

Tall, narrow systems worth a look



Narrow Trench Installation Technology means a narrow trench, a narrow product, good flow rates, and extended life span.

Good drainage to turf managers is like a doubleplay to pitchers: a best friend. While not a sizzling topic in conversation, drainage is so important it can make or break a field.

While the basic design of narrow and tall, or what some refer to as “panel” drains or “vertical” drains, has been around for years, many of the early products had open cores that led to poor flow capacity and higher structural failure rates. Today’s second generation of these systems are fundamentally different and instead have enclosed cores that provide structural integrity.

Gravity-operated drainage systems create paths of least resistance that allow excess water to leave the soil. “A system should remove only excess water that the soil can’t hold,” says Arnie Plowman of Varicore Technologies. “A lot of people believe that all the water is removed [by drainage systems] but it is not. Drainage only brings the soil water level down below the saturation point.”

Plowman’s company manufactures Multi-Flow systems. He says the benefits of his product’s design, like all panel-shaped drains, include increased surface area in contact with the soil and, because it is placed in a narrow trench, it is cheaper to install. “But the Multi-Flow design features enclosed flow channels which creates a stronger, faster flowing product,” says Plowman. “It can be closer to the surface, moving water faster, without being crushed by traffic.”

Backfill Multi-Flow with clean sand, he recommends, which acts as a filtration system for fines in soils. Different soil types offer corresponding challenges for turf managers, and drainage is a big part of it. If you’ve got a sandy loam, you can drain it with lines farther apart than in a clay soil. “We use slightly different techniques for different drainage patterns,” says Plowman, and adds that that’s the case with all systems.

Keys to good installation

Arnie Plowman, head of technical sales for the Multi-Flow system, says there are four keys to getting a good drainage system installation:

1. Choose a product with adequate flow rates.
2. Have an adequate system layout design that meets your specific recovery time preferences.
3. Get the grading correct for your drain lines.
4. Make sure the transport system for carrying water away from the field is designed well so it won't become a bottleneck to your drainage performance.

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Installation

Plowman says his system can be trenched in using a 4-inch width. "Many customers see our system, the flow tubes and the filter and think it will be expensive. But because you can install the system efficiently you can save money," he says.

Installation time is difficult to gauge, says Plowman. "If you bring enough people to the job it can be done in 2 days. It's not rocket science; I've seen it done by volunteers. Most maintenance staffs can handle it, though bidding it out is always an option.

"Our design functions to get rid of water in minutes. We can affordably lay out a system designed to handle 1-inch per hour rainfall events," he says.

Plowman says the life of a drainage system directly relates to its surrounding soil structure and the velocity of water as it moves into the system. Lots of variables play into this but suffice it to say, if your drainage system needs to be replaced, you probably need a new field. "For all the millions of feet of system we've sold we've never heard of an internal clog," he says.

Hydraway system

Jim Surrell, sales manager for Hydraway, says his company's drainage system has a designed trench width of 2 to 4 inches by 12 inches deep (for 6-inch product) and 24 inches deep for 12-inch in vertical installations. If the field is deep tined then the depth will be deeper, he says.

"Traditional pipe only allows 3-5% of water in per foot due to the small size of the openings in the pipe. Our system allows for water penetration of up to 90% of water per foot. Our core design creates an opening of more than 66 square inches per square foot. This is an incredibly fast intake of surface water," Surrell says.

"Our geotextile fabric is designed for high volume of water. We use a 4.5-oz non-woven that resists fines and clogging. The fabric is 'heat fused' bonded, not glued to, the core," Surrell says. "This allows for a secure system. The geotextile is approved for most DOT applications. A typical traditional drain system clogs due to the small openings and clay fines that pass through the rocks around the pipe."

The Hydraway 2000 drainage system is made of high-density polyethylene (HDPE) and can exceed its 9200 PSF rating. "HDPE has higher compressive strength than polypropylene and it resists chemicals," says Surrell. "And our core design promotes more water flow.

"We recommend for backfill a 'coarse' sand to be an added filter for clay fines in the soils," he says.

Installation

Is a contractor required to install or can turf managers do it themselves? Surrell says it depends mainly on the application and the amount that needs to be installed. "I have several customers who have the manpower and the equipment to install themselves. For example, the University of Michigan recently installed a few thousand feet with their own crews using a simple 4 x 12-inch trencher," he says. Hydraway has templates that will aid in a successful application depending on the slope and design of the field.



"There are contractors who have special equipment to install Hydaway that will trench a 2-inch trench up to 24 inches (depending on the application), remove the spoils, and install Hydaway in one pass," Surrell says. "Then a second piece of equipment comes behind the first installing the coarse sand via a hopper system. These contractors can install about 3000 lineal feet a day."

"If turf managers are simply removing water in selected areas, they typically will install themselves. If it's a new field install or a complete renovation is when a contractor who has the equipment to install our system is chosen."

Proper planning and selecting the right back fill is key to a successful installation, Surrell says. "I can't emphasize enough that short cuts should not be taken when the back-fill is selected." ■

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