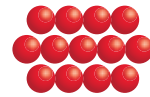


Company Profile



TERRE ARMEE

Leaders in Innovation and Technology

RETAIN / CROSS / PROTECT

Precast Retaining Wall **T-Wall**[®]

TechAbutment[®]

TerraNail[®] TA Grid[™] Coastal Defence

Reinforced Earth[®] **Composite Earth**[™]

TechSpan[®] TechWall[®] TechCulvert[™]

Debris Flow Control **TA Web**[™] TerraSlope[™]

Avalanche Barriers Erosion Protection

TerraWall[™] Slope Retention **TechCulvert**[™]

TerraAnchor[™] **TechBox**[™] River Training

TerraMattress[™] Industrial Risks Protection

Rock Fall Protection TechShelter[™]

Tubo TechSpan[®] River and waterfront walls **TerraLink**[™]

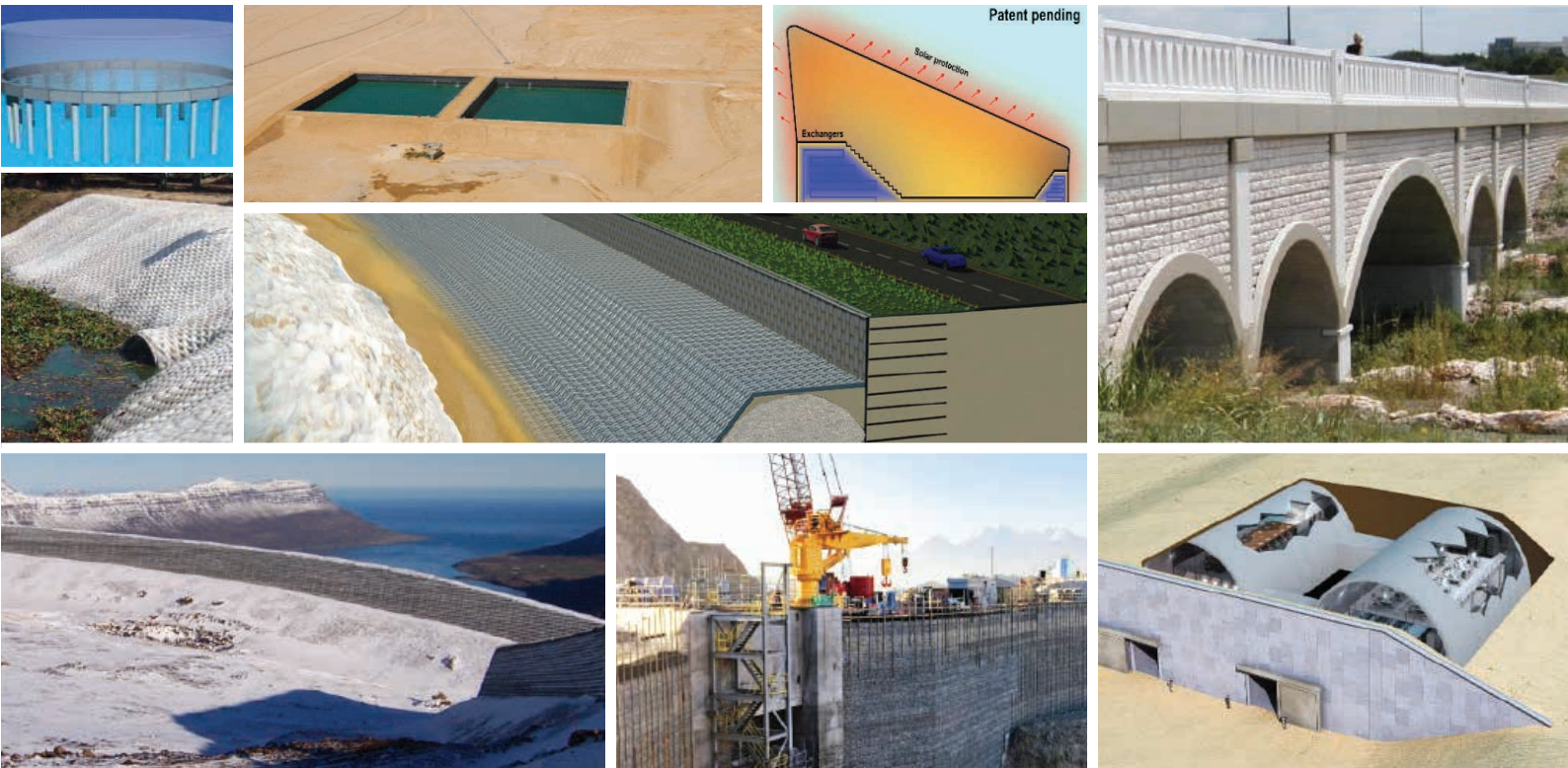
Airport supporting structures ReMain[®] Cut and cover structures



TERRE Armée

Leaders in Innovation and Technology

RETAIN / CROSS / PROTECT



Integrating Innovative Engineering Solutions

Terre Armée in India provides innovative technology by integrating engineering solutions in the fields of HYDRAULIC protection, ENVIRONMENTAL sustainability, GEOHAZARD risk mitigation, precast crossing STRUCTURES, SOIL reinforcement and RETAINING structures.

Our business model is based on providing speciality services to our Retain, Cross and Protect business lines through efficient, optimised and alternative designs, cost efficiency, engineering value-addition and construction methods management. Our experienced engineers, technical directors, material science specialists and certified technicians strive to meet the needs of our clients by proposing solutions that are tailored to the specific features of each project. Our products ensure superior and assured quality and safety standards, long term performance and durability, as well as low risk and economic ramifications.

**TERRE ARMEE**

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RETAIN / CROSS / PROTECT

About the group

**SOLETANCHE FREYSSINET**

Soletanche Freyssinet is the world leader in soil, structural and nuclear engineering.

