Geotechnical engineering,
innovative solutions to

Retain Cross Protect Strengthen

GEOQUEST

Geoquest Hong Kong
geoquest_group
Geoquest Group

www.geoquest-group.com.hk/

©2026 Soletanche Freyssinet – The text, photos and other information contained in this catalogue are the property of Soletanche Freyssinet. Any reproduction, display or other use, in full or part, without the prior consent of Soletanche Freyssinet is prohibited. Publication: September 2026.

GEOQUEST

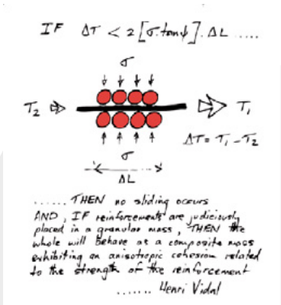
Reinforced Earth

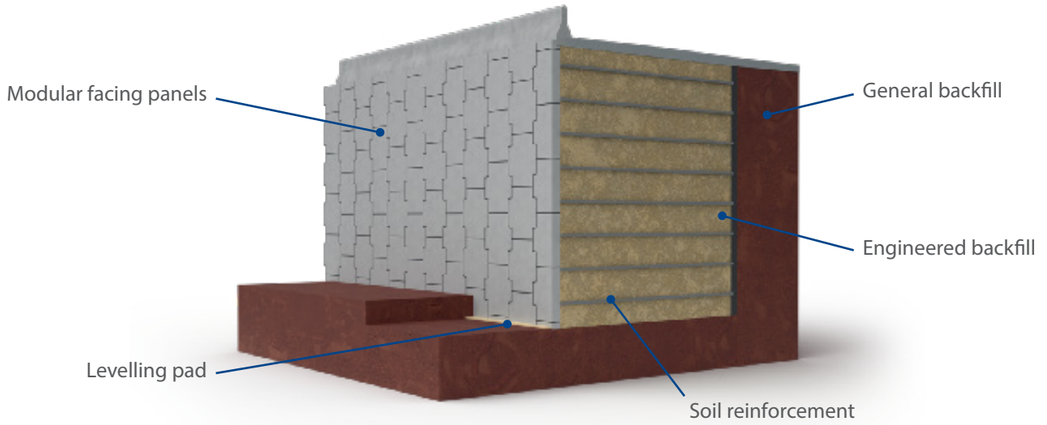
Pioneer solutions for retaining walls and slopes
ensuring sustainable, adaptable and optimized structures

Geoquest invented in the 1960s the Reinforced Earth technique that is based on a simple concept. As originally conceived by its inventor, French architect and engineer Henri Vidal, the interplacing of soil and reinforcements develops friction at the points of contact between the two, resulting in a permanent and predictable bond and creating a unique composite construction material.

/ Reinforced Earth technique

Reinforced Earth solutions combine engineered backfill with steel or geosynthetic tensile reinforcements and a modular facing structure, generally made of precast concrete panels, welded wire mesh or semielliptical steel panels. This unrivalled combination creates a durable, mass gravity retaining structure which in addition to its own weight can support large dead and live loads imposed by associated structures and vehicles.





Reinforced Earth solutions address complex geotechnical conditions such as weak soils, steep slopes, narrow rights-of-way, seismic areas, differential settlement, and limited excavation space. These solutions provide stability where traditional retaining structures are impractical or too costly.

Sectors increasingly require lower-carbon solutions and visual integration into urban or natural landscapes. The Reinforced Earth technique allows a choice between vegetated facings, mineral finishes, or thin concrete panels for permanent applications, or exposed geotextiles for temporary situations. The environmental footprint of Reinforced Earth structures is low by design.

Geoquest provides 3 types of solutions based on this technique:

Reinforced Earth walls

Reinforced Earth slopes

TerraLink

/ Walls and abutments

The Reinforced Earth technique for walls and abutments is a proven geotechnical solution combining soil reinforcements, modular facing elements and engineered backfill to create durable, high-performance retaining structures.

The solution offers long-term reliability and wide adaptability to complex terrains, tight construction schedule and locally available fill materials. With low environmental impact and customizable aesthetics, it's ideal for infrastructure, industrial and urban development projects.

