

ACO Blue Roofs

The ACO System (Patent Pending)

Design overview



Blue Roofs

Overview of current design practice

Conventional blue roof design looks to provide the rainwater attenuation within the build-up of a normal roofing system as a single solution in a similar way to that of a green roof. Ultimately this has led to a degree of confusion and differing interpretation as to how a blue roof should be designed given that its purpose and function is very different from flat roof drainage design.

In simple terms a standard flat roof is designed to drain quickly in the worst case event – a short intense summer storm lasting minutes, whereas a blue roof is designed to drain slowly – to mitigate the effects of downstream flooding that can be a duration of hours. Designing a roof drainage system to cater for both extremes is a difficult challenge.

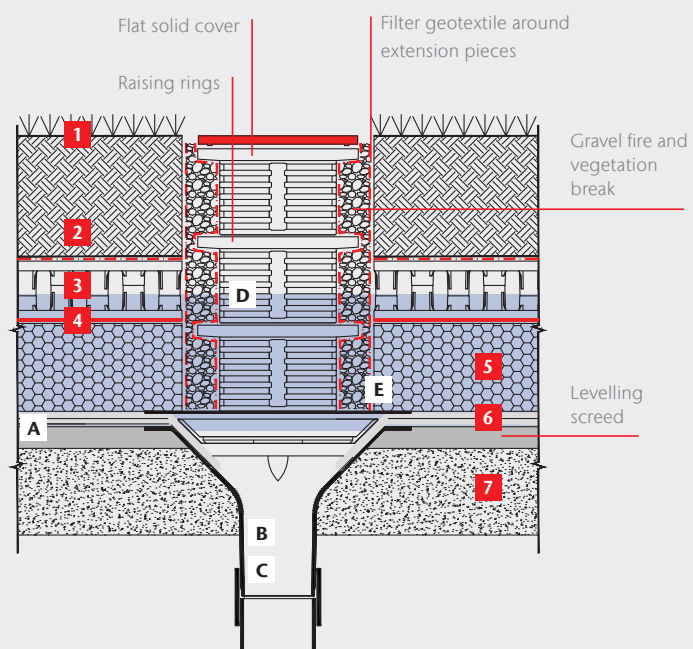
Current design dilemmas associated with blue roofs include, drain down times, roof falls, number of roof outlets, pipe gradients, roof construction - most notably with inverted designs, and not least a lack of standards, all of which lead to issues with design liability and warranties.



Typical inverted roof design

Key

- 1** Planting (200-1000mm)
- 2** Filter geotextile
- 3** Storage void
- 4** Protection fleece
- 5** Insulation
- 6** Waterproofing
- 7** Roof slab



Current design issues

- A** Zero roof falls or minimum 1:80 fall
- B** How many roof outlets and overflows?
- C** Potential low flow
- D** Increased hydraulic head and duration – greater risk of leaks
- E** Reduction in U-Value and potential buoyancy of insulation

ACO Blue Roof Attenuation System

The ACO System (Patent Pending)

The ACO solution separates the competing drainage requirements by engineering an elevated structural attenuation system that operates independently of the flat roof drainage system, allowing both storm eventualities and systems to be engineered to known standards and best practice.

Separating the design issues ensures that compromise is not needed. The attenuation system can drain slowly in normal use and in an unforeseen eventuality the attenuation system can be bypassed if necessary and the flat roof drain quickly.

The system operates by creating a structural drainage void between the top of the roof waterproofing and the underside of the attenuation lining membrane that surrounds ACO RoofBloxx. As the blue roof tank sits inside the roof area a weir overflow is created at the perimeter of the tank and above the ACO roof outlets ensuring free flow of rainwater if the blue roof tank is full. The design of the system allows the blue roof tank to be controlled through as few ACO blue roof flow restrictors as needed and integrates with the ACO range of roof outlets.

The system can be incorporated under a wide range of roof finishes from soft landscaping to trafficked areas, and with a variety of roof construction types including inverted roofs and podium decks.

ACO Blue Roof Benefits

- The flat roof drainage including the roof outlets can be designed to BS12056:3 so the attenuation criteria are not compromised
- Drain down times are not affected as the blue roof attenuation system is independent of the flat roof drainage
- The roof membrane warranty is not compromised due to the addition of an attenuation liner which reduces the risk of leaks
- Design responsibility is clearly separated
- Inverted roof designs are not compromised – no reduction in U-value or potential buoyancy issues
- Risk is eliminated allowing use in a wider range of building categories/applications
- Normal roof falls – no backfall
- Level invert for blue roof tank
- Separate blue roof restrictor – no low flows

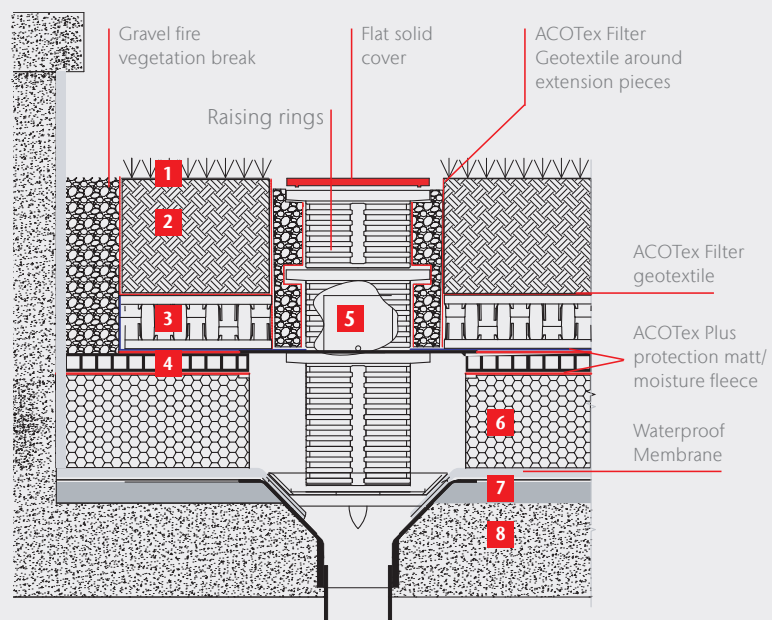
Design Service

ACO's in-house technical design team can assist with attenuation sizing and the design of blue roof drainage systems using bespoke software. They can also consider any other surface water drainage requirements by modelling the behaviour of the roof during various storm events.

ACO inverted blue roof design

Key

- | | |
|----------|--------------------------------|
| 1 | Planting |
| 2 | Planting substrate |
| 3 | RoofBloxx tank (depth to suit) |
| 4 | ACO RoofBloxx Cell 30mm |
| 5 | Blue Roof flow restrictor |
| 6 | Insulation |
| 7 | Levelling Screed |
| 8 | Roof slab |



Request a FREE Blue Roofs Calculation

Our in-house software calculates the water storage volume, together with the discharge rate email abdtechnical@aco.co.uk



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- ACO Access
 - ACO Building Drainage
 - ACO Water Management
Civils + Infrastructure
Building + Landscape
 - ACO Sport
 - ACO Wildlife

To download a copy of the
ACO RoofBloxx Product
Overview brochure visit
[www.aco.co.uk/
products/roofbloxx](http://www.aco.co.uk/products/roofbloxx)



ACO Building Drainage

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ACO. creating
the future of drainage