The Group brings together an unparalleled array of construction and engineering expertise and brands – Soletanche Bachy, Menard, Terre Armée, Freyssinet, Nuvia and Sixense – that provide technical excellence to boost the performance and durability of structures. Operating in about 120 countries with a workforce of 22,000+ employees, the Group earned a revenue of €3.04 billion in 2016.

22,000+
employees

120
countries

6
companies

3.04
billion € turnover in 2016

**TERRE ARMEE**

Since the pioneering and significant invention of the modern Reinforced Earth® technique by its inventor Henry Vidal in early sixties, Terre Armée has forged an unrivalled level of expertise and experience in reinforced backfill applications and soil-structure interaction. Over the last 50 years, Terre Armée has been setting the industry gold standard in reinforced earth structures and has played an active role in over 60,000 projects in 5 continents. The company is committed to pursuing a policy of continual improvement in a bid to achieve operational excellence.

**MENARD**

Menard brings its extensive experience to projects in the planning and design development phase to provide optimal ground improvement and stabilisation solutions. Menard's expertise lies in ground improvement, specialist foundations, all methods of grouting, and environmental remediation; and has facilitated the delivery of cost effective solutions for the construction of a large range of structures. Menard's scope includes small to large infrastructure based solutions across a broad range of market segments for private and public stakeholders.

**FREYSSINET**

Founded over 70 years ago by Eugène Freyssinet, the inventor of prestressing, Freyssinet brings together an inimitable range of skills in the specialist civil engineering sector, offering integrated technical solutions in the fields of new structure construction and structural repair. Freyssinet is involved in numerous projects across five continents, making it the world leader in its areas of specialization: prestressing, cable-stayed structures, construction methods, structural accessories, structural repair and structural maintenance / upgradation.

**SOLETANCHE BACHY**

Soletanche Bachy specializes in geotechnical and civil engineering. Specialists have mastered the full range of geotechnical engineering processes, special foundations, underground works, ground improvement and pollution treatment and control. They serve a wide range of clients in the public and private sectors: central and local governments, industrial, general building and civil engineering contractors. With this expertise, Soletanche Bachy has always helped customers resolve their ground problems and build their foundations and underground structures.

**NUVIA**

Nuvia represent a unique approach and has a 50-year-old heritage. It can trace its roots to the beginning of the French and British nuclear industries. The Group has grown organically and through mergers and acquisitions. Pioneering work in construction, engineering, energy, nuclear R&D, design, build, operations, radiation protection and decommissioning has been undertaken, always with a strong emphasis on safety, quality and sustainability.

**SIXENSE**

Soletanche Freyssinet group launched its sixth branch SIXENSE. The new entity brings together 10 companies with a current combined workforce of 600 employees and operations in 20 countries. It specializes in digital services and solutions for structures, soils and the environment. It is structured in three areas of expertise: Engineering, Digital and Technologies. It helps customers to optimize design, understand structural behaviour and support decision making throughout the infrastructure's life cycle.



TERRE ARMÉE

Leaders in Innovation and Technology
RETAIN / CROSS / PROTECT

Vision

We aspire to provide a complete range of innovative engineering solutions in the field of Retaining Structures and Soil Reinforcement; Crossing structures; and Preventing and Protecting infrastructures.

We continually **create, design** and **supply innovative technologies** for various market segments.

Mission

At Terre Armée in India, we are determined to provide quality service to our esteemed customers. To fulfil this mission of creating a distinct identity, the Terre Armée in India team affirms what we stand for.

As **dependable** and **steadfast performers** we seek to consistently provide our customers with **high technical expertise** in products, engineering and processes. For our stakeholders and shareholders

we aspire to be identified as a **well diversified, successfully growing** and **professionally managed company**. Terre Armée in India continuously strives to be a coveted and thriving institution to share work and life experiences, procreate value and respect, and provide equal opportunity and solidarity to all its employees.

Work Culture

Terre Armée in India emanates a multifaceted, diverse, and conducive culture that invigorates our brand and allows us to build strong and lasting relationships with our customers.

The DNA of Terre Armée in India parents the innovation gene with state-of-the-art technologies.

We value the uniqueness of all our employees and believe in enhancing management skills and promoting talent in all functional areas ranging from Operations to Sales. We endeavor to build dynamic and charismatic leaders for the future in the field of Specialized Civil Engineering.

Terre Armée in India's strong foundation is built upon providing its customers with high quality products and delivering exemplary service.

We foster an environment conducive to learning that aims at building an academy of committed professionals.

Besides maintaining our focus on achieving our business goals we feed inspiration through a shared success work culture. Terre Armée in India adds vitality to the professional lives of all its employees by promoting diversity, creativity, and uniqueness. Terre Armée in India treats its diversity as a limitless source of learning and growth opportunities.



Occupational Health & Safety

It is our company policy to value the health and safety of our people in offices and job sites. Each employee has the right to walk away from an unsafe or dangerous situation, even if this requires compromise with a production target. All sites conduct and record pre-start meetings and tool box talks, and report unsafe situations. The company uses all necessary resources to train and develop its employees towards a strong health and safety culture. Our organization has a Health and Safety Policy that reinforces in all its employees the importance of ergonomics, work-life balance, stress management, and prevention of harassment and violence.

We are fully committed to realizing our goal of a zero-accident rate; our regulations, our company rules and our in-house tools guarantee that we will achieve this ambition.



