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Wastewater Underdrain Block Design

DE NORA TETRA™ SNAP T® Block

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In municipal wastewater and advanced wastewater treatment plants using gravity filters, the filter underdrain is one of the most important components contributing to overall system performance and operation – whether a new filter design or retrofitting an existing filter. An underdrain system is required to support filter media and to separate the filter media from the bottom of the filter.

In addition to providing support for the filter media, the underdrain system serves two primary purposes: to allow filtered water to pass through to the collection system and to start the distribution of backwash water and backwash air across the filter.

The DE NORA TETRA™ SNAP T® Block underdrain from De Nora Water Technologies is a proven design of filter underdrain offering superior distribution of both backwash air and water, concurrently. The revolutionary design further enhances block stability during backwash procedures and features additional passive interlocking as well as positive row spacing for improved backwashing distribution.

Product Specification – TETRA™ SNAP T® Block			
Length	Width	Height	Weight
543 mm	203.2 mm	187 mm	24 kg
21.375 in	8 in	7.375 in	53 lb

DE NORA TETRA™ SNAP T® Block

The DE NORA TETRA™ SNAP T® Block underdrain features a unique and patented (U.S. Patent Number 7,997,041) jacketed, 5000 psi concrete filled, interlocking underdrain design. This feature passively locks the position of the blocks within the underdrain, providing a passive interconnection between the rows of underdrain blocks in a fully interlocked underdrain grid. As a result, the weight of the entire filter floor can be used to counteract the upward forces of the backwash. The SNAP T® Block design is resistant to any uplifting from the backwashing routine. The underdrains are not susceptible to crushing weight from the media bed and they are also resistant to concrete degradation.

The small opening (0.635 cm or 0.25 in) between each block is maintained to allow backwash water into and filtered water out of the filter. Jacketed with high density polyethylene plastic for ease of installation, the blocks are less vulnerable to biogrowth clogging issues and are capable of supporting up to eight meters of media.

Features

- Heavy total block weight of 24 kg (53 lb); grout or anchored hold-down system not required
- Robust design constructed of 351 kg/cm$_2$ (5000 psi) concrete and HDPE
- Interlocking design does not need to be grouted down; no hold down anchors required
- No moving or wearing parts
- Corrosion resistant design
- Easy maintenance and simple installation
- Long life

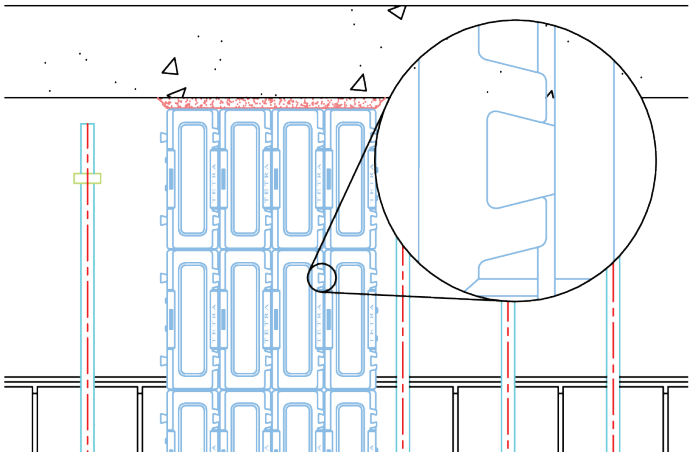
Benefits

- Excellent distribution of backwash air/water – more efficient bed cleaning and reduced filter operating costs
- Reduced installation costs and time
- Interlocking grid throughout entire filter bottom resists uplift, even from a water hammer event
- No maintenance requirements
- Weight of block prevents lifting
- Expected life of 35 to 50 years

