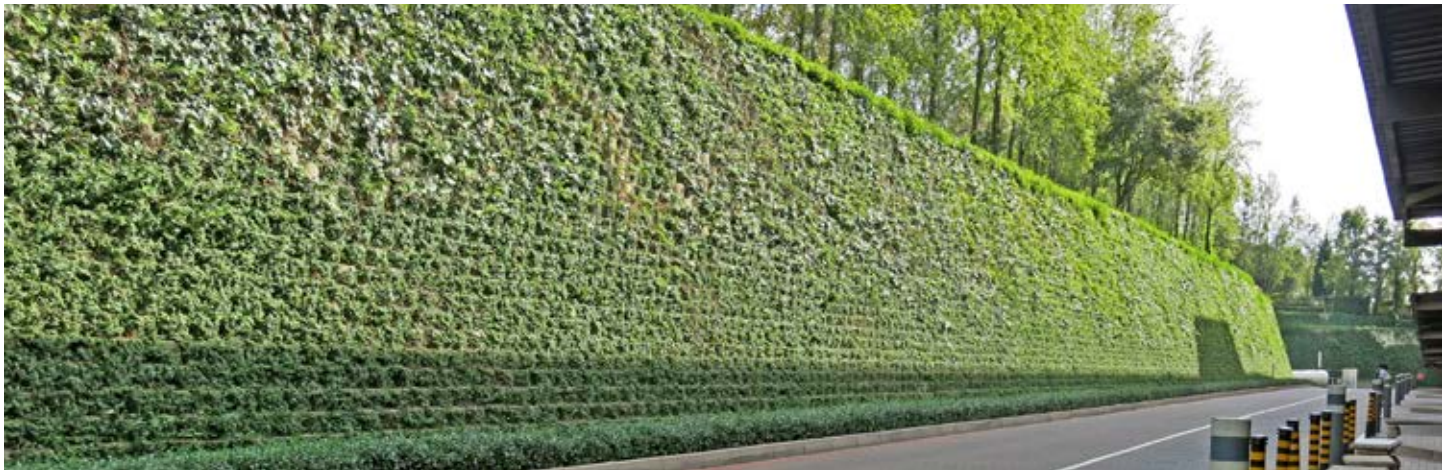
How to achieve correct irrigation for a Terraforce® retaining wall



Your retaining wall is complete. It looks fantastic, lush and freshly planted. However, in a few months and after a few forgotten watering sessions, it resembles the desert Gobi – the plants are wilted and dry. The reality is, that any planted landscape needs proper irrigation and maintenance. Most importantly incorrectly installed irrigation can trigger wall failure in large commercial installations.

Silvio Ferraris, Pr Techni Eng. HNDT (Civil), from ReMaCon Products CC, a Gauteng-based concrete retaining block manufacturer, highlights that it's not the actual watering spray action but how landscapers install the irrigation system that can cause real problems.

Tips for installers and landscapers

1. Use at least a class 6 irrigation pipe and refrain from using class 3, as they are too soft for commercial applications.
2. To prevent too many pipe-to-pipe joints, the landscaper should opt for continuous lengths of pipe.
3. Use an irrigation system that has leak-proof jointing. Either pipe-to-pipe "T"-joints or sprayer joints.
4. When installing the system, the pipes and sprayers need to be placed as far behind the rear of the retaining wall blocks as possible.

Sprayers can propel the water to cascade downward into the plant pockets. For high wall sections, pipes can be placed at intermediate height levels against the wall, with spraying again occurring top-down.

5. When it comes to more complex irrigation with connections into junctions and control boxes, it's best to place these into a sump; so that if leaking occurs, the problem will be quickly detected by the runoff water on the surface.

By not following point 5, slow leaks will seep into the backfill, creating saturated conditions that can result in potential wall failures.

Please note!

Like water mains are pressure tested, the irrigation system must be thoroughly tested before the landscaper leaves the site. This ensures a reduced risk of leakage that can damage the retaining wall.

