INTRODUCTION TO THE TERRAFORCE RANGE OF RETAINING BLOCKS

TERRAFORCE is an award-winning retaining wall system, combines more advantages than other systems: relatively light weight for transport, interlocking on horizontal as well as vertical plane, reversible to display smooth round face, smooth straight face or split straight face appearance, is fully plant supportive with an open horizontal surface structure, and has a closed vertical surface structure to prevent progressive erosion of compacted backfill. The wall inclination and curvature can be adapted at will to suit site conditions and blocks can be filled with soil, gravel or concrete as required by the design engineer. (2/2006 multi choice system)*

Terraforce pioneered the reversible hollow interlocking concrete blocks in varying sizes and colours that are unmatched in its versatility, both in application and elevation. The range of plant-supportive blocks are suited to create environmentally friendly domestic or industrial installations and support sustainable development in soil stabilisation. Walls can range from light or heavy gravity walls to composite (earth reinforced with geo-grid) retaining walls. The company made a modest contribution toward conserving environmental resources and bio-diversity by publishing a guide to the introduction of hardy indigenous plants for establishing on Terraforce retaining walls and erosion control measures. (10/2005 local plants are best) (3/2010 greening of walls) (7/2008 irrigation)*

ALL IN ONE SYSTEM:

- Smooth round face blocks - stacked with rounded side to the front
- Smooth straight face blocks - stacked with the straight side to the front
- Split straight face blocks - stacked with the rock face straight side to the front
- Design flexibility - corners, curves & steps (7/2010 corners) (7/2009 stairs) (5/2009 seating)*
- Domestic and commercial retaining/landscaping and noise control (1/2007 noise barriers)*
- Heavy duty erosion and sediment control (27/1993 river bank)*
- Storm water control and shoreline protection (10/2007 detention ponds) (2/2005 shoreline)*
- Light and do-it-yourself garden landscaping (33/94 street of dreams) (15/2003 do-it-yourelf)*
- Land reclamation and terracing - creating extra space (6/2010 play ground) (1/2008 retreat)*

Terraforce has based its business philosophy on fair and ethically sound principles. We believe that the well being of a society depends to a large extent on the quality and value of its living environment. Large expanses of asphalt and concrete, planned without consideration for aesthetics and sustainability will eventually erode the foundation of our existence. (5/2005 consider tomorrow)*

Terraforce is committed to professional design service and the development of first-class products. We strive to provide the installers of our blocks with all the guidelines and advice they need to deliver safe walls that are pleasing to the eye.

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TERRAFORCE Concrete Retaining Blocks (CRB) are factory made hollow units of uniform strength and dimensions. They have been substantially tested and analysed under field and laboratory conditions and are manufactured under licence by reputable manufacturers on five continents.

The blocks can be used as part of either a gravity system or as the fascia for a geosynthetic reinforced segmental retaining wall structure or as a fascia for a cement stabilized backfill.

