The Control of Water in a Green Roof

Water Storage

Providing moisture to the roots is essential to maintain good healthy plants on a green roof.

Much of the moisture is supplied by natural rainfall, which is collected and stored by the layers in a ZinCo green roof.

The drainage layer plays an essential part in storing rainwater that filters through the growing medium. Once the troughs in the drainage layer are full, excess water overflows, to be soaked up by the moisture mat. Only water that cannot be absorbed by the moisture mat drains from the roof down the roof outlets.

In dry periods, stored water gradually diffuses up into the growing medium for uptake by the plant's roots.

Rainwater Harvesting

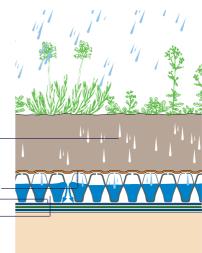
Excess rainwater run-off can be collected by rainwater diverters, and used for non-potable purposes such as lavatory flushing (which represents approximately 60% of total water consumption in a typical commercial office environment), and landscape irrigation.

Any water which is not collected is treated as surface water run-off.

Irrigation

There should always be easy access to a water point for irrigation purposes, especially for intensive roof gardens. An automatic system is the ideal solution as it provides a constant water supply. The ZinCo Sub Landscape Irrigation system is simple and reduces the water lost through evaporation which occurs during surface applied irrigation by up to 30%. See page 48 for further details.

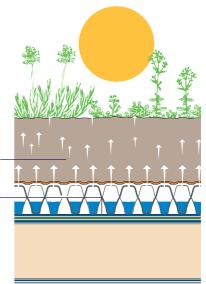
Fig 8: How a green roof stores water



- The intensive/extensive substrate is highly porous, storing up to 3 litres/m² per 10mm depth of substrate.
- Once the substrate is saturated, the excess water filters into the drainage layer and over into the moisture mat below.
- The profiles of the drainage layer permits excess water to drain in any direction to the outlets.

Typically, green roofs will store between 50 and 90% of rainfall.

Fig 9: How a green roof releases moisture



- As the substrate dries out through plant usage and evaporation the water stored in the drainage layer diffuses up into the substrate.
- Once the drainage layer has run dry the moisture mat releases its moisture through diffusion up through holes in the top of the drainage layer.