What is Terraforce?

TERRAFORCE is an award-winning South African company that developed a range of interlocking concrete blocks for earth retaining walls and erosion control.

- land reclamation
- erosion control
- sea shore protection
- river and stream erosion control
- garden landscaping
- cut slope stabilization
- noise and blast barriers and much more.

A Terraforce retaining wall Jalila Children's Hospital, Dubai, United Arab Emirates. The blocks alternate between rock and round to create plant pockets.
There are four Terraforce systems available:


2. The 4x4 Multi Step block for stairs/seating/arenas

3. The Terrafix block for slope/embankment stabilisation

4. The Terracrete block for paving of channels/roads/parking

Check with your local supplier for availability
A living wall: The unique hollow-core design allows you to make plants a part of your wall and allows water to drain back into the ground. Use low-water-use plants to create a landscape that’s sustainable. Plant growth also deters graffiti.

Durability: Concrete will not rot and weaken over time, and no chemical preservatives are required. Blocks can be replaced if damage occurs.

Uniquely interlocking: The units are simply stacked up without mortar to provide a cost effective, do-it-yourself system. Can be used for light revetment cladding, medium-to-heavy gravity retaining walls, heavy duty composite walls in combination with earth reinforcing grids (fabrics) or reinforced concrete infill.
**Layout flexibility:** The half moon interlock easily handles convex and concave curves of unrestricted radius, and the wall angle can vary from vertical to shallow slopes. Create steps by reversing the block, either with a straight or curved alignment. Perfect spiral stairways can be constructed with ease.

**Colours and textures:** choose between round, straight or rock face finish. Consult your local supplier about available colours.

**Easy to use:** The blocks are lightweight for easy delivery, handling and installation, yet heavy in mass when filled with soil, gravel, or concrete. Fence and handrail posts can be set within blocks.
These drawings illustrate the most common planning options for L Range retaining walls:

The blocks interlock horizontally as well as vertically with optional keys or gravel infill, and contain no air voids. They have a closed vertical and open horizontal surface structure, and thus lend themselves ideally to the construction of **light terrace walls** but also **heavy gravity, composite or vertical RC filled retaining walls**.

Factors influencing installation costs: as wall angles and heights increase so does cost. Due consideration has to be given to the presence of groundwater or unstable retained soil.
The planning stage of a retaining wall depends on environmental, structural and cost factors:

**Type of retaining system**: Resist the temptation to specify slender, stretched-out types or imitations of proven blocks. The system should be chosen for maximum structural mass (no air voids within wall) combined with optimal rooting conditions. This will help in binding the system and embankment together.

**Climatic conditions**: Exposure to factors such as coastal, salt-laden winds, long hours of direct sunlight, deep shadows, etc., should be taken into account.

**Function and type of vegetation**: Herbaceous, deep rooting (low maintenance) or attractive flowers (high maintenance) may be considered. Mixed complimentary species or uniform ground covers can be planted. Feeding values for birds and insects must be investigated for a complete bio-engineering approach.

**Maintenance**: Monitoring of soil fertility, irrigation and regular maintenance operations form an integral part of a growing investment. Indigenous plants are ideally adapted to prevailing climatic conditions. They generally require less water and maintenance, are deep rooting and can contribute considerably toward adding competence to these installations.
Once planning is complete, Terraforce offers various levels of design support. Terraforce offers a free, online design software called Maxiwall Pro - [www.maxiwall.com](http://www.maxiwall.com) - as well as a professional Terraforce retaining wall design service - Terrasafe - if needed. You can also consult our table calculator for quick checks on setback and wall angles.

Design charts, tables and manuals are freely available on the downloads page on our web site.
Some illustrations of designs possible, depending on site conditions and height of the wall:

- Single block layer
- Light gravity retaining wall, rock face option
- Single block layer
- Light gravity retaining wall, round face option

Light retaining walls are suited for low/inclined walls only, unless extra reinforcement is provided.
A double layer of blocks can provide extra stability for higher or steeper walls.

- **Double block layer**
- **Heavy gravity retaining wall, rock face option**
- **Heavy gravity retaining wall, round face option**
Sometimes severe lack of space calls for a double layer, with concrete infill and steel reinforcement.

Two block layers. Concrete infill and steel rebar in back layer.

Reinforced gravity retaining wall, rock face option.

In addition, stabilized backfill (sand and cement mix) can also be considered.
Geosynthetic reinforced walls utilize reinforcing sheets of geogrid or suitable woven geotextile. These are attached to the fascia and are embedded in a body of engineered fill.
With these four basic walls types in mind, the design possibilities are endless!

With one block, you can create terraces, curves, corners, vertical walls and steps.

YOUR GROWING FORCE
Follow slope contours with ease!
The three terraces reach up to 18m in height when combined
Terraforce is a member of the **Concrete Manufacturers Association (CMA)** in South Africa and adheres to the **Canadian and US international Standard Specification for Loadbearing Concrete Masonry Units**, following a successful **ICBO evaluation** in 2002 (now ICC-ES, a leading US nonprofit, limited liability company that does technical evaluations of building products, components, methods, and materials). The system was also extensively tested by **Hawkins Hawkins & Osborne Consulting Engineers**, South Africa in 1992, resulting in a comprehensive design and specification manual and user guide.