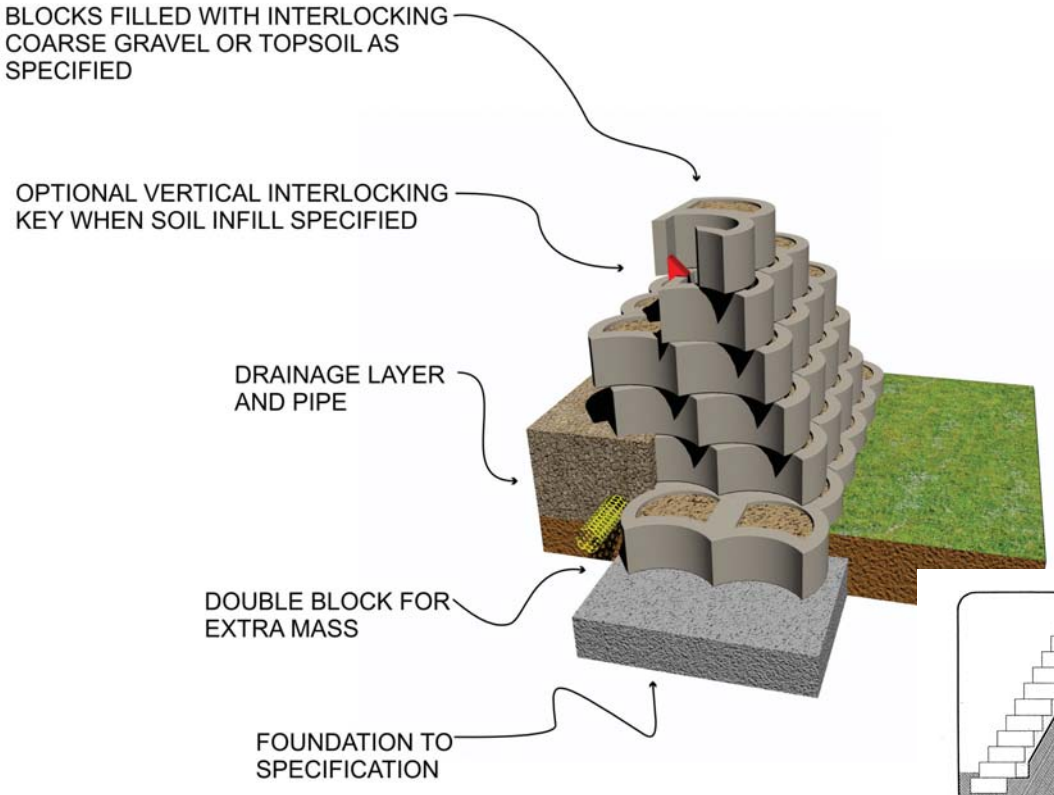
Gravity retaining: gravity retaining walls rely on their self-weight to resist lateral earth pressure, and such walls have been in use for centuries. In a gravity system the Terraforce masonry units can be stacked several courses deep to provide support to the forces imposed by the retained soil; the weight and geometry of the stacked units prevent the constructed wall from sliding on its base or at an intermediate height, toppling over, or rotating out of position.

Reinforced Soil Retaining: Sometimes the complexity or wall height required for certain installations dictate retaining walls that are reinforced by either geo fabric/geo grid material or, in tough cases, concrete filled layers of blocks.

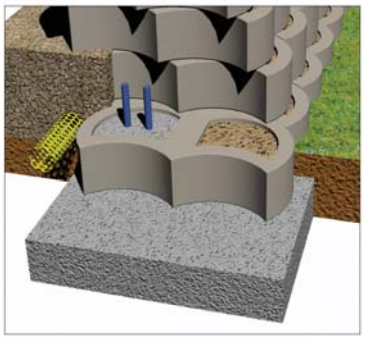
Occasionally severe space limitations or extreme situations dictate the use of a double skin of Terraforce blocks with reinforced concrete infill and/or stabilised backfill. (38/2004) (49/S/95)*

This type of installation, while similar in nature to conventional reinforced concrete / masonry retaining walls, offers a number of added advantages:

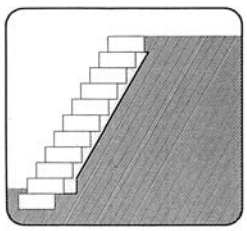
- **Ease and speed of construction** - no shuttering and less specialised construction skills required.
- **Aesthetic appeal** - choose between split face blocks or smooth moulded appearance. It is even possible to retain a degree of plantability in some cases. (6/2008 Monte Casino)*



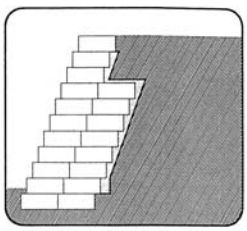
Mass Gravtiy Retaining wall



OPTIONAL R.C INFILL



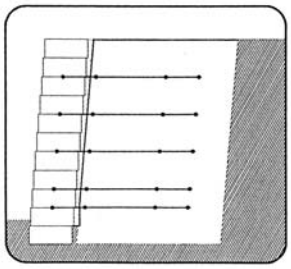
LIGHT GRAVITY WALL



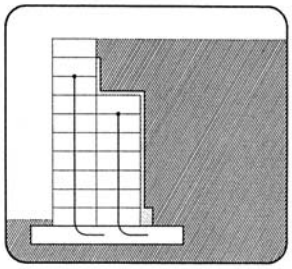
HEAVY GRAVITY WALL

Composite retaining: These walls are geo-synthetic reinforced soil, segmental retaining walls. They utilise reinforcing sheets of geo grid or suitable woven geo textile which are locked into the fascia blocks and are embedded in a body of engineered fill. (1/2010 levels of excellence)*

