

Atlantis®
GREEN CITIES FOR LIFE

Commercial Building Greece

Project Location
Greece

Atlantis Application

Void Fill

Project Overview

Completed in October 2007, the project incorporated three metal garden beds designed with opposing sides following matching wave profiles. Two garden beds were positioned beside the building entrance and a third within the foyer. The beds were designed to be filled with soil and finished with turf, with soil depths reaching at least 1 m in numerous locations.

With an underground car park directly below the building, the depth of the garden beds created concerns regarding both the quantity of soil required and the resulting floor loading. Approximately 400 m³ of Atlantis Flo-tank® modules were incorporated as void fill to reduce the soil volume and associated loading while maintaining the required wave-profile geometry.

Technical Summary

Project	Commercial Building Greece
Location	Greece
Application	Void Fill
Completion	October 2007
Size	400m3
Surface Use	Turfed garden beds
Atlantis System	Flo-Tank®

Design Challenge

The three garden beds incorporated a distinctive wave-profile geometry, requiring the internal soil levels and finished turf to follow the changing height of the metal sides. In numerous areas, the required soil depth was at least 1 m, resulting in a substantial volume of planting media.

The depth of the garden beds presented two specific constraints: the cost associated with the required soil volume and the additional weight loading on the floor beneath the garden beds. This loading was particularly relevant because an underground car park was located directly below the building.

The void-fill configuration also needed to follow the varying wave geometry rather than form a uniform horizontal layer, while allowing water infiltrating through the soil profile to enter the Flo-tank® modules.

01 Provide void fill for three metal garden beds.

02 Accommodate soil depths of at least 1 m in numerous locations.

03 Reduce the volume and associated cost of soil required.

04 Reduce floor loading above the underground car park.

05 Configure the void fill in staggered levels to follow the wave profile of the garden beds.

06 Allow water infiltrating through the soil layer to enter the Atlantis Flo-tank® modules.

Solution

Approximately 400 m³ of Atlantis Flo-tank® modules were used as void fill within the three garden beds. Replacing a proportion of the required soil volume with Flo-tank® modules reduced both the quantity of soil and the associated loading on the floor beneath the garden beds.

The interiors of the garden beds were lined with thermoplastic membranes to provide waterproofing, followed by a layer of water-permeable geotextile. The Flo-tank® modules were then installed over the geotextile in staggered levels, enabling the void-fill profile to follow the wave geometry of the garden-bed sides.

The modules were subsequently covered with geotextile and soil placed at levels corresponding with the wave profile. Turf was installed over the soil, flush with the varying side profiles. Water infiltrating through the soil layer could enter the Flo-tank® modules, providing an opportunity for water recycling.

Benefits

- Approximately 400 m³ of Flo-tank® void fill incorporated across the three garden beds.
- Reduced soil volume required within areas reaching at least 1 m in depth.
- Reduced floor loading above the underground car park.
- Reduced soil cost through replacement of part of the planting-media volume with modular void fill.
- Staggered Flo-tank® configuration accommodated the wave-profile geometry of the garden beds.
- Water infiltrating through the soil could enter the Flo-tank® modules, providing an opportunity for water recycling.

Considerations

The interiors of the garden beds were first lined with thermoplastic membranes for waterproofing. A layer of water-permeable geotextile was installed over the membrane before placement of the Atlantis Flo-tank® modules.

The modules were arranged in staggered levels to follow the changing wave profile of the metal garden-bed sides. Once installed, the modules were covered with geotextile and then with soil placed at corresponding levels. Turf was laid into the soil flush with the wave profiles of the garden beds.

Project Outcomes

- Approximately 400 m³ of Atlantis Flo-tank® modules installed as void fill.
- Void-fill system incorporated across three metal garden beds.
- Soil volume reduced within garden beds reaching at least 1 m deep in numerous locations.
- Floor loading reduced above the underground car park.
- Flo-tank® modules arranged in staggered levels to follow the wave-profile geometry.
- Infiltrated water able to enter the Flo-tank® modules, providing an opportunity for water recycling.

The key design relationship was between garden-bed depth, irregular geometry and structural loading above the underground car park. Approximately 400 m³ of Flo-tank® modules replaced part of the required soil volume, while their staggered arrangement followed the changing wave profile of the garden beds, reducing floor loading without altering the intended landscaped geometry.

Did You Know?

Approximately 400 m³ of Atlantis Flo-tank® modules were installed in staggered levels as void fill across three garden beds, with soil depths reaching at least 1 m in numerous locations.













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Thank You For Your Attention



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