

**MACCAFERRI**



Engineering a Better Solution

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## INTRODUCTION

In 1879 we invented the gabion and changed the course of civil engineering. We are still changing it today.

We provide engineering services across many market sectors, solving their geotechnical problems. We are a vertically integrated company; we research, design, manufacture and supply materials and support the construction of our solutions.

The global footprint of our offices and manufacturing facilities means you are never far from Maccaferri's engineers and the support they can bring to your projects.

Our knowledge capital is shared throughout our business and with our clients; global capability is delivered locally through our specialists.

We endeavour to 'Engineer a better solution'; minimising the carbon footprint, waste and by reusing site materials whenever possible.

We thrive on innovation, whether in the solutions we provide or the combinations of materials we use. The Maccaferri Innovation Center (MIC) is our R & D hub; advances made here in materials, design and manufacturing bring benefits to our clients.

## CONTENTS

### Our Applications:

1. Hydraulic Works
2. Retaining Walls & Soil Reinforcement
3. Rockfall Protection & Snow Barriers
4. Soil Stabilisation & Pavements
5. Basal Reinforcement
6. Erosion Control
7. Environment, Dewatering & Landfills
8. Coastal Protection, Marine Structures & Pipeline Protection
9. Drainage of Structures
10. Landscape & Architecture
11. Safety & Noise Barriers
12. Tunnelling
13. Concrete Flooring, Precast & Other uses
14. Fencing & Wire

We manufacture and supply high quality durable materials which:

- M** Enhance the service life of the works
  - M** Reduce environmental impact
  - M** Provide client reassurance
- Many of our products are certified by international or local accreditation bodies.

This guide provides a short introduction to the range of Maccaferri solutions. Detailed technical information, brochures, design guides and more are available from your local Maccaferri website and office.



## Interrelation between sectors and applications

### Applications

|   | Market Sectors |                      |        |                    |                               |                          |                    |                   |                           |              |
|---|----------------|----------------------|--------|--------------------|-------------------------------|--------------------------|--------------------|-------------------|---------------------------|--------------|
|   | Transportation | Urban Infrastructure | Mining | Oil & Gas / Energy | Coastal & River Control Works | Environmental Protection | Defence & Security | Emergency & Flood | Building, Industry, Sport | Agribusiness |
| Basal Reinforcement   | ✓              | ✓                    | ✓      | ✓                  |                               |                          |                    |                   |                           |              |
| Coastal Protection, Marine Structures & Pipeline Protection |                |                      |        | ✓                  | ✓                             | ✓                        |                    |                   |                           |              |
| Concrete Flooring, Precast & Other uses                     | ✓              | ✓                    | ✓      | ✓                  |                               |                          |                    |                   |                           |              |
| Drainage of Structures                                      | ✓              | ✓                    | ✓      | ✓                  | ✓                             | ✓                        |                    |                   | ✓                         | ✓            |
| Environment, Dewatering & Landfills                         |                |                      | ✓      | ✓                  |                               | ✓                        |                    |                   |                           | ✓            |
| Erosion Control   | ✓              | ✓                    | ✓      | ✓                  | ✓                             | ✓                        |                    | ✓                 |                           | ✓            |
| Fencing and Wire  | ✓              | ✓                    |        |                    |                               |                          | ✓                  |                   | ✓                         | ✓            |
| Hydraulic Works   | ✓              | ✓                    | ✓      | ✓                  | ✓                             |                          |                    | ✓                 |                           | ✓            |
| Landscape & Architecture                                    |                | ✓                    |        |                    |                               | ✓                        |                    |                   |                           |              |
| Retaining Walls & Soil Reinforcement                        | ✓              | ✓                    | ✓      | ✓                  | ✓                             | ✓                        |                    | ✓                 |                           | ✓            |
| Rockfall Protection & Snow Barriers                         | ✓              | ✓                    | ✓      | ✓                  |                               |                          |                    |                   |                           |              |
| Safety & Noise Barriers                                     | ✓              | ✓                    | ✓      | ✓                  |                               |                          | ✓                  |                   |                           |              |
| Soil Stabilisation & Pavements                              | ✓              | ✓                    | ✓      |                    |                               |                          | ✓                  |                   |                           | ✓            |
| Tunnelling  | ✓              | ✓                    | ✓      | ✓                  |                               |                          |                    |                   |                           |              |
| Aquaculture Nets/Cages*                                     |                |                      |        |                    |                               |                          |                    |                   |                           | ✓            |