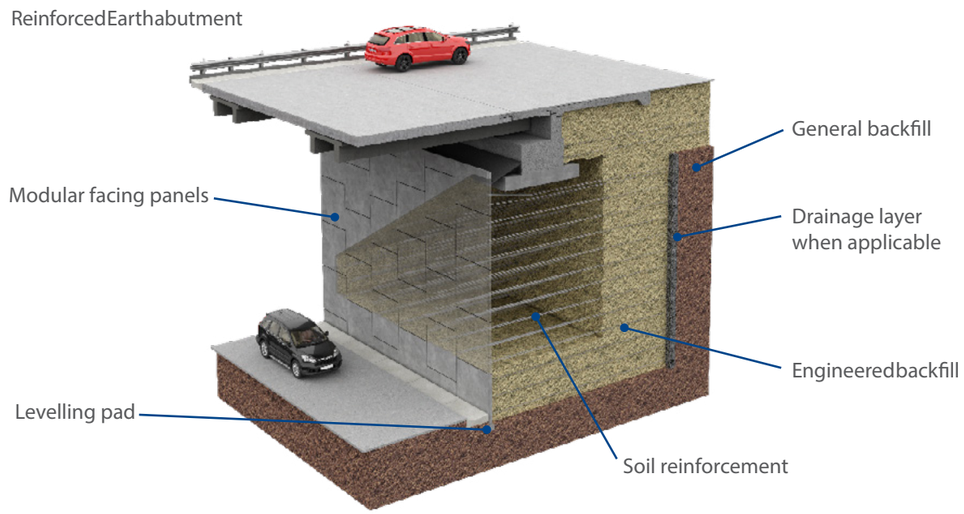
- Strong, durable, and settlement-tolerant performance.
- Compact, modular, and environmentally integrated design.
- Minimal land and material footprint.
- Lower overall project costs.
- Decades of global use.

+

- Engineered proprietary connections.
- One stop shop for design, supply and on-site support services.

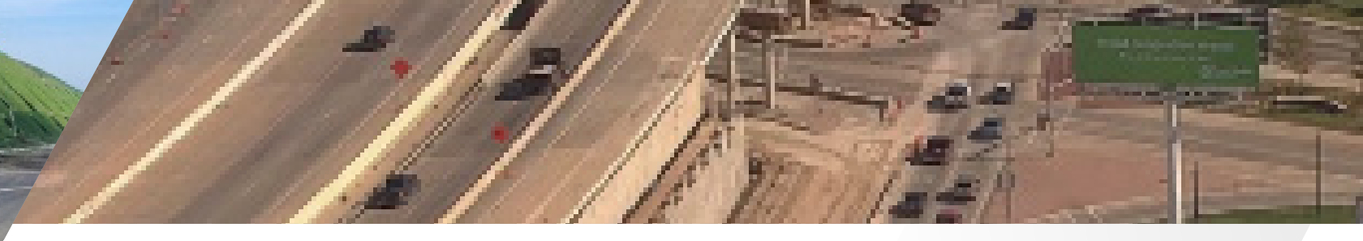
Benefits

- Low environmental footprint and efficient land use
- High load-bearing capacity supports large static and dynamic loads
- Proven outstanding resistance to earthquakes
- Reduces overall project costs through material use efficiency
- Quick installation accelerates project timelines
- Customizable with a wide variety of shapes, finishes and textures



/ Fields of application

- Railways
- Industry
- Roads & Motorways
- Mining
- Water Management
- Commercial & Logistics



Slopes

The Reinforced Earth technique for steep slopes is an engineered solution that combines high-performance soil reinforcements with facing elements to ensure stability and durability. The solution is available with either *ArmaStone*, a mineral-faced finish for robust infrastructure, or *ArmaGreen*, a vegetated facade for natural integration.

