Benefits of the system

High compressive strength

Due to its high compressive strength all ND WSE hd Water Retention Elements are perfectly suited for the use in trafficable (pedestrians, cars and heavy goods vehicles) roof constructions.

Calculated runoff through adjustable flow control system

Every water retention system is to be combined with an adjustable flow control system (ND AFC-200 Adjustable Flow Control). The project specific flow rate is adjusted to the calculated runoff values by turning and fixing the adjustable flow control to the required position in line with the flow control table.

Relieving the storm water system

For trafficable roof applications, the ND WSE-80hd Water Retention Element, with a build-up height of 80 mm, is recommended. Other heights are available upon request. The ND WSE-80hd can store water up to 76 l/m².

Technical properties			
Product name	Height	Compressive strength*	Water retention capacity
ND WSE-50hd	approx. 50 mm	> 1,050 kN/m²	approx. 47 l/m²
ND WSE-80hd	approx. 80 mm	> 1,050 kN/m²	approx. 76 l/m²
ND WSE-100hd	approx. 100 mm	> 700 kN/m²	approx. 95 l/m²
ND WSE-150hd	approx. 150 mm	> 500 kN/m²	approx. 142 l/m²

*Values were determined on a full-contact (top/bottom) press. The test speed is 10 mm/min and the temperature is approximately 23+ / -2 ° C.

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NOPHADRAIN®
SMART GREEN ROOF SYSTEMS

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NOPHADRAIN®
SMART GREEN ROOF SYSTEMS

Nophadrain Water Retention Systems for trafficable roofs

Water retention systems for sustainable and climate-proof cities

Why use water retention systems?

The consequences of the climate change are and will be the challenge for our and our next generation. On the one hand we face temperature increase. On the other hand, we have to cope with heavy and unforeseen rainfalls, causing flooding and severe overloads of the storm water systems in cities. This combined with the trend towards urbanization and the increasing wish towards "green, more biodiverse living space" to fulfill our basic needs, challenges our society.

The reclaiming of land and subsequent sealing of natural soil by urbanization, is seen as one key drivers for the flooding issues. Since rainwater cannot percolate anymore into the ground, water runs off straight into the storm water system, causing overload of the storm water system, potentially combined with flooding. The small water cycle is more and more disturbed as there is no time for water to evaporate.

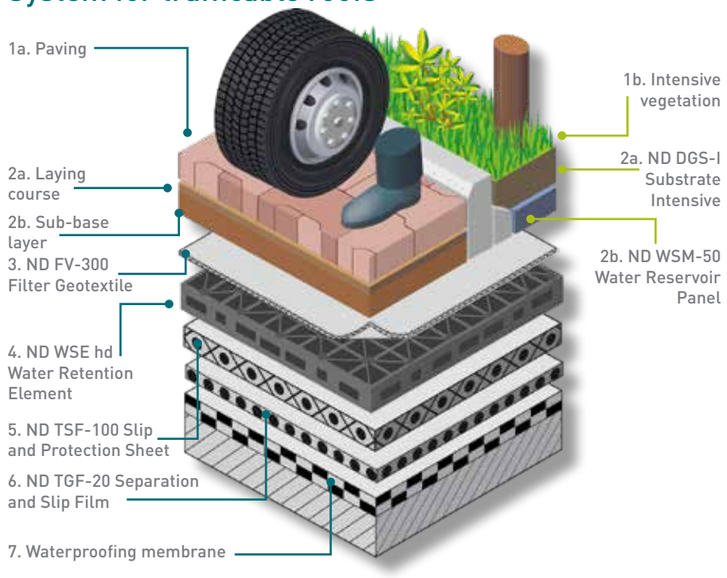
When equipping a basic trafficable roof with defined water storage elements in combination with an adjustable flow control system the trafficable roof transforms into a water retention and water management system. Based on rainfall runoff models, such systems can be designed to store calculated water volumes over a specific period (e.g. 24 hours) and to relieve calculated water volumes into the storm water system.

Nophadrain has developed a specific system for trafficable roofs based on the ND WSE hd Water Retention Element. The water storage capacity of this system varies between 48 and 143 l/m² (depending on the height of the element chosen – 50 to 150 mm). Combined with the adjustable ND AFC-200 Adjustable Flow Control (adjustable to reduce the water flow down to 0.04 l/s), this system builds the best base for any water retention system for trafficable green roofs.

