slopes, is one of the most important aspects influencing the long term performance of that structure.

The MacDrain® range are geo-composites for drainage, manufactured with a rigid or flexible polymeric core, providing a free conduit for water and fluid flow, from the adjacent materials. Geotextiles, or geomembranes, bonded to one or both sides of the core ensure filtration, separation, waterproofing and protection of the core.

With lab-tested performance and quality controlled manufacturing, MacDrain® can replace traditional gravel drainage, offering faster installation, quantifiable performance and construction cost savings. Additionally, the reduction of gravel extraction and truck movements to and from the project site, serve to reduce project environmental impact.

Function

Drainage

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Function

Separation/Filtration/Protection

MacTex® geotextiles are used to replace the traditional methods of:

- Separating and filtering two distinct soils or layers and preventing cross-contamination
- Protecting membranes or other vulnerable structures
- Improving the bearing capacity of weak soils.

The wide range of products is augmented by Maccaberris’s capability to develop and manufacture specific textiles to suit individual projects.

In dewatering, industrial or contaminated slurries can be pumped into the MacTube®. Once the slurry has dried, it can be disposed of far more safely and cost effectively, than wet slurried material.
Geomembranes are used to prevent the migration of fluids from one location to another; for example, lining landfills to stop leachate polluting groundwater, controlling groundwater entering tunnels or creating attenuation ponds within developments.

Maccaferri MacLine® geomembranes and geosynthetic clay liners are available in a variety of thicknesses and compositions to suit applications such as mining heap leach pads, settlement lagoons, landfills, tunnels and many other specialist applications.

MacLine® products are often used in conjunction with MacDrain® geocomposites and MacTex® geotextiles providing a complete solution to capture, contain and drain fluids.

MacMat® R, MacGrid® T or MacWeb™ can be used to secure a layer of topsoil on the membrane, facilitating revegetation.

Available landfill volumes can be increased by using MacLine® in place of traditional compacted clay and Maccaferri geogrids to make cell walls steeper.
**Erosion Protection**

All natural slopes and surfaces are subject to continuous erosion forces. To limit expensive land-loss, Maccaferri offers a range of erosion protection systems to suit the severity of erosion expected. Relying upon vegetation growth alone is very unpredictable and unreliable as it is difficult to achieve 100% vegetation coverage, leaving vulnerable exposed areas. Furthermore, vegetation can die back or become diseased, reducing the anticipated erosion control capability.

MacMat® and MacMat® R (reinforced), three-dimensional permanent erosion control mats increase the soil’s resistance to erosion. They provide immediate protection of exposed topsoil areas from the direct effects of wind, rainfall impact or water flow regardless of the amount of vegetation established.

Additionally MacMat® R and MacGrid® T are used to reinforce soil veneers over low-friction surfaces and also in conjunction with soil nails on strengthened slopes.

Where thicker layers of soil need stabilisation and containment, MacWeb™ geocells are used to promote slope revegetation.

**Coastal Protection**

Mac Tubes® and Mac Bags®, fabricated from quality geotextiles are geosynthetic systems, used as a component in a variety of marine, hydraulic engineering, coastal protection and dewatering applications.

Filled in-situ with a pumped slurry, the water drains through the fabric walls, leaving the residue within the Mac Tube®. In coastal and hydraulic works, the filled tubes are then used to construct breakwaters, dykes or for dune reconstruction.
High quality products are only part of the solution; design and selection of a solution that meets the clients' requirements are equally important. Maccaferri’s software uses the latest modelling techniques, in accordance with various design methodologies to design robust, cost-effective solutions.