Excellence in Client Care

Terre Armée in India believes in striving for excellence in client care. Our primary objective is to earn our client's respect, gain our client's trust and forge a robust and long-term relationship. Our mandate:

- Know and respect your client
- Provide an image of excellence
- Build a relationship with the client
- Promote clear communication
- Be a solution provider
- Deliver your commitments
- Maintain a positive and controlled attitude at all time



Quality Management System

Terre Armée in India steadily operates on its fundamental principle of providing quality products and service to its customers. Our ISO 9001:2008 certification signifies our approach and commitment towards quality. Terre Armée in India is a premier quality system certified organization for structural design, procurement and supervision of installation for Mechanically Stabilized Earth and Prefabricated Concrete Arch structures for overpasses, underpasses and interchanges, and manufacture of Geosynthetic Strap soil reinforcement products.

Our organization conducts stringent and regular internal audits to ensure that its processes meet and satisfy the client's requirements. Terre Armée in India adequately complies with all regulatory requirements. We have in place a systematic method for proactively identifying and correcting any discrepancies and preventing any potential non-compliance from occurring.



Environment Management System

Sustainable Development is core to our Social Responsibility. Our company consistently endeavours to provide its customers with not only superior innovative technology but also environmentally-friendly solutions. The Terre Armée in India team is sensitive to the impact of high-tech solutions on the environment and consequently on future generations. Therefore, we employ methods and products that control the damage to the environment. Our precast products like TechSpan®, TechBox™, TechCulvert™ and TechWall®, amongst others, have much less carbon emission, and are readily repairable causing significantly less damage to the environment. Internal audits are carried out on our worksites to monitor compliance with control measures. Our in-house training programs help our site managers, engineers, technicians, superintendents and supervisors assist our clients to improve awareness of environmental risks, assessment and remediation control. Terre Armée in India team supported the RALLY FOR RIVERS, a drive initiated by Isha Foundation to create awareness and momentum amongst all sections of society and the government about the perennial rivers in India that are becoming seasonal. A commitment to comply with environmental legislation and regulations and emphasis on continual improvement constitutes Terre Armée in India's fundamental values.

Sustainable Technology

Sustainable Technology

Terre Armée in India is committed to parenting the innovation gene with sustainable technology.

- Sustainability is the core theme of Terre Armée in India activities. We are consistently stepping up initiatives for environmental protection.
- We conduct impact assessment studies each time we conceive a significant project, ensuring reduction of negative environmental consequences.
- Our customized design and build solutions diminish negative effects on the environment and surroundings by minimizing consumption of the earth resources.
- Our innovative sustainability approach entails a constant quest for improvement pertaining to pollution prevention, chemical storage and waste sorting.
- Our products represent superior alternatives to conventional methods with regard to judicious resource consumption and reduced greenhouse gas emissions.
- Innovation in product development has induced resourceful methods and techniques that use recycled and marginal fills for Reinforced Earth backfills.



TERRE ARMEE

Leaders in Innovation and Technology
RETAIN / CROSS / PROTECT

Business Lines and Techniques

Our business model is based on providing a range of integrated innovative engineering solutions in the field of Retaining Structures and Soil Reinforcement (RETAIN), Crossing Structures (CROSS), and Preventing and Protecting Infrastructures (PROTECT).



RETAIN

RETAINING STRUCTURES & SOIL REINFORCEMENT

TECHNIQUES

Reinforced Earth®

- TerraWall™
- TerraSlope™

Precast Retaining Wall

- TechWall®
- T-Wall®

TerraAnchor™

TerraNail®

Composite Earth™

TerraLink™

TerraRenforcée™

- TA Grid™
- TA Web™



CROSS

CROSSING STRUCTURES

TECHNIQUES

TechSpan®

TechBox™

TechCulvert™

TechAbutment®

Tubo TechSpan®



PROTECT

PREVENTING & PROTECTING INFRASTRUCTURES

TECHNIQUES

Reinforced Earth®

TerraDyke™

TechRevetment™

TerraMattress™

TerraGreen™

TerraBund™

ReMain®

TechShelter™

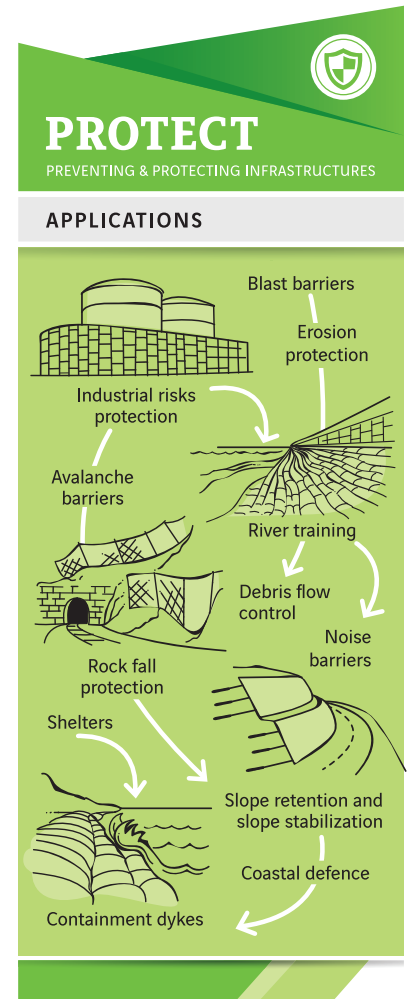
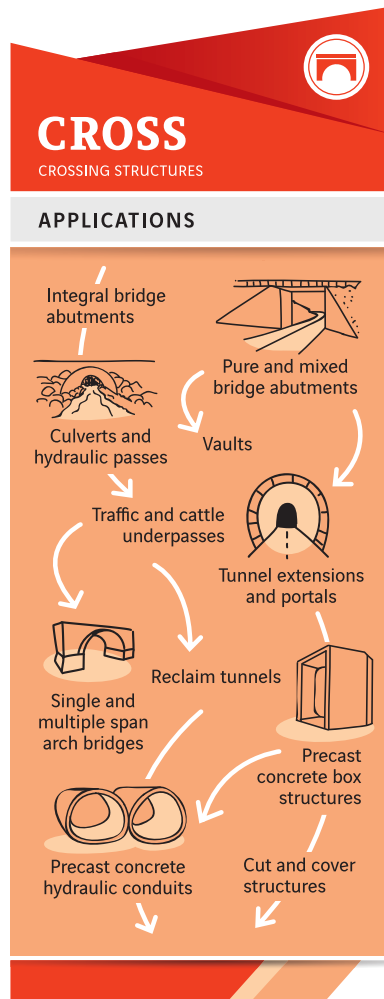
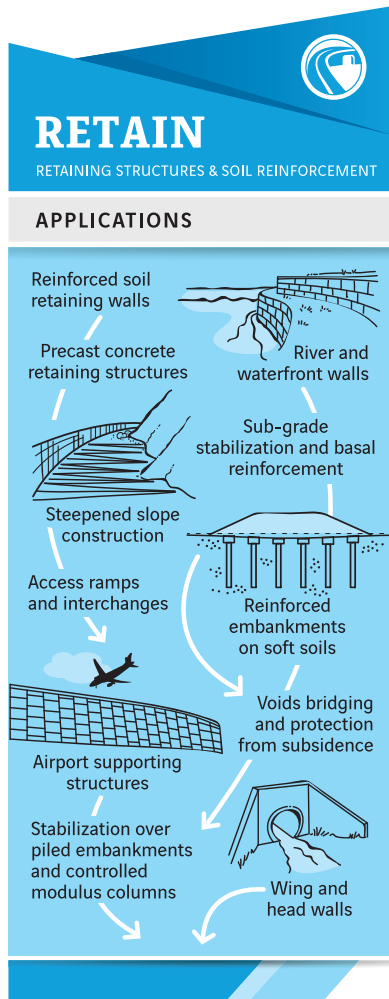