6. Maintenance, especially in commercial developments, must be ongoing. The landlord needs to ensure that the landscape maintenance team often checks for leaks.

Did you know?

If you slack on maintenance, examples of sites have proven that there are potential failure problems up to five years after completion because of leaking irrigation joints.

A well-planted and irrigated retaining wall not only offers structural safety but also looks eye-catching. As noted above, a good irrigation system that functions according to the needs of the retaining wall requires numerous steps to ensure that the plant life survives and continues to flourish throughout the years.

A successful irrigation implementation at Oasis Retirement Village. A case study:

Noise barrier before planting and irrigation at the Oasis Retirement Village, South Africa

Good irrigation successfully kickstarted total plant cover at the Retirement Village

A skilfully planted and irrigated retaining wall, besides being more structurally safe, also looks good.

In 2005, a large noise barrier wall (or berm) using Terraforce L12 blocks was installed by Decorton Retaining System, Western Cape Terraforce recommended retaining wall contractor, running along busy Ratanga Road and facing the Oasis Retirement Village, Century City, South Africa.

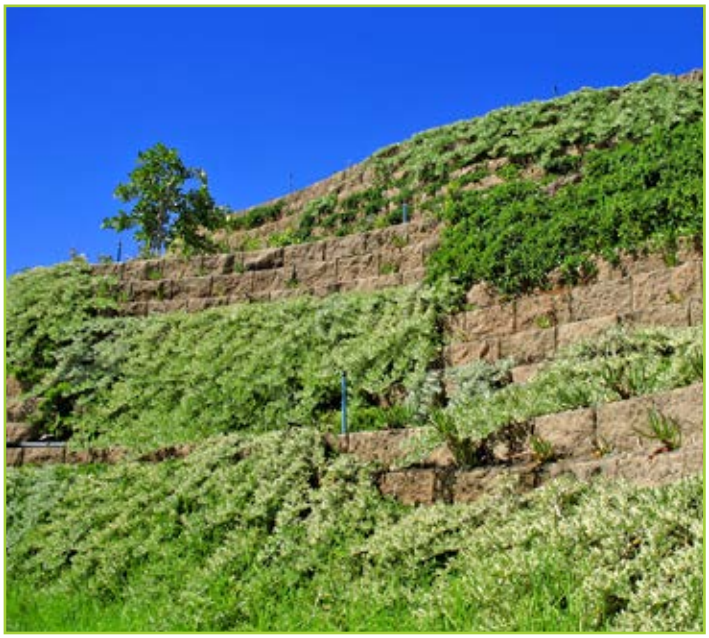
The three undulating Terraces, specified by Planning Partnership, well-known Cape Town based landscape architects, were later used by the landscaping team from Real Landscapes to create instant hanging gardens with mostly water-wise indigenous planting.

The project later went on to win the Concrete Manufacturers Association (CMA) Premier Award in 2008, for excellence in retaining block walls, impressing the judges with its lush vegetation softening the overall visual impact of the retaining wall.

Project Expansion:

After several years, the client loved the results so much that another major extension was implemented in the form of a double-sided, near-vertical noise barrier. In 2020 the berm was extended again. Today there is significant growth of the established indigenous vegetation on all sections of walls.

This is principally due to the first-rate irrigation system implemented at the end of 2005 by Cape Irrigation Systems, who installed the fully automated irrigation on all three levels of the retaining wall to ensure effective coverage of all areas.



Water-wise creepers and shrubs are thriving with strategically placed sprayers

The planted wall offers traffic noise mitigation adds an extra layer of security

Consideration during the design stage (specific Oasis Retirement Village)

1. Prevailing winds, and road traffic adjacent to the berm.

2. Accurate application of water to ensure that the soil does not become saturated due to overwatering.

3. Drip irrigation was a brief consideration but was rejected due to fluctuations in effluent water quality.

4. Due to the maintenance requirements of a drip irrigation system on a project of this nature, a conventional overhead "blanket type" irrigation design was decided on.

