

Bio-Filter

Modular drainage (VersiCell®) Manukau Waste Water Services

Client: Manukau City
Date: September 2004

Manukau Waste Water Services approached Permathene initially for the supply of the drainage cell for the two new biofilters used for odour control at the new facilities at Mangere treatment plant.

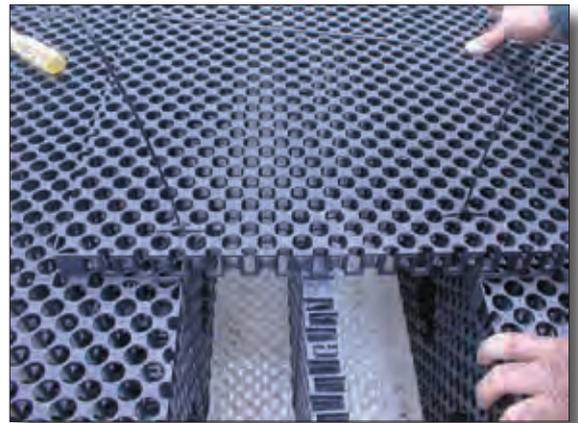
The main construction of the bio-filter is the normal masonry block wall design sitting a top a concrete slab. Originally the design was for the drainage cell to sit on top of 190 x 400 H6 treated timber blocks. This option was chosen instead of using what is considered to be the norm, 200 x 400 masonry block, how ever due to the highly corrosive nature of the gasses produced in the wastewater process these masonry blocks have been degrading and failing.

Permathene provided a design that would replace the timber blocks with our VersiCell interlocking drainage module. VersiCell has the ability to lock together with its unique locking system, we created a rib system that the top layer of drainage cell could lock into the ribs below thus creating a rigid flooring system that could support the load of the 900mm media mix sitting on top of the drainage cells.

The benefits of using the Permathene Bio-filter system is increased airflow through the cells at the bottom of the Biofilter as the drainage cells have a very high flow rate. The cost of using the Permathene Biofilter design is far cheaper than the H6 Timber treated blocks and due to the drainage cells being made from HDPE they are resistant to the corrosive effects of the gas that is passed through the Bio filter.

Permathene is available for supply and install or just supply of this system.

Note: Today Permathene represents Ausdrain modular drainage systems. Please refer to the Permathene Technical Catalogue for detail.



Roof Garden Drainage

**Modular drainage (VersiCell®), Nonwoven Geotextile (Syntex®)
Apartment complex, Auckland, New Zealand**

Client: Viaduct Point Apartments

Date: October 2002

The Viaduct Harbour in Auckland is being developed with numerous prestige apartment blocks. This high profile part of the Auckland CBD attracts buyers who demand only highest quality fittings and finishes. A Permathene modular drainage cell was selected for this project because of its high compressive strength. This system is relatively new but has been proven to be more effective than traditional methods using only sand and basecourse. The advantage is that it provides a completely flat, high strength platform for paving stones. This means a parking area can be quickly made which is both highly functional and perfectly flat.

This 1100 m² project was designed for the purpose of resident parking. The modules were placed and locked together. Syntex nonwoven geotextile was laid over the cell to act as a separation layer. Coarse washed sand to a depth of 20 mm was then placed over the entire geotextile to allow for even placement of the paving stones. The area was made using 50 mm precast pavers, 200 mm growing media, and 80 mm coloured concrete.



The cell is light weight. Weighing only 2.7 kg /m² savings are made in handling and installation, as well as reducing the static load on the overall structure. Typically 150 mm to 200 mm of aggregate (scoria) can be replaced by a 30 mm thick cell resulting in increased soil depth for the landscaped area.

Available in New Zealand from Permathene, is quickly installed by clipping the modules together. There is no extra clip in this system as required with some brands. The system was placed directly on top of the waterproofing membrane.

Placed over the top of the installed cell is Syntex nonwoven geotextile (GNP A1). This polypropylene geotextile acts as both a separation barrier and drainage fabric. Sand is then placed over the geotextile to allow the paving stones to be easily levelled into place.

The cell panels were easily cut by hacksaw and electric saw to allow fitting around protrusions and finishing to corners.

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