**Software**

**MacBARS**
Design of basal platforms and piled embankments

**MacRA 1 & 2**
Design of channel linings and drop structures for hydraulic erosion protection works

**MacFLOW**
Design of drainage systems using MacDrain for vertical, flat and sloped applications

**MacREAD & OLCRACK**
Design of paved and unpaved reinforced roads

**Landfills**
Design of veneer stability over membranes, drainage capacity and GCL-CCL equivalence

**Quality Control**

Maccaferri’s geosynthetics are manufactured under quality controlled conditions and where appropriate, are CE Marked. This provides client reassurance that the product has been tried and rigorously tested before installation within the project.
As geosynthetics are used in so many geotechnical and civil engineering applications, it is not possible to consider them all here. The table below indicates principle functions and uses. Please contact your local Maccaferri office for advice or assistance in these, or any other use of geosynthetics.

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### Stabilisation
- MacGrid AR
- MacGrid WG
- MacGrid EG
- MacGrid W1 & C2
- MacTex W1 & C2
- MacGrid WG
- Paragrid
- Paralink
- Paradrain
- ParaWeb

### Reinforcement
- MacDrain
- MacDrain TD
- MacLine
- MacLine GCL
- MacMat R
- MacGrid T
- MacMat
- MacWeb

### Drainage
- MacDrain MM/NN
- MacDrain TD
- MacLine
- MacLine GCL
- MacMat R
- MacGrid T
- MacMat
- MacWeb

### Barrier Systems
- MacDrain MM/NN
- MacDrain TD
- MacLine
- MacLine GCL
- MacMat R
- MacGrid T
- MacMat
- MacWeb

### Erosion Control
- MacDrain MM/NN
- MacDrain TD
- MacLine
- MacLine GCL
- MacMat R
- MacGrid T
- MacMat
- MacWeb

### Separation/Filtration/Protection/Dewatering
- MacDrain MM/NN
- MacDrain TD
- MacLine
- MacLine GCL
- MacMat R
- MacGrid T
- MacMat
- MacWeb

### Applications
- Gravity Walls & Reinforced Soil
- Reinforced soil slopes
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- Unbound pavement reinforcement
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- Landfills - lining & capping
- Mining heap leach pads
- Dams/Reservoirs/Lagoons
- Pollution control liners
- Protection of liners, structures
- Erosion Control & Drainage
- Dry / Wet slope protection
- Slope face stabilisation
- Soil containment
- Structural drainage
- Roadway drainage
- Landfill/lagoon water drainage
- Landfill/lagoon gas venting
- Green-Roof drainage
- Hydraulic Works
- Separation
- Filtration
- Coastal & Dewatering
- Groynes & Breakwaters
- Emergency coastal protection
- Dewatering sludges / wastes / mine residues
- Sea/River Bed filter mattresses
- Dune Reconstruction
- Basal Reinforcement
- Basal reinforced embankments
- Piled embankments
- Void spanning
- Tunnels
- Waterproofing & drainage
- Erosion protection at portals
Officine Maccaferri

Group Profile

Founded in 1879, Officine Maccaferri soon became a technical reference in the design and development of solutions for erosion control and retaining structures. Since then, through technological innovation, geographical expansion and focussed diversification, Maccaferri now offers solutions at a global level for a wide range of civil and environmental engineering applications.

Consultancy and Partnership

Maccaferri’s motto is ‘Engineering a Better Solution’. We do not merely supply products, but work in partnership with our clients, offering technical expertise to deliver versatile, cost effective and environmentally sound solutions. We aim to build mutually beneficial relationships with clients through the quality of our service and solutions.

Organisational Structure

Officine Maccaferri is at the heart of the Maccaferri Industrial Group. Its continued growth is based upon long-held values of innovation, integrity, excellent service and respect for the environment.

Maccaferri’s vision is to become a leading international provider of advanced solutions to the civil engineering and construction market. Implementing a strategy of vertical integration, Maccaferri researches, manufactures, designs, supplies and constructs solutions within its target markets.

The capability of the business continues to expand due to a strategic plan to open new markets and grow existing ones; Maccaferri now offers advanced engineered solutions from beach nourishment to reinforced soil structures and from rockfall mitigation to tunnelling systems.

With over 2000 employees, 26 manufacturing facilities and local operations in 100 countries around the world, Maccaferri can truly claim to have a global presence with local focus.

Maccaferri: Engineering a Better Solution