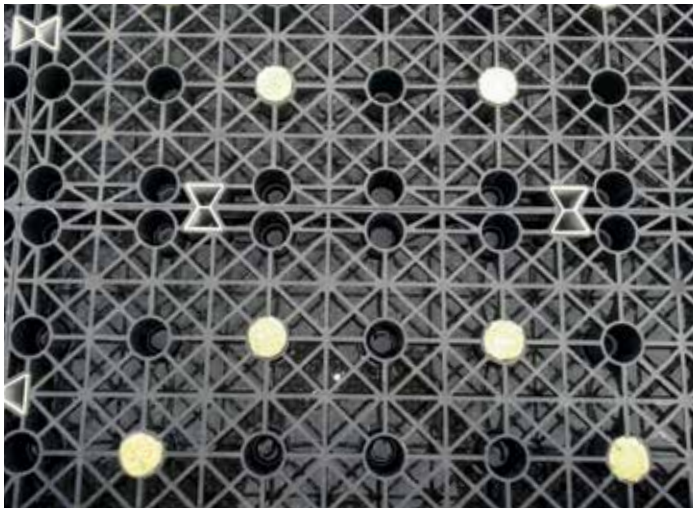
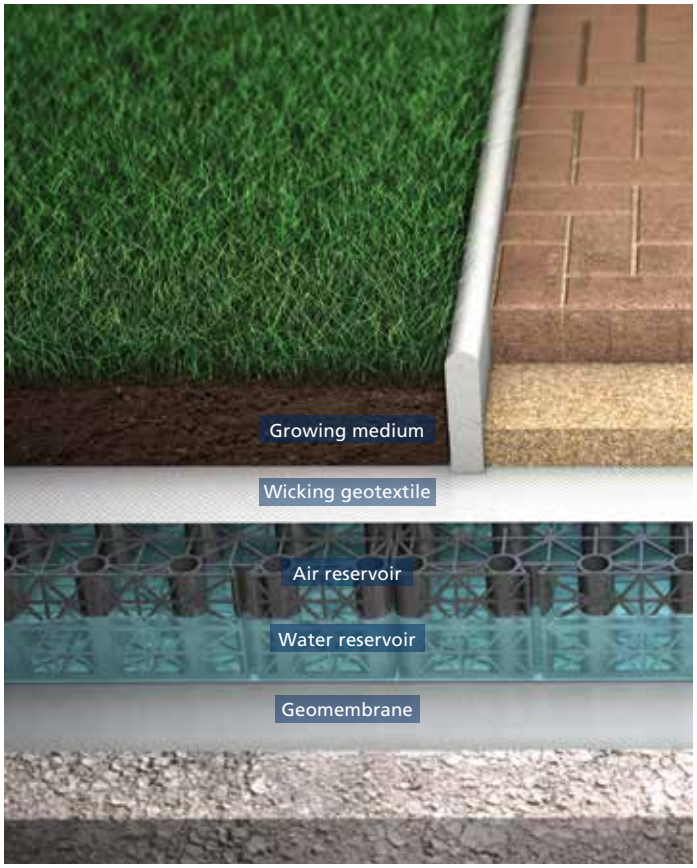
Permavoid System: **Passive Irrigation**

Passive irrigation uses an inert porous medium to transport water and oxygen to the roots and surrounding soil, which boosts the amount of water held in the soil in dry periods and promotes the use of water as a valuable resource.

The Permavoid system can use passive irrigation to effectively replenish soil moisture content at shallow depths. The 92% void ratio of the Permavoid Capillary cells allows a high volume of stormwater to be stored within the system, before being moved up through the cell via capillary action. This is achieved by filling the hollow structural columns within the Permavoid geocellular units with absorbent Capillary Cones, which draw up the stormwater that has collected within the unit.

The system helps to maintain a consistent nutrient content for longer, and allows engineers to design load-bearing systems in urban settings that not only mimic nature, but can also be incorporated into a sustainable stormwater management system.