Composite retaining wall design and construction procedures with Terraforce blocks have been subjected to rigorous laboratory test. 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 based on experience with a large number of systems tested over many years.

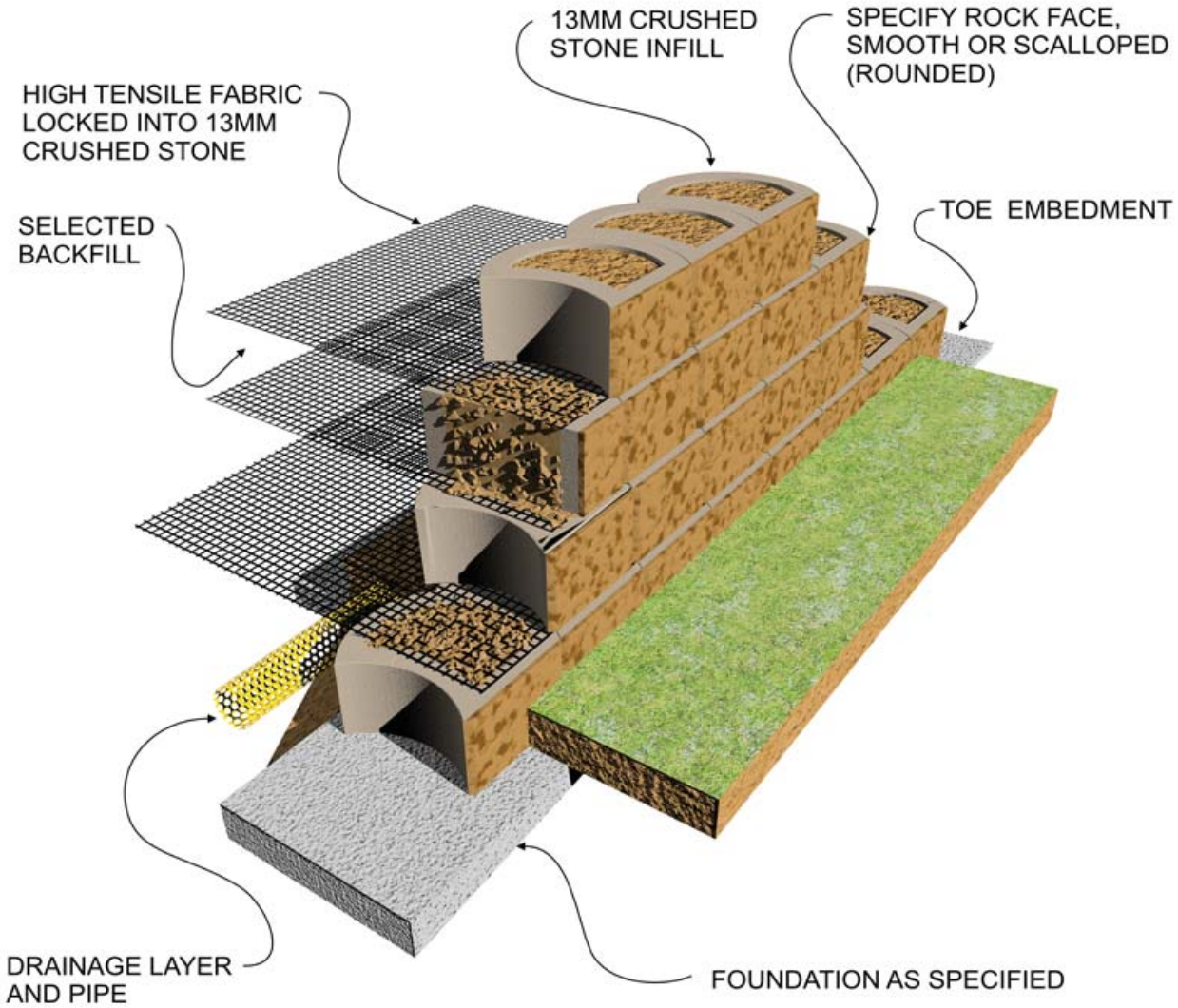


COMPOSITE STRUCTURE



VERTICAL R.C. FILLED WALL

Composite Retaining wall
(earth reinforced with geogrid)



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BRIEF INSTALLATION GUIDELINES

Develop a precise plan for your Terraforce wall by analyzing your site, noting slopes, drainage and shape of wall. Measure the length and vertical height to obtain the surface area and thus the number of units required.

Remember that retaining walls require professional design and supervision input and must comply with local building regulations. Refer to Terraforce design and installation manuals available.

1. Prepare a level foundation, gravel or concrete as directed by site conditions. Compacted gravel foundations are usually sufficient for structures not higher than (1) one meter. On sloping sites the foundation may be stepped by block height at intervals to suit the slope.

2. Place first row of blocks to required alignment and ensure that the units are level in all directions. A small amount of mortar will assist with accurate levelling on a concrete foundation. Note: Stretcher or running bond is preferred but not always possible. Stack bond is allowed. (Installation Dubai - Construction Guide 3)*

3. Install drainage pipe with outlet and free draining backfill as specified behind first row of blocks. A length of flexible pipe will assist in setting out smooth curves.

4. Fill blocks with good quality soil or soil compost mix and tamp lightly. In this instance the round face elevation was chosen. (Installation Vancouver L18 - Construction Guide 1)*

5. Continue construction, row by row while backfilling and compacting free draining material as each row is completed with topsoil infill. In situ or precast interlocking keys to be installed when directed by the engineer.

6. When specified, install geo grid/geo textile on compacted backfill and wedged between blocks (or cut and folded into blocks) as indicated by the engineer.

7. Terraced walls must also be well founded and must not impose a surcharge load on the lower wall.

The completed installation can now be turned into a growing investment by your imaginative choice of plants. (3/2010 greening of walls)

Your local supplier will recommend an experienced installer for that rewarding finish. For a professional design service, please contact your local engineer or Terrasafe at **www.terraforce.com**

TOOLS YOU MAY NEED

- Pick
- Shovel or spade
- Line and level
- Trowel
- and occasionally a disc cutter.

Your supplier will recommend a qualified installer for that professional finish.

* Refer to www.terraforce.com/downloads for PDF case studies.