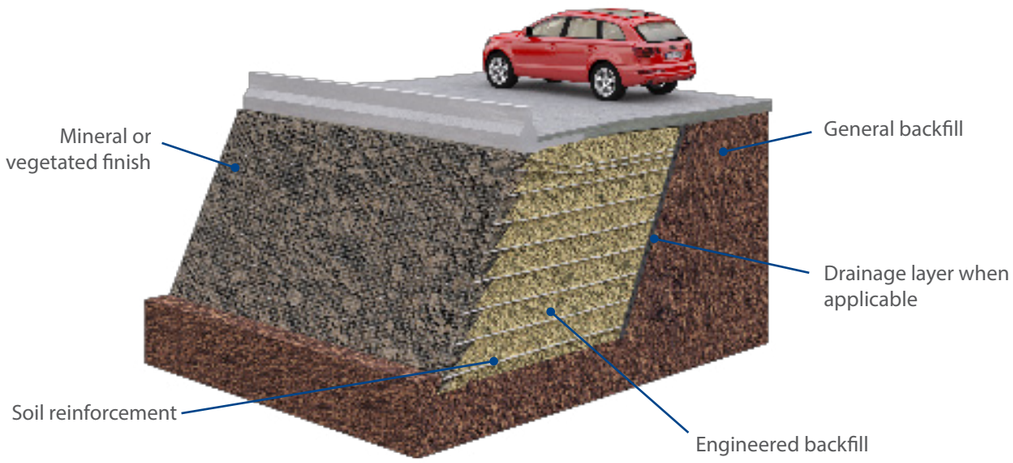
- Continuous performance even on weak ground.
- Controlled project budgets.
- Optimized use of space and materials.
- Custom design adapted to terrain configuration.

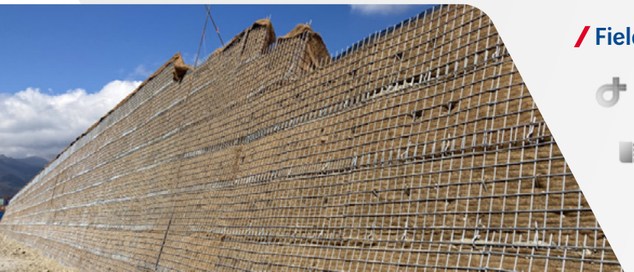
+

- Backed by Geoquest global expertise in mechanically stabilized earth solutions.
- ArmaStone facing uses -50% less mineral filling than gabion facings.

Benefits

- Lower maintenance costs due to durable materials and long-term structural integrity
- Environmental integration through vegetated facing that support biodiversity and landscape restoration
- Optimal use of stones for the filling of ArmaStone facing
- Wide applicability across infrastructure, environmental, and landscaping projects
- Low carbon solution through environmentally friendly materials and optimized design





Fields of application

Roads & Motorways · Industry · Mining · Coastal · Rivers & Waterways · Residential & Housing · Waste Management

TerraLink

TerraLink is an innovative shored Reinforced Earth solution designed for construction in narrow spaces. The solution ties new reinforced fill structures to existing ones or sloping ground using either friction or direct link solutions, ensuring structural integrity. TerraLink minimizes excavation and total project costs, speeds up construction and reduces environmental impacts.

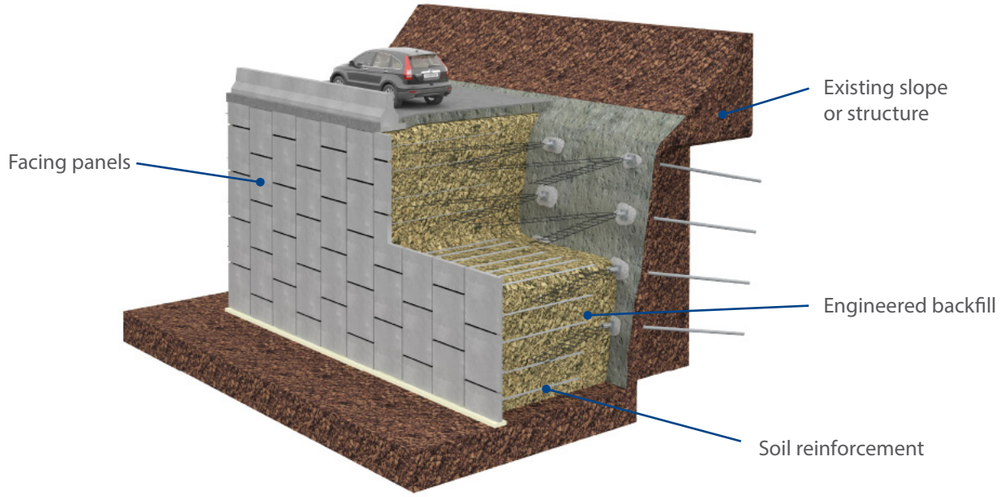
- Geometrical and structural complexity.
- Safe interaction with existing infrastructure.
- Reduced excavation and earthworks.
- Maintain traffic, stability, and aesthetics.