Applications:

- Green Roofs
- Brown Roofs
- Landscaped Areas
- Sports Pitches
- Amenity Areas
- Bioretention Systems

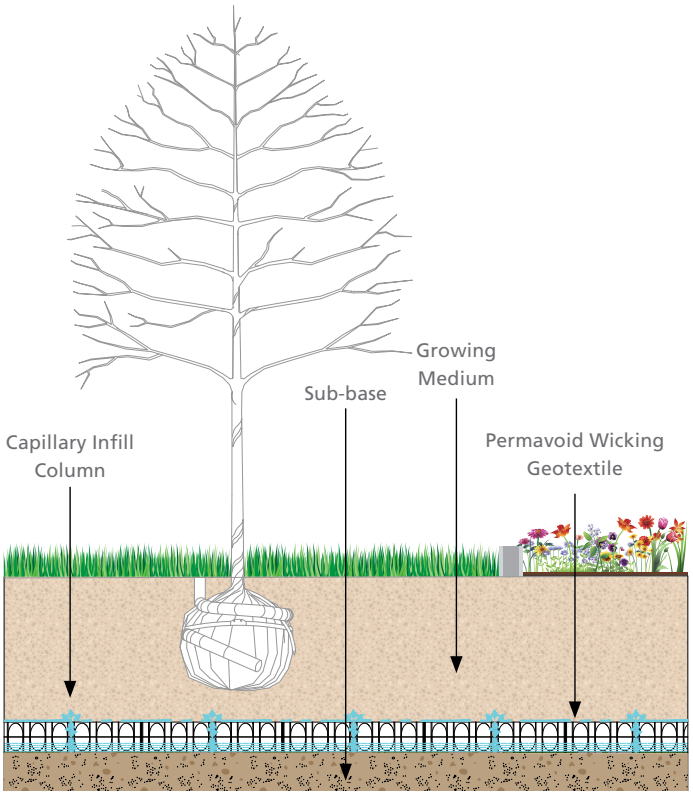
Polypipe

Permavoid System

Technical Bulletin

Issue No: 5 July 2016 P2

Typical section through Permavoid capillary irrigation system showing infilled Permavoid Capillary Cones



For smaller areas or individual landscaped areas it is possible to provide on-demand irrigation using Permafoam units. Permafoam is an open celled, highly absorbent and water retentive phenolic foam that is incorporated into a Permavoid geocellular unit. It can store 3lc/unit (125l/m²) and has water permeability up to 0.452 l/s/m. Permafoam has the same unique structural properties of the Permavoid cell and can be incorporated as part of a structural raft used for attenuation/retention.

Benefits of Permavoid Capillary Cones

- Provides a consistent, high strength raft to support the rooftop garden surface loading and associated maintenance traffic.
- 92% void ratio of the Permavoid Capillary cells allows for the collection of a reservoir of stormwater within the system.
- Passive irrigation replenishes soil moisture content, and enables plants with medium water demands to be installed on rooftops with slender soil cover. This reduces the loading on roofs associated with deeper soil cover, and minimises evaporation and over-spraying losses associated with over ground irrigation systems.
- Passive irrigation maintains the soil moisture content at between 15% and 45% by volume, ensuring plants have the correct amount of soil moisture to promote growth and prevent wilting.
- The hydrophilic geotextile, installed above the irrigation system, allows the wicked stormwater to spread across a large surface area.
- Provides an undersoil drainage system that can be incorporated into a sustainable stormwater management system.
- Provides rainwater interception at source
- Air reservoir provides oxygen to root system
- Evaporative cooling mitigates the heat island effect by reducing urban air temperatures.
- A zero energy irrigation system, Capillary irrigation potentially replaces the need for a pumped irrigation system. This produces a system with a low carbon footprint and low maintenance requirement, reducing the carbon footprint for the development and maximising BREEAM points.

TECHNICAL WORKSHOP

Contact Us

to find out about our Technical Workshop

Look out for our Permavoid Technical Manual, available to download from our website

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