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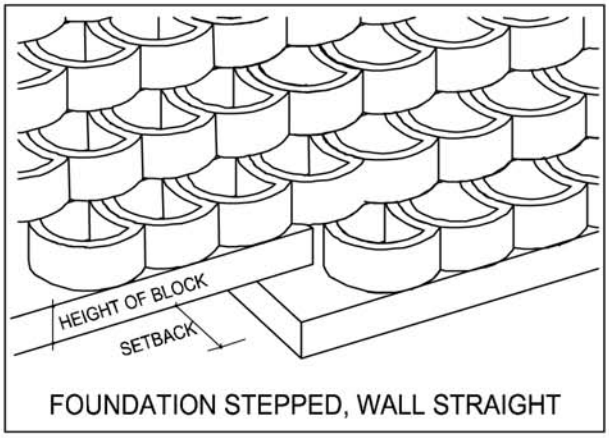
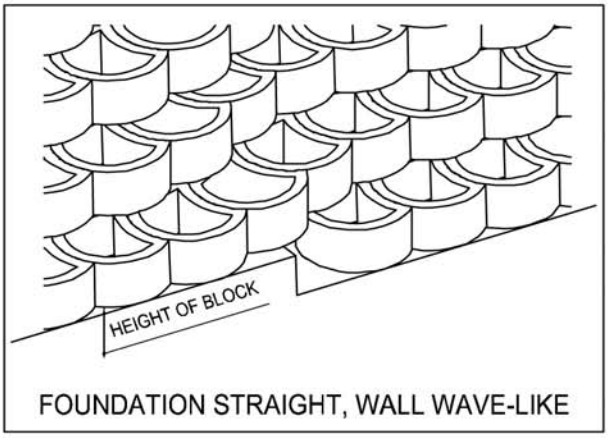
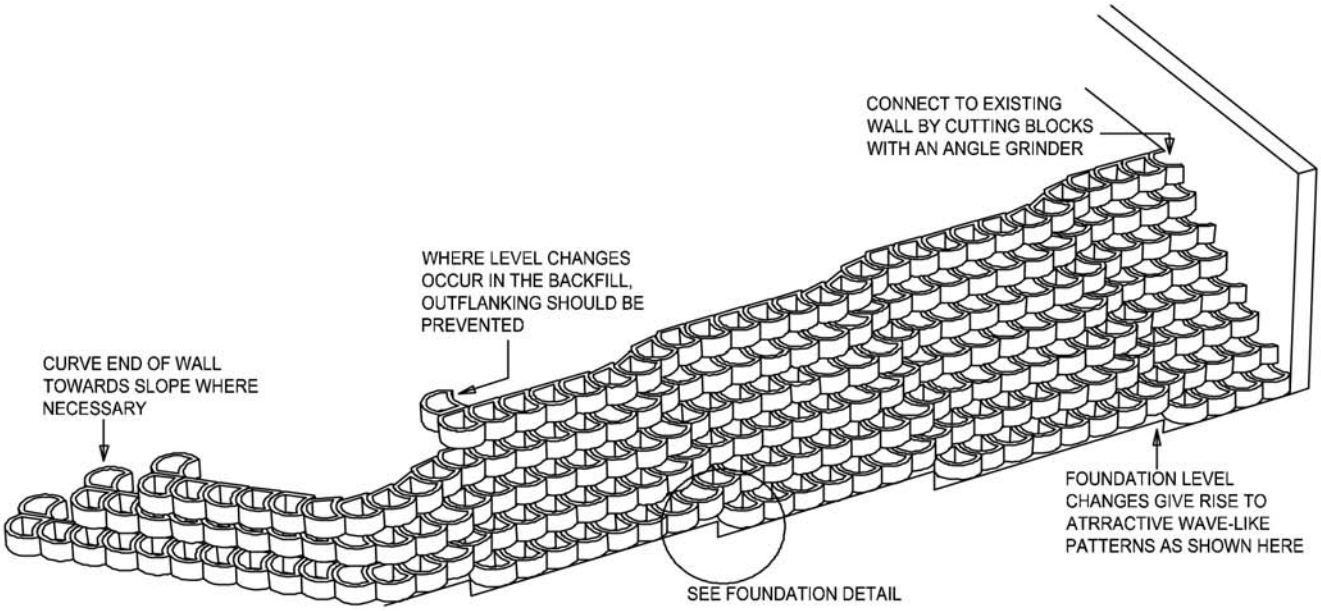


FOUNDATION STEPPED, WALL STRAIGHT



FOUNDATION STRAIGHT, WALL WAVE-LIKE



ELEVATION

SLOPING FOUNDATION LEVEL -
WHERE BOTTOM ROW FOLLOWS ONE STRAIGHT LINE OR
ALTERNATIVELY-FOUNDATION STEPPED IN TWO DIRECTIONS

FOUNDATIONS

Prepare a level foundation, compacted earth, subbase or concrete as directed to suit site conditions. The top of finished foundation level should be at least 150mm below natural ground level. Compacted earth foundations are usually sufficient for structures not higher than 1.5metres. When poor ground conditions occur or higher walls are to be built, please consult your local supplier with regards to foundation details. On sloping sites, the foundation may be stepped in intervals to suit the height of units. **(SEE ILLUSTRATION ABOVE)**
Note: **No services and trenches are to be permitted immediately in front of the foundation.**

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