Why drip irrigation can prove problematic when used in conjunction with recycled water.

Particles treated in effluent water can cause blockages as the flow path in the drippers is too small and when the system is shut down during the wet winter months, algae can grow and further compound the problem. The "blanket type" overhead irrigation system chosen can easily reach all areas in the terraced-type installation, such as this one, and would only be hard pressed on very high walls, where supplementary measures would have to be considered.

The bottom line is that vegetated Terraforce walls offer a multifaceted approach to environmental stewardship, combining erosion control, habitat creation, air and water quality improvement, and sustainable design principles.

Technical irrigation details of the site

1. The irrigation on the berm consists of just over 200 static type shrub sprinklers with nozzles varying from 3m to 4,5m in radius.

2. A total of 30 gear-drive rotor sprinklers with a spray radius of 10m were also installed to stabilise the "back" of the retaining wall.

3. Approximately 700m of HDPE pipe was used for mainline reticulation and 1300m of Class 6 LDPS piping was used for the sprinkler lines.

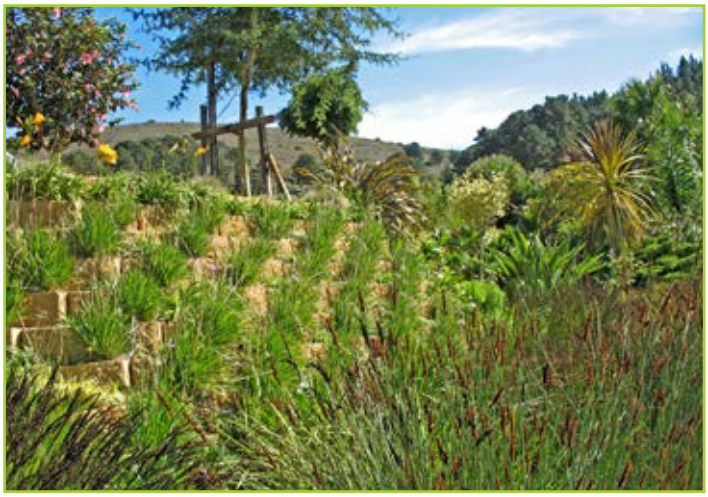
4. A Hunter ICC modular controller, dedicated to irrigation only, runs 18 Hunter PGV 25mm solenoid valves.

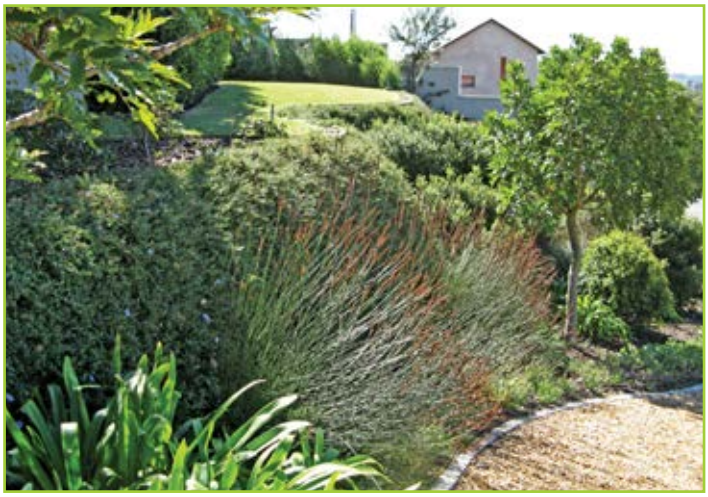
The above serves as one example of a specific irrigation system. It quickly becomes clear how many factors come into play when aiming to ensure a successful result over several years. It all depends on the functional needs of the retaining wall, which in turn determines the aesthetic requirements and those of the commercial buildings they serve.