TERRE ARMÉE

Leaders in Innovation and Technology
RETAIN / CROSS / PROTECT

Business Lines and Applications

In order to meet the increasing diversity of infrastructure, construction and urbanisation challenges in today's changing world, Terre Armée in India provides tailor-made solutions for a variety of applications.





TERRE ARMÉE

Leaders in Innovation and Technology
RETAIN / CROSS / PROTECT

Market Segments

By being at the forefront of innovation and path-breaking technology, Terre Armée in India has forged an unrivalled level of expertise and experience to provide unique and bespoke solutions to a wide array of market segments.



Roads & Motorways



Railways



Rivers & Waterways



Ports & Coastal Works



Water Management



Reservoirs



Oil & Gas



Energy



Industry



Building



Land Development



Airports



Environmental



Military



Sports & Leisure



Bridges



Dams



Disaster Management



Mining & Minerals



Waste Management



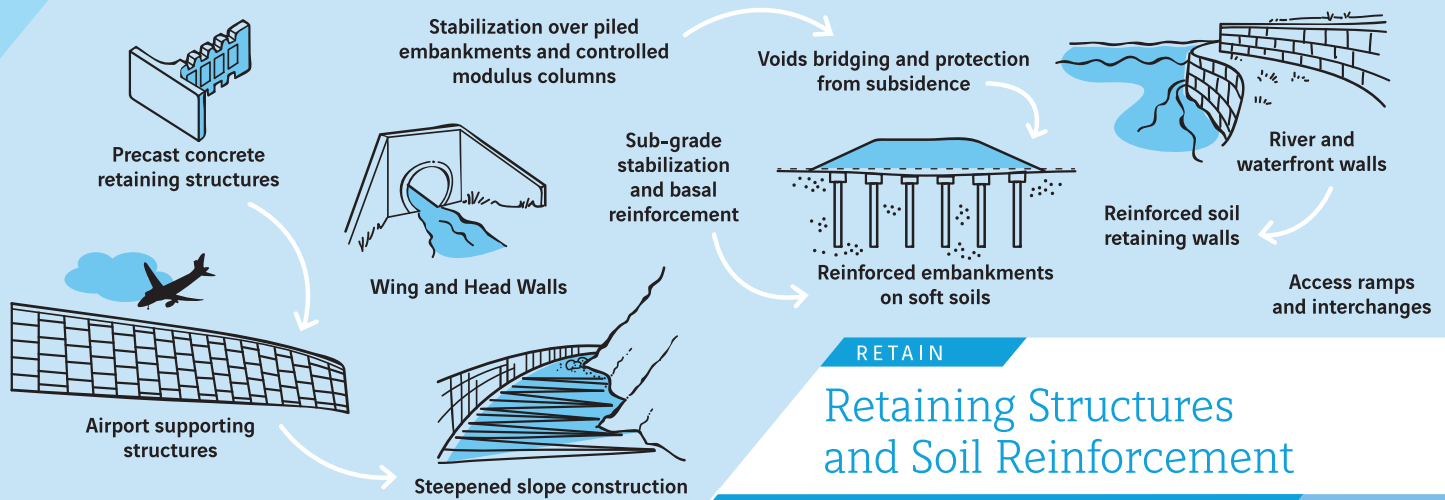
Urban Development



TERRE ARMEE

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RETAIN / CROSS / PROTECT

Business Line: RETAIN



RETAIN

The RETAIN business line relates to technologies that involve earth retention and earth reinforcement applications. Being the inventor and pioneer in back-filled soil retention systems and earth reinforcement business, this business line targets for projects and techniques involving externally built-up earth retention structures and in-situ improvement techniques. Our precast TechWall® and T-Wall® techniques can be applied to a wide range of land development, building and civil infrastructure projects. The soil reinforcement techniques can be applied to a variety of applications – from mechanically stabilized earth structures (reinforced earth slopes and reinforced earth walls), to reinforcement of cut and fill slopes through grouted soil nails, driven and stressed anchors and ground / rock anchors. This business line also deals in projects involving subgrade stabilization and improvement works, engineered solutions like bridging voids and subsidence, capping and piggy bagging of landfills, reinforcing lagoon closures, reinforcing and stabilizing embankments on soft and very soft foundations, load transfer platforms over piles, controlled modulus columns and stone columns.

