

Monoflor[®]
HD Underdrain

Introduction

Over the past decade, there has been much documented evidence concluding that filter backwash systems which incorporate air scour capabilities provide superior cleaning efficiency and reduced water consumption over water-only or surface-wash assisted systems. Gradually, these air/water nozzle underdrain systems have become the industry standard. Ondeo Degremont's Monoflor HD concrete underdrain system incorporates air scour without use of precast underdrain components. A single, poured-in-place concrete floor provides superior structural strength without the need for sealants, while providing simple installation, even in retrofit applications. Even the posts which support the monolithic floor are formed in the same single pour of concrete.

The key component of the Monoflor HD system is a high-impact, molded polystyrene form. When concrete is poured into the form, it becomes a permanent part of the filter underdrain without deflecting. Each form includes nozzle adapters into which the distribution nozzles are threaded

after the concrete is installed. Disposable, threaded plugs are included to prevent concrete from entering the nozzle adapters. Once the concrete is cured, the plugs are easily removed, and the polypropylene nozzles installed.

A finished Monoflor HD installation is not only strong, but it's also less likely to suffer installation-related problems leading to media leakage or other operational difficulties.

Applications

The Monoflor HD concrete underdrain system can be incorporated in most filtration applications. Potable water treatment, advanced wastewater treatment, and various industrial filtration systems are all appropriate applications. Whether the application calls for multimedia or a single media, a Monoflor HD underdrain can be used. Monoflor HD underdrains are ideal for many retrofit applications since few restrictions exist regarding filter size or orientation.

The system is currently available in six standard pressure loadings, each designed in accordance with the ACI-318 code: HD-600 (Greenleaf Filter

Only), HD-1200, HD-1400, HD-1600, HD-1900, HD-2100. The current pressure ratings range from 600 PSF to 2100 PSF in both the upflow direction (backwash) and downflow direction (filtration). The Monoflor HD is NSF 61 approved.

Construction Procedure

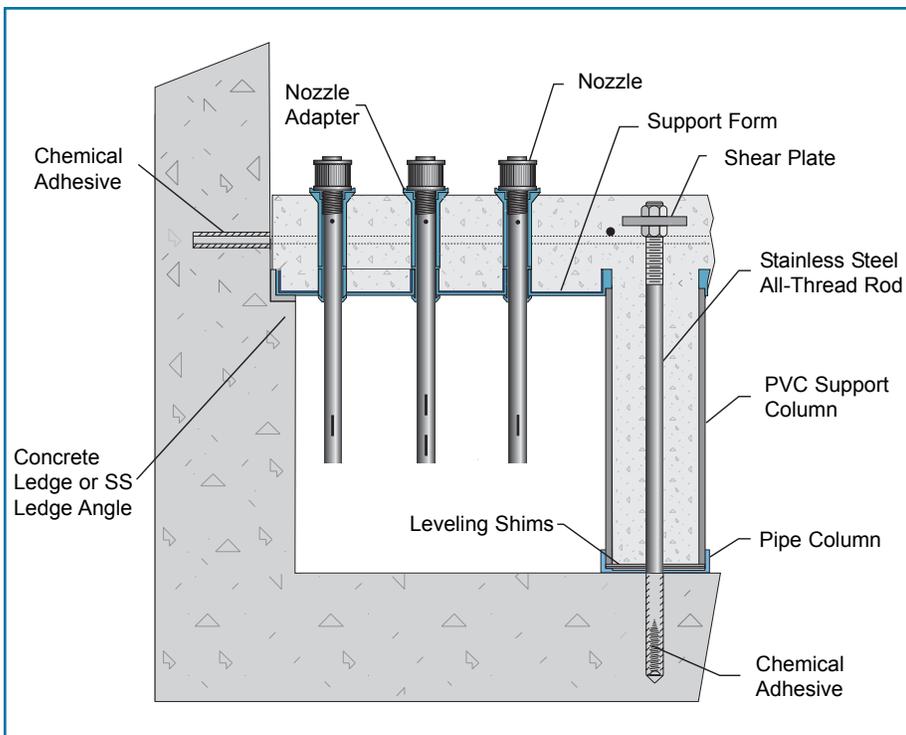
The Monoflor HD filter underdrain system is constructed using one-piece molded forms of high-impact polystyrene. The forms include pre-formed openings spaced on 6" and 5" centers, respectively, for receiving adapters and nozzles. The forms become a permanent part of the finished false floor once the concrete has been poured.

The polystyrene forms are supported on 6" diameter PVC pipe columns, which are filled with concrete when the floor is poured. A chisel-pointed stainless steel all-thread rod is inserted through each pipe column and chemically anchored into the concrete floor of the filter cell.

To tie the Monoflor HD underdrain into the filter walls, reinforcing rods are doweled into the walls. The result, after the concrete pour, is a filter floor that is firmly anchored, both at the periphery and into the filter floor. The six different standard structural designs will ensure that any foreseeable applied load, either during backwashing or filtration, can be met by the appropriate Monoflor HD design.

Leveling of forms and nozzles is assured prior to the concrete pour through the use of a pipe collar and leveling shims. Adjustment of individual nozzles or nozzle stems from above or below the plenum is not required.

Prior to pouring the concrete, nozzle adapters are snap-locked into the preformed cylinder openings without the need for caulking or adhesives. The adapters have removable threaded plugs to prevent the entrance of concrete. After the concrete is cured, the plugs are removed and distribution nozzles are screwed into the adapters to complete the installation.



Monoflor HD Underdrain Section View



Shims are used to adjust the height of the columns ensuring the polystyrene forms are level.



Nozzle adapters with threaded plugs are snapped into the forms and reinforcing rods are doweled into the filter walls.



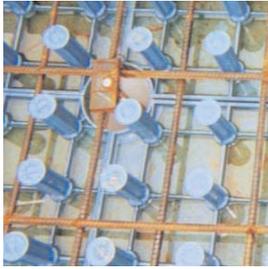
After the concrete is poured, the resulting underdrain will withstand applied loads from above and below during filtering and backwashing operations.

Advantages

Monoflor HD filter underdrain systems are not only less expensive to own and maintain, but they also cost less to install since the rebar and concrete are obtained locally, minimizing shipping and handling costs.

Other key advantages of the Monoflor HD Underdrain System:

- The high-impact, molded polystyrene form and nozzle adapters are specially designed to withstand the rigors of installation without deflecting or breaking.
- Monoflor HD underdrains are designed for simple installation of the air-water distribution nozzles and nozzle adapters, while alternative designs may require the tedious application of adhesive to each nozzle during installation.
- IDI's Monoflor HD system utilizes nozzles spaced on 6" and 5" centers, resulting in 4.8 nozzles per square foot. This concentration of nozzles ensures thorough media washing while maintaining uniform backwash water and air distribution.
- The use of a stainless steel, all-thread rod to tie the underdrain slab into the base concrete floor ensures structural rigidity for the life of the system.
- Various nozzle slot sizes are available to ensure compatibility with the specified filter media.



Monoflor[®] HD Underdrain



Contact us for information on
cost-effective water treatment
solutions.

P.O. Box 71390
Richmond, VA 23255-1390 USA
Phone: (800) 446-1150
(804) 756-7600
Fax: (804) 756-7643
www.infilcodegremont.com