Composite retaining wall design and construction procedures with **Terraforce** blocks have been subjected to **rigorous laboratory tests**. These were conducted on a large-scale test apparatus to evaluate the mechanical performance of, among others, the connection between blocks and grids. In all tests the primary mode of failure was rupture of the geogrid outside the blocks and performance was found to be above average. **See references on the next page →**
References and Test results:

- **Guidelines for the use of the Terraforce retaining wall design spreadsheet**, Nov. 1994 by G Bentel of Steffen, Robertson & Kirsten. Technology Park, W Australia.
- **Crushing tests of blocks subject to line loading**, July 1998 by Damon Clark Associates. Durban, South Africa.

Available on request
Palm Jumeirah, sea shore protection and stairways, 2 million blocks used:

The project under construction, precast foundations used for the steps...
The walls and steps nearing completion...
Owners of the properties all landscaped the walls uniquely...
Owners of the properties all landscaped the walls uniquely...

Plants are doing well in the harsh climate...
Seashore retaining walls and 4x4 Multi Steps at Durat Al Bahrain, UAE
The shape of the block allows for unlimited curves.
Qatar, clover leaf interchange retaining wall with planting:
Garden landscaping and erosion control at prestigious equine estate, Cavalli

Mainly water wise South African plants were used
Terraforce offers green - or colourful - solutions!
Terraforce offers green - or colourful - solutions!
Terraced, vertical or sloped, you chose!
YOUR GROWING FORCE

Need a corner? Try these, no cutting required.
Need a corner? Try these, no cutting required
For sharp or right-angle corners, cutting the blocks is possible.
For sharp or right-angle corners, cutting the blocks is possible.
The project: a large, composite retaining wall at a new 5 star Hotel, Ajman

Terraforce blocks are also used widely for lake and sea shore landscaping.
One of the pedestrian ramps under construction
Steps in the process of installation above the drainage layer
The project nearing completion. Sand will be filled in up to the red layer of blocks.
The end result
Using the 4x4 Step block for stairs and seating and ramps:

The 4x4 Step block: a light, dry-stack concrete unit, generally used for constructing low terrace walls, stairs and seating arrangements:

Aimed at providing efficient and economical steps in conjunction with the original retaining blocks of his design, they soon became very popular not only for stairway access, but also to provide comfortable, practical stair and seating arrangements at leisure amenities and school sports facilities.

*Free standing staircases ★ integrated staircases ★ public seating ★ auditoriums or arenas ★ access and seating ramps*
Amphitheatre for 2000 people - Turkey

Amphitheatre for 500 people - Turkey
Seating arenas at recreational private and public facilities:
Seating arenas at recreational private and public facilities:
Various stairs, public and private:
Various stairs, public and private:
Award winning seating arena using the L18 block
Terracrete blocks are VERY versatile. A grassed driveway, a rustic gravel driveway, or an attractive pattern of pavers can add the finishing touch to a home looking to stand out. Permeable grass pavers can add a park-like or pastoral feel to many areas that normally require hard paving.

**TERRACRETE blocks are used for erosion control of:**

1. Roads and parking areas
2. Spillways and storm water channels
3. Embankments
Commonly Applied Patterns for TERRACRETE installations

Unidirectional Formation
36,3% open/m²
±9,09 Blocks/m²
Allow for small variations.

Circular Formation
40,2% open/m²
±8,2 Blocks/m²
Allow for small variations.

Unidirectional, Extended
45,6% open/m²
±7,4 Blocks/m²
Allow for small variations.
Terracrete hard lawn pavers make excellent eco-surfaces:
Large scale stormwater control with Terracrete channels
Terracrete surface for a Boatlifter facility capable of lifting 200 ton boats

Blocks were reinforced with 40 MPa concrete mix with EPC BarChip “Macro” to stop fragmenting.
Award winning Terracrete installation – CMA Trophy 2014 in sustainable category

Terracrete hard lawn pavers were installed between the paddocks, to restore storm-water runoff
The block offers a “hard”, yet flexible surface that is permeable for water & vegetation.
If filled with topsoil the blocks can be grassed to create a green surface
The Terrafix erosion control block, for slope stabilisation of any kind:

Flexible and permeable erosion control block:

**TERRAFIX** is an interlocking environmentally acceptable element made of high strength concrete. It is designed to provide a flexible lining where cost-effective protection against wind/water erosion is required. Available in 3 different thicknesses. Can be laid in a variety of configurations to suit site conditions.

Permeable eco-surfaces for embankments, storm water channels & river lining...
Storm water channels and spillways:
Storm water channels and spillways:
Embankment stabilisation:
River and stream lining:
Large scale embankment erosion control:
Large scale embankment erosion control:
Where to purchase TERRAFORCE blocks

The products are produced on 5 continents:

Send us your contact details and comments: Contact us

Or, alternatively, find your closest supplier:

Find your closest supplier

Call Terraforce directly: +021 465 1907 or email Karin: karin@terraforce.com or visit the web site: www.terraforce.com

We also offer a professional design service

Professional design service that provides first-class engineering, management, and specialist technical service to users of any of the Terraforce products.