Each technique by itself is an engineered solution and the combinations of the techniques in this business line open the possibility to address solutions in more complex, hybrid and technically challenging project environments. Our ability to interface these techniques with a diverse portfolio of solutions assists our customers to build and restore assets with our superior product quality and reliability, proven design, engineering detailing and scientific know how.

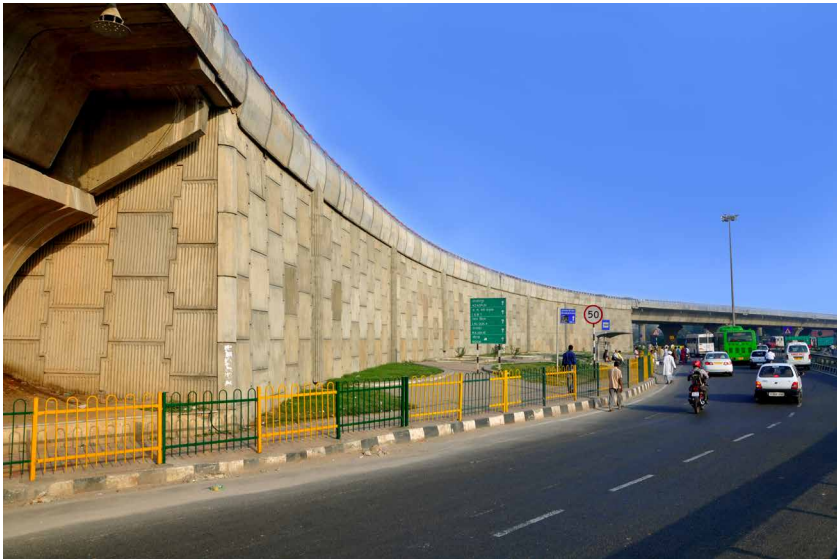


TERRE ARMEE

Leaders in Innovation and Technology
RETAIN / CROSS / PROTECT



Reinforced Earth® - TerraWall™



TerraWall™ structures combine engineered backfill with steel or synthetic tensile reinforcement and a modular concrete facing system. This ideal combination creates a durable and resilient earth retention structure. With TerraWall™ structures we can create several attractive architectural finishes.



Reinforced Earth® - TerraSlope™



Hilly terrains infrastructure are often prone to landslide, unstable slopes, rockfall and debris flow. Terre Armee in India offers bespoke **TerraSlope™** technique to build steepend slopes for slope engineering and geo-hazard solutions. TerraSlope™ technique uses both mineral and vegetative facing finishes that appropriately blends with project requirements.



RETAIN



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Precast TechWall®



TechWall® precast retaining walls and abutments are an effective solution when a standard footing is used or when site conditions rule out the use of Reinforced Earth® structures. TechWall® is developed as an engineered product with low lifecycle costs, long-term performance and helps minimize overall construction duration and reduces site works.



Precast T-Wall®



The **T-Wall®** system is a precast modular gravity type reinforced concrete retaining wall system. It is most suited for railway load supporting structures and construction of submerged retaining structures. The T-Wall® system decreases in stem length course by course – reducing materials, excavation and backfill as compared to other wall systems.



RETAIN

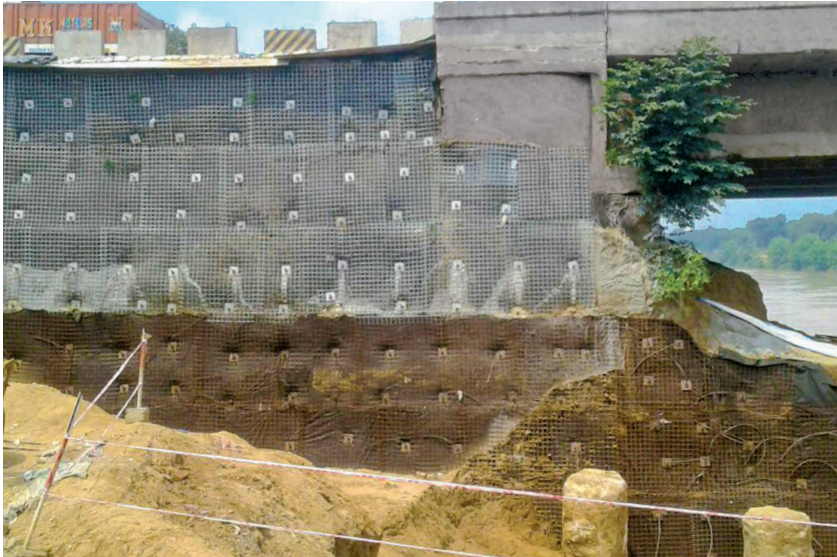


TERRE ARMEE

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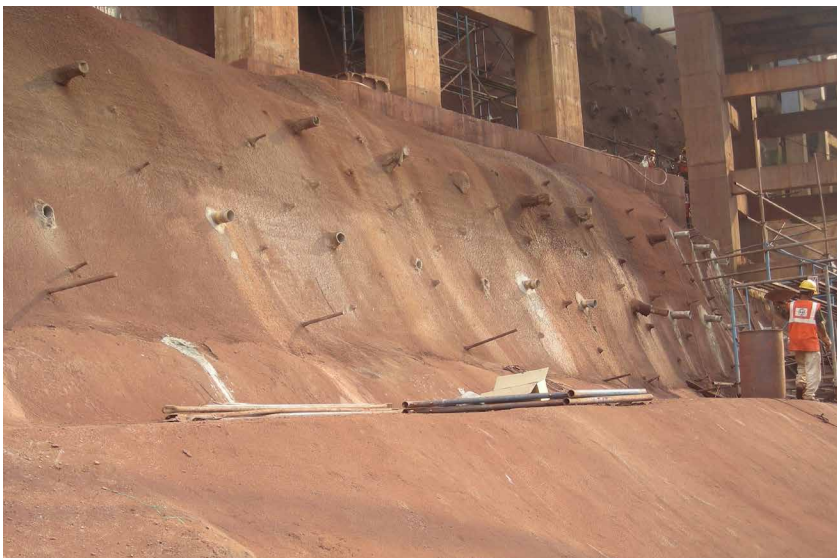
TerraAnchor™



TerraAnchor™ technology is an active soil reinforcement system used for permanent as well as temporary stabilization of existing slopes / structures by using high tensile steel as soil reinforcement (galvanized bars for permanent and strands for temporary). It is a driven and stressed soil anchoring system used with suitable facing.



