The Reinforced Earth® technique, a major innovation

Recognized as a major innovation in the field of civil engineering, the Reinforced Earth® technique provides numerous structural solutions for owners and contractors ranging from retaining walls to slope stabilizations.

As the world leader in mechanically stabilized earth, TerraFirma is a presence in all five continents and has the advantage of both local and international expertise.

This wealth of expertise has led the company to develop processes offering common advantages:

- Reliable and sustainable materials
- Savings in terms of time and resources
- Capacity to adapt to complex situations
- Integration into the environment, in particular due to an attractive range of panel finishes

The Reinforced Earth® technique has revolutionized structural design and is applicable for all kinds of structures:

- Road
- Railway
- Marine and waterway
- Industrial and protective

Sustainable Technology

Our goal is to create, design and supply innovative techniques to the civil engineering industry with a strong commitment to excellence in design, service and public welfare.
TerraLink™
The shared Reinforced Earth™ wall system

The TerraLink™ technique allows the construction of Reinforced Earth™ walls in front of existing structures with narrow space between them. Since the reinforced fill pile has to be wide enough to accommodate conventional lengths of reinforcements, the acceptable solution consists in connecting the Reinforced Earth wall to the existing structure. The whole configuration, called TerraLink™ forms a shared retaining wall that ensures a sound structural behavior.

TerraLink™ elements are similar to those used for Reinforced Earth™ retention soil reinforcements (piles or precast elements) connected to modular facing systems (cast-in-place concrete panels, wire mesh and connection party). These elements are placed between wall core and soil fill levels. The main feature is that reinforcements are linked to the rear part (backfill) of the system through the existing structure, which enables combination or continuity of the reinforcements between the rear Reinforced Earth wall and the existing structure.

Two types of linked system are possible

The choice of the appropriate system depends on several factors: geometrical site configuration, type of existing structures and type of reinforcements among other considerations.

Friction Link system

Additional reinforcements are inserted between the reinforcement layers of Reinforced Earth™ wall and attached to the existing structure. The overlap between reinforcements ensures their mechanical connection on both sides of the structure. This solution has the advantage to keep the facility of the combined wall system but requires sufficient space for overlap of the reinforcements.

Direct Link system

The reinforcement of the Reinforced Earth™ wall are directly connected to the existing structure. This solution easily adapts to very narrow or limited space but requires further procedures in terms of construction.

Adaptation to existing structure

The existing structure or natural feature against which the Reinforced Earth wall is constructed has its importance to the TerraLink™ design, especially in determining the suitable technique for attachment of the reinforcements.

The existing structure could be a fill wall, Reinforced Earth wall or other retaining wall, or an existing natural feature such as a slope terraces or backfill. Wherever its origin, a specific assessment is required to ensure that the existing structure is safe enough or needs evaluation of the combined system to support the new load configuration.

Field of application

The TerraLink™ system is an excellent alternative when site constraints prevent the construction of traditional precast retaining walls. Its field of applications depends on environmental, technical and economic considerations.

Widening of platform in urban environment

Due to the increase of traffic, providing a widened of platform is often necessary. In restricted urban areas, the construction of new ramps to overpass existing roads, a special retaining wall would have the disadvantage to partially obstruct the current ramp in order to build the measure. The TerraLink™ system enables the construction of the new ramp while keeping in place the existing road, minimizing traffic issues for most of the construction time.

The main advantages are:

- Reduced footprint at the base of the structure
- Minimal disruption of the traffic flow during construction
- Speed of construction
- Saving demolition of the current structure
- Reduction of soil and fill volume

Construction in steep topography context

Another main application is the construction of retaining walls in steep terrain such as an existing embankments, cut slopes or rocky outcrops.

A standard retaining wall solution requires wide and expensive cutstones, including costly excavations. The use of TerraLink™ system reduces the footprint compared to traditional solutions, and consequently the volume of excavated materials.

The decrease of excavation and backfill material make this technique both sustainable and economical.

The main advantages are:

- Reduced footprint at the base of the structure
- Economy of excavation works
- Decrease of excavated materials
- Economy of recovery (landfill or recycled)
- Speed of construction
- Reduction of technical facing
- Continuity of traffic operations with intermediate tie beams reinforced Earth walls