An irrigation system can be complex, depending on the needs of the client, but it is important to remember what the end result will be – a beautiful, vegetated retaining wall that elevates the space for years to come. See guide to **Planting your Terraforce wall**

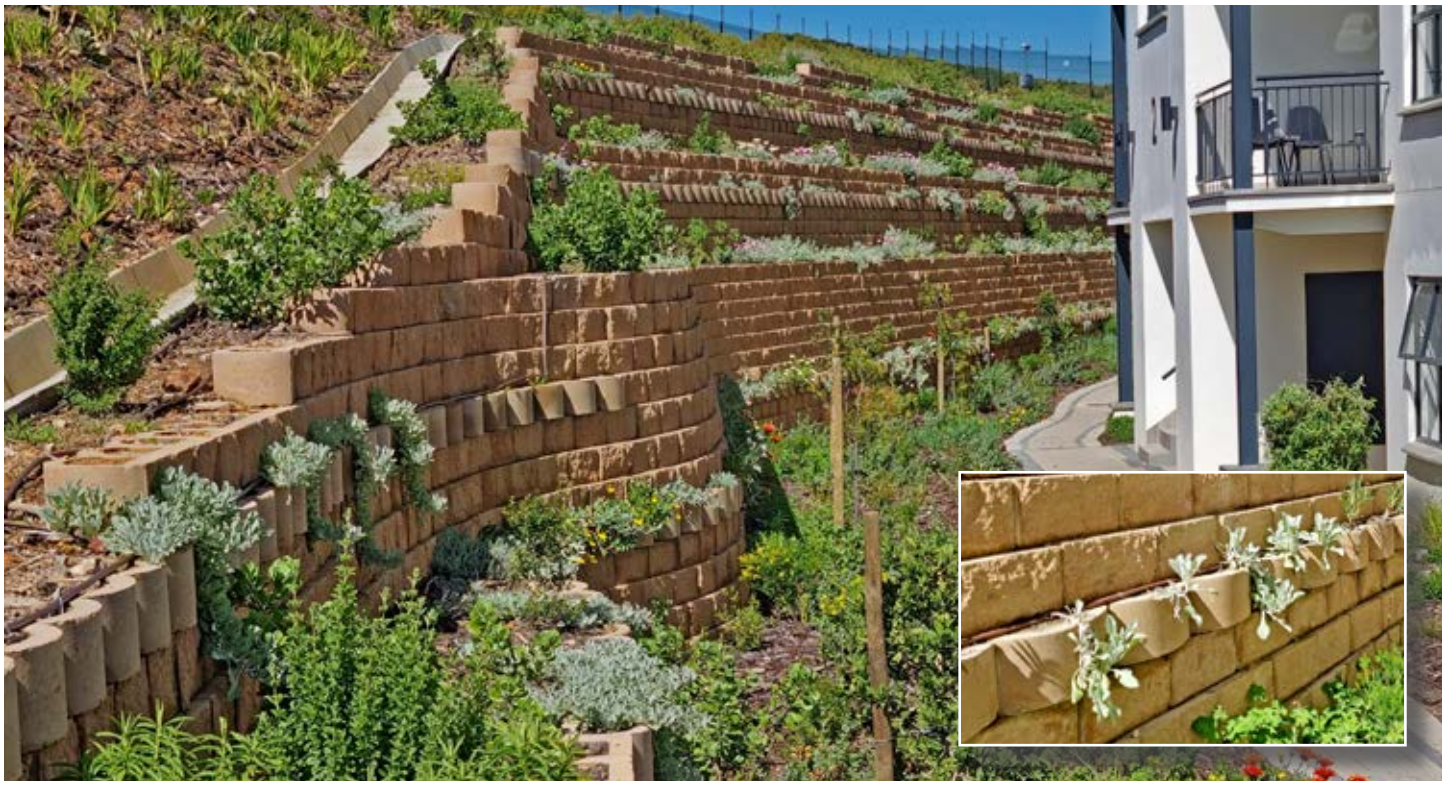
Acknowledgment and thanks go to Terraforce, ReMaCon Products CC, the Concrete Manufacturers Association and Cape Irrigation Systems for the information contained in this article.

