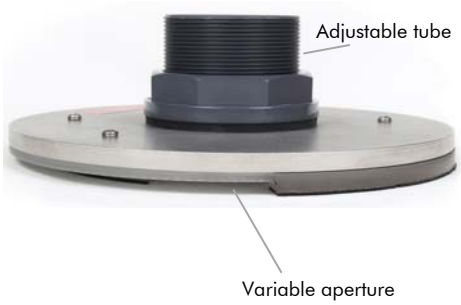
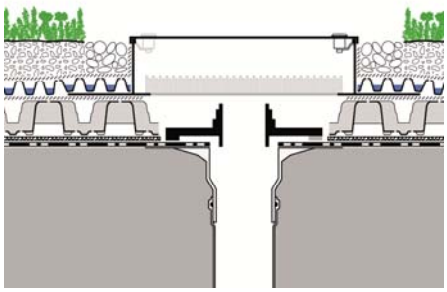
Info Sheet
Stormwater Management Roof

Generally spoken, every green roof build-up retains a certain amount of water and is therefore effective as a retention area. If the water retention within a conventional green roof is to be increased, more substrate needs to be applied. Apart from a higher total weight this results in an undesired "vegetation transformation" requiring more maintenance.
Therefore a different approach is adopted with the ZinCo Stormwater Management Roof. Additional water storage volume is provided below the actual green roof build-up. This volume is created by so called spacer elements (generally Retention Spacer RS 60) applied on the entire roof surface. The further system build-up is applied above these spacer elements.
Preconditions for this type of construction are a sufficient load-bearing capacity of the roof, corresponding connection heights and no inclination. The water storage takes place temporarily by means of run-off limiters, which are inserted above the roof outlets. Water is accumulated up to a defined level due to an adjustable tube and runs off again within a defined period of time (usually less than 24 hours) via an adjustable aperture.
The greenery itself is not affected by this water dam-up in any way.



„ZinCo Run-Off Limiter"

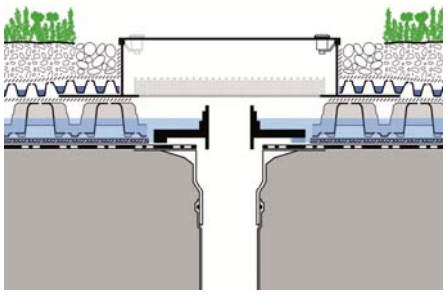
Operating Mode of a Stormwater Management Roof:



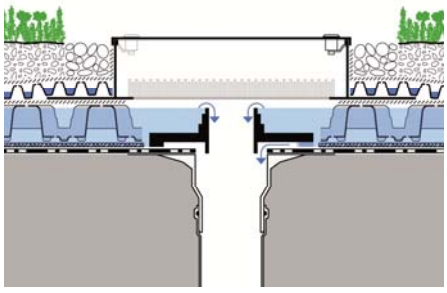
As long as the system build-up can absorb incoming precipitation, no water is stored within the retention level.

System build-up „Stormwater Management Roof":

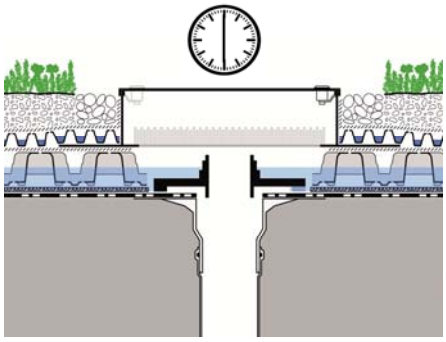
Plug plants according to Plant list "Rockery Type Plants"
System Substrate "Rockery Type Plants", ca. 70 mm
Filter Sheet SF
Floradrain® FD 25-E
Filter Sheet PV
Retention Spacer RS 60
Filter Sheet PV
Roof construction with root resistant waterproofing



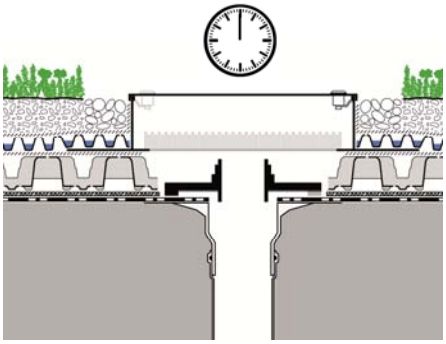
In case of prolonged precipitation events, water dams up within the retention level and runs off gradually.



During extreme precipitation events, water is being accumulated within the retention spacer up to the upper edge of the tube. Excess water flows off via the tube.



The water flows off with a restricted discharge rate during a pre-defined period of time (e.g. 24 hours) through the aperture, ...



... to ensure the retention volume is emptied and is available for the next precipitation event.

Subject to technical alterations and printing errors • First edition 11/2016; Revised 09/2018

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Setting the Run-off Limiter:

The selection of the retention spacer depends on the specifications made by the planner. In case the planner determines a certain level of retention, a corresponding spacer is selected depending on its storage capacity. Some municipalities define water discharge restrictions for construction works, which means that a certain discharge rate (l/s) - up to a discharge-free plot - shall not be exceeded. Based on this and taking into account the desired emptying period of the retention space, the required spacer element and the setting of the run-off limiter can be determined.

The decisive parameters for the calculations are the relevant precipitation event (design rainfall e.g. "rainfall of a century") and its duration.

Furthermore the planner needs to decide when the emergency overflows shall respond. ZinCo's recommendation for the order is the following:
After exceeding the defined accumulation level, the water runs first into the tube of the run-off limiter. Only when this is overflown by a defined amount, the emergency overflows should respond.
Of course, it can also be determined that the emergency overflows respond before the maximum accumulation level is reached.

The ZinCo Run-off Limiter offers the advantage that both the retention level and the discharge rate are adjustable even after completion of construction works.

If the emptying time is set to exceed 24 hours and the retention level exceeds 100 mm, one needs to be aware that increased requirements may be placed on the waterproofing.

Additional Information:

In any case, the additional load resulting from the "Stormwater Management Green Roof" must be taken into account. If all parties involved provide their written consent, this additional load can be considered instead of the snow load.

The ZinCo Run-Off Limiter RD 28 is suitable for any roof outlets with a foamed connecting flange. For screw-in flanges the Run-Off Limiter RD 48 is available.

The Retention Spacer RS 60 is applied as a standard solution. If a higher pressure resistance or a different retention level is required, alternative products are available (for example the heavy duty Retention Spacer RSX 65). Please feel free to contact us.

Temporary overwatering of the substrate does not cause problems for the vegetation. Furthermore it is not in contradiction with the FLL Green Roof Guidelines, which allows even short-term flooding of the vegetation. As a consequence even a retention volume of 70 l/m² can be realized with the 60 mm high Retention Spacer RS 60 elements (retention volume 55 l/m²) if a green roof build-up with an additional drainage element is installed above.
However, in comparison to the spacer only about 20 % of the substrate volume are available for water retention, as substrate particles displace water.
As there is usually a sufficient retention volume provided, the vegetation above does not change due to an excessive supply of water. The extensive planting remains extensive.

A permanent overflow of the spacer elements however would result in a transformation of the vegetation (see also FLL Green Roof Guidelines item 5.3).

Following information is necessary for the calculation of the diameter of the throttle opening:

- Relevant precipitation event
- Maximum dam-up volume
- Time required to empty the retention volume
- Maximum discharge per time unit

We will gladly assist you with any calculations.
Please provide any relevant data by filling out the "Checklist Stormwater Management".

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