TerraNail®



TerraNail® is an in-situ method of reinforcing existing soil/rock mass by installing solid or hollow fully threaded hot-dip galvanized high tensile geotechnical steel bars encased in grout. TerraNail® is typically use to stabilize existing slopes or excavations. It is also a reliable solution for landslide rehabilitation and active rockfall protection.



RETAIN



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Composite Earth™



Composite Earth™ technology adopts primary and secondary soil reinforcement systems for the design of Reinforced Earth® retaining walls. It aims to control the lateral deformation of the facing during construction and operation, including during seismic events. This is an effective way to design and construct tall and critical structures.



TerraLink™



TerraLink™ technique allows building of earth retention structures connecting existing profiles stabilized by soil nails and/or anchors. It is a useful technique for construction of benches and for road widening projects with limited available space, and activates the best optimisation between cut and fill requirements.



RETAIN



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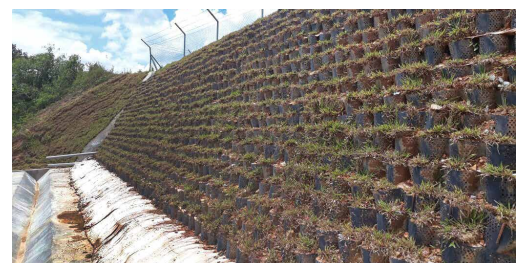
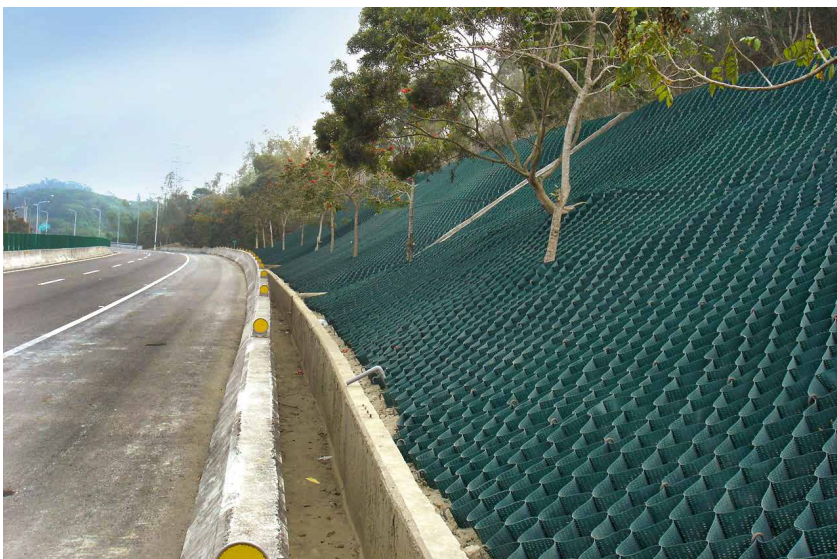
TerraRenforcée™ – TA Grid™



TA Grid™ is high strength geogrid consisting of a uni-axial group of GeoStrap® strips. TA Grid™ applications include foundations improvement soft soil reinforcement, embankment reinforcement, void bridging, stabilizing platforms over controlled modulus columns, stone columns and vertical drains.



TerraRenforcée™ – TA Web™



TA Web™ is a 3-dimensional soil stabilization and erosion protection system. It is made of High Density Polyethylene (HDPE) and welded or riveted at junctions to form cellular confinement systems. It is used for various applications like, supporting heavy loads, protection of bare embankments, channel banks and sub-grade stabilization.