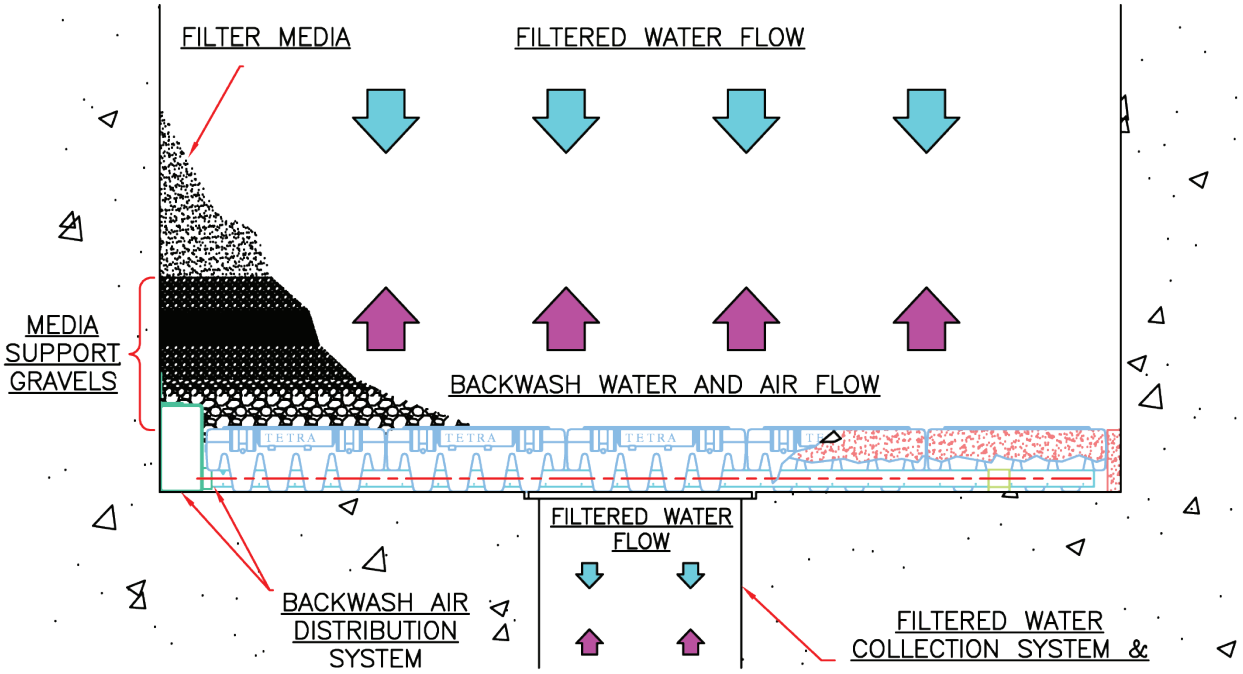
Materials

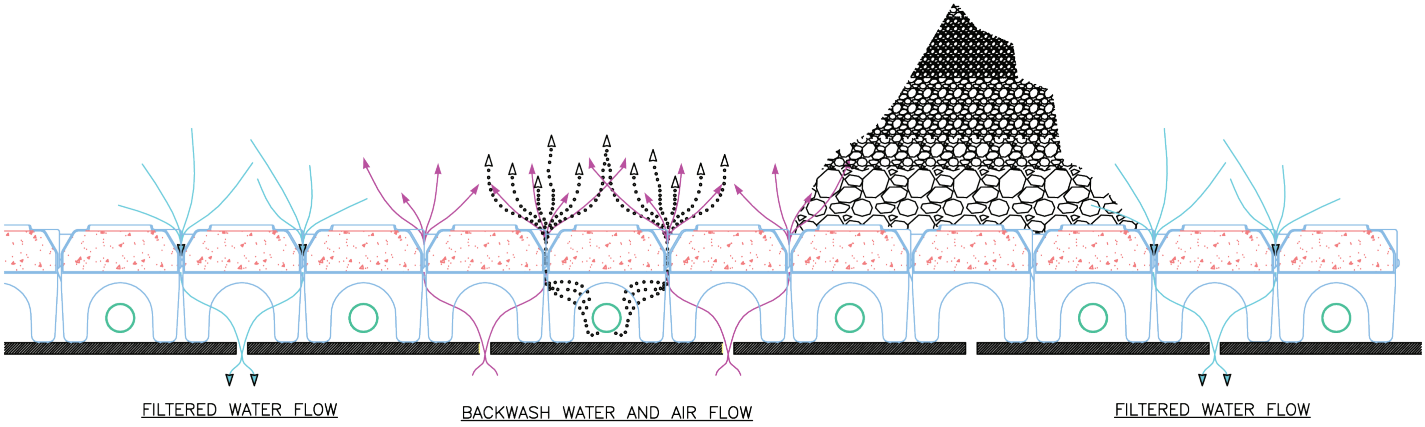
- Constructed of 351 kg/cm$_2$ (5000 psi) concrete filled HDPE

SNAP T® Interlocking Feature



Principles of Operation





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