+

- Pioneer on shored Reinforced Earth solution.
- Tallest structure built of 102.8 meters.

Benefits

- Enables construction in narrow spaces where traditional retaining solutions are not feasible
- Offers flexibility in design through two connection solutions with friction link and direct link
- Minimal disruption to traffic and surroundings
- Lower volume of earthworks
- Maintains continuity of wall appearance with adjacent structures



Fields of application

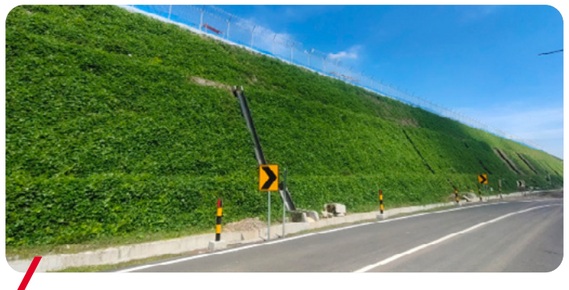
Railways · Roads & Motorways · Mining · Commercial & Logistics · Residential & Housing

References

Mercedes Benz stadium Atlanta, GA, USA

North Link Tonkin interchange, Australia

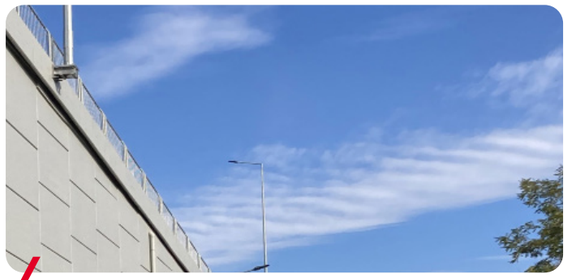
Azbane intersection, Casablanca, Morocco



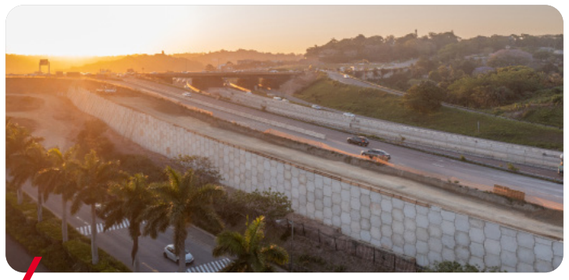
Doho airport, Indonesia

Cerro Verde, Peru

Calgary, Canada



Highway project, Romania



Kwa Zulu Natal highway, South Africa

Want to discover more?

Check our website by scanning this QR code

Innovation enhanced by experience

Geoquest combines 60 years of expertise in the field of soil-structure interaction and engineering backfills, with continuous innovation to deliver, across various applications, efficient solutions that are resilient and durable, quick to install, cost effective and sustainable

Geoquest teams around the world work to develop ideas aiming at being more efficient, meeting new needs and solving new challenges. Geoquest has developed around 100 major inventions, which are covered by patents registered worldwide.

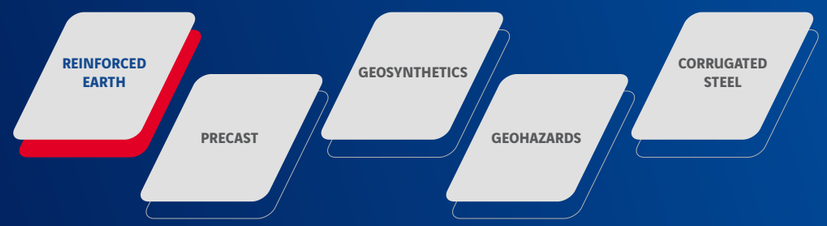
Geoquest delivers solutions for a wide variety of structures across different sectors:

Transport infrastructure | Hydraulic infrastructure | Waste management

Urban development | Resources and industry | Military

From Reinforced Earth to corrugated steel, passing through precast, geosynthetics and geohazards, Geoquest supports your projects with expertise for operational excellence.

Discover our solutions for your projects:



is now

GEOQUEST