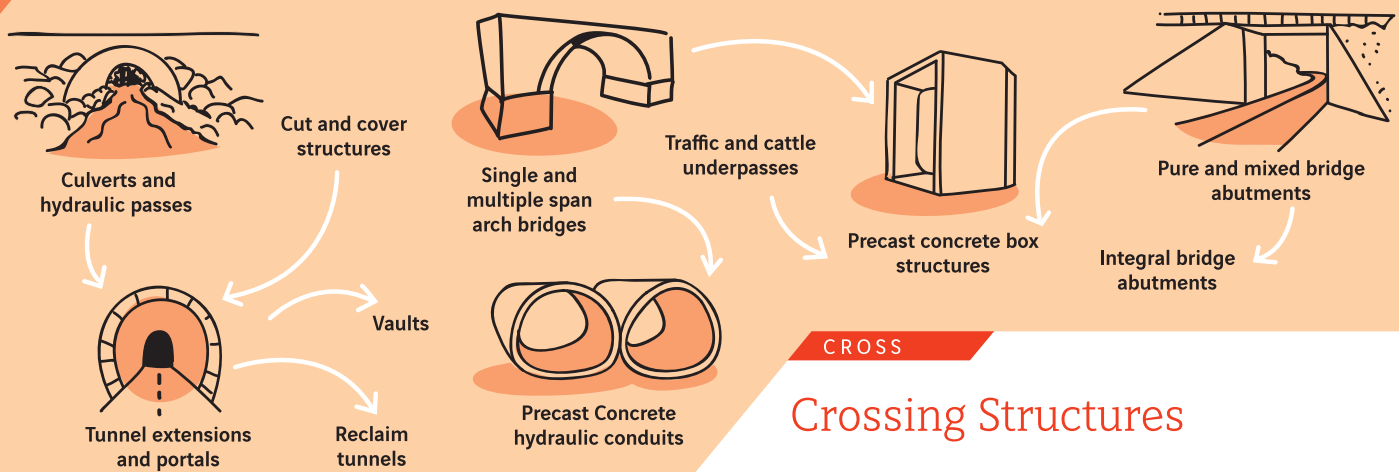
RETAIN



TERRE ARMEE

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RETAIN / CROSS / PROTECT

Business Line: CROSS



CROSS

The CROSS business lines focus on technologies and applications related to crossing structures. Reinforced Earth® true and integral Bridge Abutments (TechAbutment®) are the preferred choice for bridge engineers, EPC contractors and private project developers.

Precast concrete arch (TechSpan®) and box (TechBox™) structures are used for the construction of minor bridges in single or multiple spans, hydraulic passes, material and water conveyance tunnels, vehicle, cattle and pedestrian underpasses, and cut and cover tunnels. As an expansion to the technique, these structures are also used as extensions to tunnel portals and construct hydraulically pushed tunnel envelopes. Both precast box (TechBox™) and precast arch (TechSpan®) structures can be used to act as rockfall and debris flow sheds and shelters, as a more reliable alternative for prevention and mitigation of geohazards. TechSpan® arches also have proven use as ammunition storage bunkers in military applications.

Finite element modelling realises the benefits of soil-structure interactions provides optimum structure geometry and size and thus savings in materials consumption. It is possible to achieve complete water tightness of these segmental structures using state-of-the-art products and installation methods.



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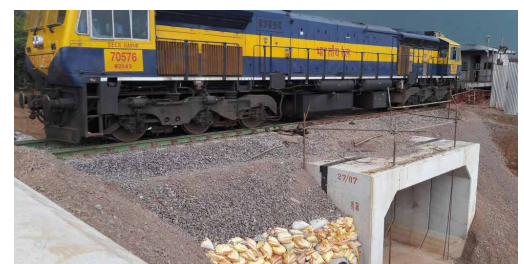
TechSpan®



TechSpan® is one of the most reliable, cost effective precast concrete arch systems available for cut 'n' cover structures. It is widely used in the construction of bridges, underpasses, conveyance and reclaim tunnels, portals, ammunition storage bunkers and rockfall sheds and shelters. Typically, 15-20 linear meters of TechSpan® can be installed in one work shift.



TechBox™



TechBox™ is a state-of-the-art precast 'box' structure, typically a one- or three-segment system suitable for cut 'n' cover buried structures. The precast segments are brought to the installation site, when the site is ready for construction. It allows rapid on-site regulated installation. The soil cover required in TechBox™ structures is lower than for arch structures.



CROSS



TERRE ARMEE

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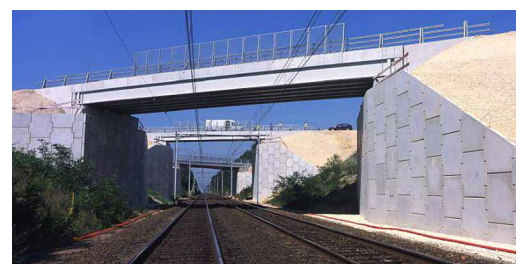
TechCulvert™



TechCulvert™ is small to medium sized single unit Precast 'Box' or two-pin Precast 'Arch' for hydraulic culverts and utility covers (like gas pipelines). TechCulvert™ provides several benefits to project owners, like assured quality, savings in indirect cost, rapid construction and early traffic commissioning.



TechAbutment®



TechAbutment® is an alternative solution for RCC / piled abutments. A highly engineered technique, it has been adopted throughout the world successfully for over 40 years. It is a Reinforced Earth® structure designed to support bridge load as an alternative to conventional RCC abutments. This is used for bridges, underpasses, flyovers, ROB's and RUBs.



CROSS



TERRE ARMEE

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Tubo TechSpan®



Tubo TechSpan® is a prefabricated reinforced concrete tube with vaulted sections that has particular designs for small cross structures like road sewer, culverts, any other utility pass, etc. To install the Tubo TechSpan®, a trench is excavated at the installation location as per the dimensions of the Tubo TechSpan®. Waterproof structures can be built using these segmental units.