\* Not covered in this guide. Please visit [maccaferri.com](http://maccaferri.com) for more information

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## HYDRAULIC WORKS

### Managing the power of water

With over 130 years of expertise in hydraulic works, we support clients by selecting solutions appropriate to the hydraulic erosion risk they face. With a wide range of products, we are able to tailor the intervention to optimise value and performance. Our solutions are flexible, permeable and durable, essential in these dynamic hydraulic environments.

Including soil bioengineering measures within the hydraulic works encourages revegetation, integrating it back into nature.

Our solutions include:

#### Channelling works

Reno Mattresses and gabions are typically used to fully contain and protect the watercourse within a specific alignment.

### Longitudinal structures

The protection of individual river banks and areas of focused erosion depends on the hydraulic forces expected; geosynthetics (MacMat® geomat range) and biodegradable geomats (Biomac® C range) for lower energy flows to Reno Mattresses and gabions for demanding, high energy flows.

### Weirs, culverts and transverse structures

By controlling and dissipating energy in focused locations, grade control structures reduce the hydraulic gradient of the river and hence the erosion forces. Gabion and Reno Mattress weir structures are flexible and simple to install.

Water control structures guide flows into and out of culverts and often have two functions; hydraulic erosion protection and geotechnical stability. Gabions and Terramesh® System can retain headwalls and stabilise banks.

### Waterproofing of reservoirs, lakes & channels

Our MacLine® impermeable membranes and geosynthetic clay liners are often used to contain water within hydraulic works. They prevent water from draining away or cross-contaminating ground water. These geomembranes are often used in conjunction with our package of MacTex® geotextiles and MacDrain® drainage geocomposites.



Channelling works containing river in urban area





**MAC.R.A. Suite**

Our software is used to design channel protection and transverse structures. These enable the designer to rapidly perform preliminary hydraulic studies to evaluate the bank protection or the weir structure required.



Longitudinal protection on major river



Weir structures can be large or small

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## RETAINING WALLS & SOIL REINFORCEMENT

When our clients need a small retaining wall in a housing development, a tall crusher wall in a mine or massive reinforced soil structures on a major infrastructure project, they trust Maccaferri to help. We offer cost-effective, value engineered, scalable solutions for clients with earth retention problems.

### Mass Gravity Retaining Walls

Tried and tested for over a century, our gabions are brought up to date with state-of-the-art manufacturing, corrosion resistance and design. Gabions offer a good value, attractive and long-lasting retaining wall.

A global leader in double-twist woven wire mesh products, our flexible gabion units offer strength and high drainage capacity. They absorb differential settlement and deformations with ease.

### Reinforced Soil Walls & Slope Reinforcement

Reinforcing soils with geogrids enables them to perform better than in their unreinforced state; standing steeper, accommodating higher loads and settling less. This is useful when reducing the footprint of a new highway embankment, or to gain development area on a sloping site. Maccaferri geogrids including MacGrid® WG, ParaGrid® and ParaLink® are high-strength, low-strain grids with excellent soil interaction.

Terramesh® and Green Terramesh® combine the rapid installation of a modular system with the flexibility of soil reinforcement. Used in conjunction with our polymeric geogrids, we can offer super-tall hybrid structures; we have completed numerous walls over 30m high in seismic zones.

Green Terramesh® enables vegetation to be established on reinforced soil slopes.



Retaining Walls & Soil Reinforcement solutions