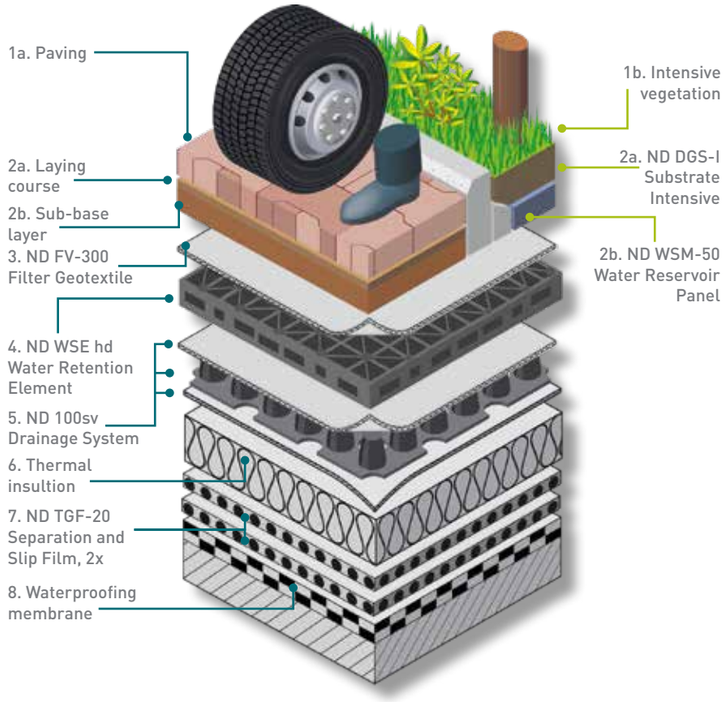
A strong base for trafficable areas

To cope with the expected mechanical stress of a trafficable roof, the ND WSE hd Retention Elements have a high compressive strength due to their special structural design. Combined with the strong GRK-5 class ND FV-300 Filter Geotextile and ND TSF-100 Slip and Protection Sheet, the system builds the right base for trafficable areas, potentially combined with vegetation. In all installations extra care has to be given to the definition of the maximum water storage level and overflow to assure that no water can accumulate into the sub-base layer. This increases the risk of the flushing out of fine materials which results in the destabilization of the sub-base layer and finally the entire build-up. When adjusting the build-up for an inverted roof construction the ND TSF-100 Slip and Protection Sheet is to be replaced by the special ND 100sv Drainage System.

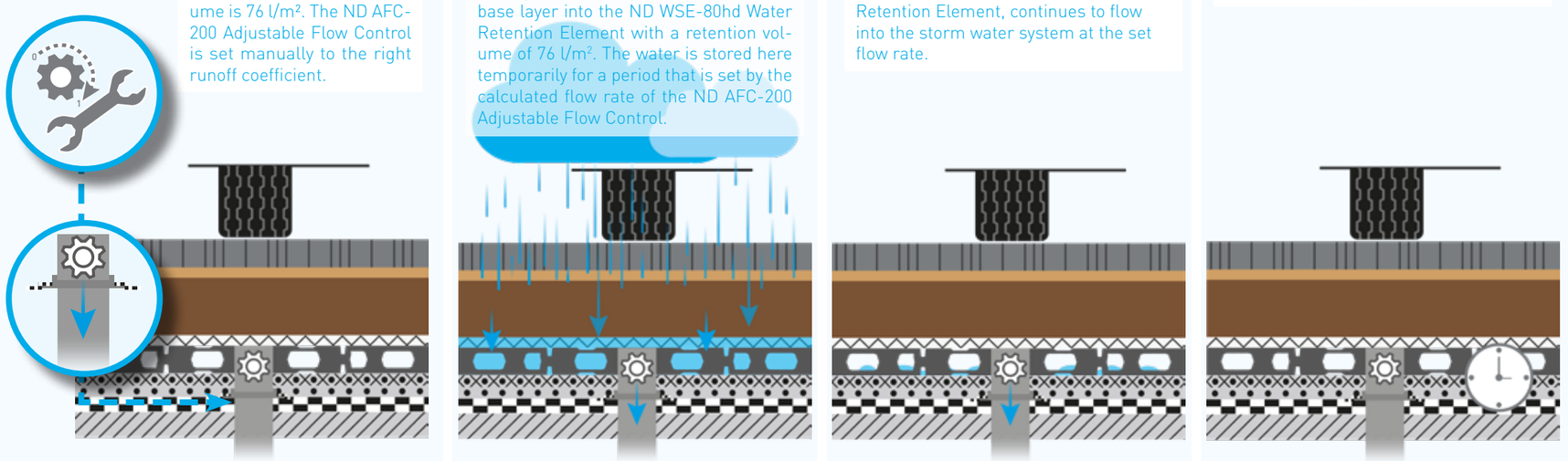
Typical build-up: Nophadrain Water Retention System for trafficable roofs



Typical build-up: Nophadrain Water Retention System for trafficable roofs on an inverted roof construction



This is how the system works*



*This example shows the option with the ND WSE-80hd Water Retention Element.