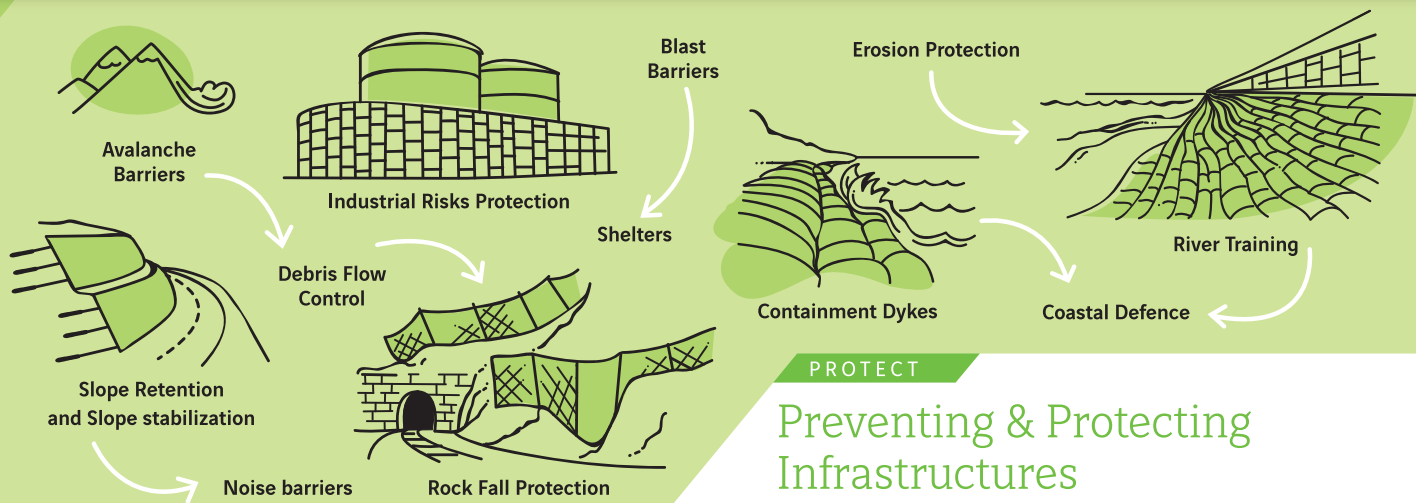
CROSS



TERRE ARMÉE

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Business Line: PROTECT



Preventing & Protecting Infrastructures



PROTECT

The Protect business lines assist the owner and our customer to prevent and protect critical and sensitive infrastructures from natural and man-made (including industrial) disasters.

The approach is to integrate our existing product, process and engineering knowledge and know-how and offer our customer the best-in-class solutions based on project specific needs. In this business segment, we also work with the best-in-the-industry associates and our strategic alliance partners to establish best practices and proven time tested solutions.

Terre Armée offers a complete protection systems package against erosion, rockfall, unstable rock and loose rock slopes, landslides, debris flow and avalanches.



TERRE ARMEE

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Reinforced Earth®



With the increase in potential for industrial explosions, fire and pollution, the use of the **Reinforced Earth®** technique for vital structures designed to protect against such hazards has been a logical extension of our technology. They are commonly used to counter dangerous natural forces like avalanches, tsunami defences and magma flows.



TerraDyke™



The combined forces of water and water borne debris require special attention while designing structures in coastal areas. **TerraDyke™** is a custom-made, state-of-the-art technique developed as a protective structure for coastal and marine works. TerraDyke™ structures are used as core for breakwaters, groins and spurs.



PROTECT



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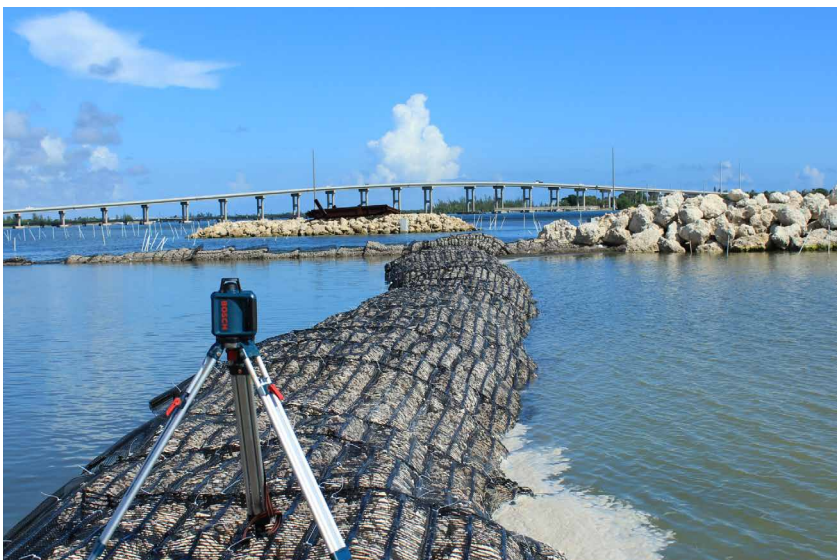
TechRevetment™



TechRevetment™ is a pre-engineered factory costumed grouted mattress system used for permanent erosion protection works. This technology is used to protect embankments protect bridge abutments against scour and bed protection of major rivers and waterways. This system can be installed at rapid speed and under water without the need for dewatering.



TerraMattresses™



TerraMattresses™ is a corrosion free polymer based erosion control system designed to replace conventional rip-raps or wet stone pitching. This system is often used on slopes to construct boulder or soil in-filled semi-rigid crates and large bags to prevent water front induced erosion and provides protection against flash floods, moderate wave attacks and run-ups.



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TerraGreen™



TerraGreen™ is a custom designed an erosion control mat / blanket useful for protecting dry and intermittently wet and erodible slopes. TerraGreen™ as a stand-alone technique or mixed with other solutions like TerraNail® or TerraAnchor™ and high-tensile steel netting is often used to mitigate low to medium grade surface erosions and soil slips and slides.



TerraBund™



TerraBund™ is a Terre Armée protection bund. It is a gravity structure built using soil reinforcement and flexible or semi-rigid facing systems. It is a passive protection system used typically as a geo-hazard solution against rockfalls, avalanches, debris flow and mud slides. TerraBund™ can withstand more than 8000kJ of impact energy in the event of landslide or rockfall.



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ReMain™



ReMain™ is a specific selection of techniques used to maintain, strengthen and upgrade Reinforced Earth® structures. ReMain™ is used for restoration and strengthening of existing structures (typically retaining structures, bridge abutments, wing walls and return walls). The durability, service life and performance of the affected structure can be significantly improved.



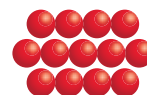
TechShelter™



Rockfall is an inherent hazard of mountainous terrains, which jeopardizes life, property and threatens the smooth operations of traffic lines. **TechShelter™** is a perfect custom-designed solution of pre-cast arch box (TechBox™ and TechSpan®) for sheds and shelters to suite these site conditions. This is one of the most reliable, cost-effective system for cut 'n' cover structure.



PROTECT



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Sustainable Technology

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