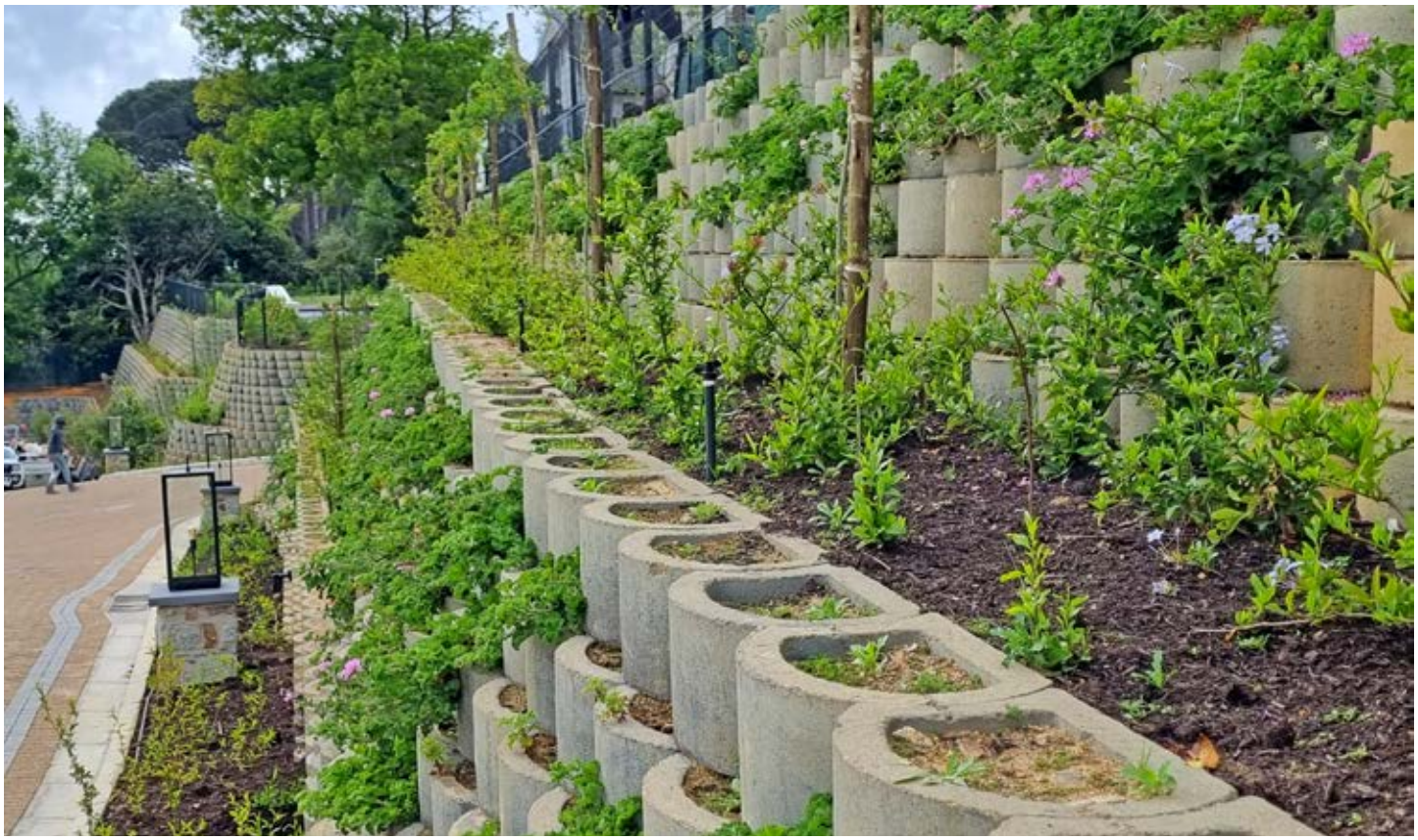
Examples of successful irrigation on TERRAFORCE walls





Drip irrigation running along round face block rows that were installed at intervals between near vertical rock face rows.





Sprayers can propel the water so that it cascades downward into the plant pockets.