EDITORIAL

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## Windows to Performance

By John Glassco (page 10)

Here is an alternative design for inspection ports in pressurized onsite treatment systems built with plastic chamber drainfields

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Plastic chambers are becoming a standard in onsite treatment leachfield design. However, installers are often on their own when it comes to construction details, especially with pressurized septic systems. Many chamber manufacturers simply do not have standard designs for ports and other details.

Photo A shows a standard completed drainfield with the vaults almost ready to backfill. The laterals have sweeps at both ends with threaded caps for squirt testing and lateral cleaning. Conventional ports use 4-inch risers with slip caps. The port bodies are slotted to fit over the laterals to bring the laterals to grade.

This conventional port has several drawbacks. First, the homeowner is faced with the six curious ports sticking up in the lawn when the job is done. The slip caps are hard to remove, and that often results in the entire port being extracted from the ground instead of just the cap (inset photo).

This usually encourages the owner to remove all the ports and fill in the holes. The ports then cannot be replaced without extensive work. Once the ports are removed, the location of the drainfield is lost, and periodic testing and maintenance are impossible.

Also, this conventional port design gives no access to inspect the floor of the drainfield or the depth of effluent in the system because it is outside of the footprint of the drainfield vaults. The lateral end sweeps are built out past the drainfield end caps. Diagnosis of distribution issues, drainfield failure and other problems is almost

impossible without visual access to the drainfield.

**Another approach**

An improved design is shown in Photo B. Here, the drainfield is shown being reviewed for backfilling by a health inspector. This design provides a single port at each end of each lateral with access for drainfield inspection, squirt testing and lateral cleaning.

A capped sweep tee is used instead of a straight coupler at the port base to stabilize the port and to prevent the port twisting when the threaded cap is removed. This also prevents the port from being easily pulled out of the ground.

The inset photo shows the underside of the port inside the vault with the lateral end sweep turning up into the port body. The end orifices in each lateral point down into an orifice shield to drain each lateral at the end of the dose. This is very important in colder climates where the laterals could freeze and burst.

The orifice shield prevents spray from undermining the vaults. A ceramic plate or a carefully placed rock can be used for this purpose instead. The construction sequence begins with the placement of the first vault. The 1-inch lateral is strapped to the underside of the vault with nylon zip-ties.

Orifices are predrilled in the shop using a drill press, alternating 30 degrees right and left to avoid masking by the undersides of the vaults. The port body, ASTM 3034 PVC, is located in the port cutout and extended up to within 6 inches from the planned finish grade. As each vault is clipped to the row, the lateral is strapped underneath.

The tee to the manifold in the middle of the system is positioned under a hole-saw cut-out between the vault ribs. Then the opposing lateral is glued into the central tee and the drainfield is continued.

When the last vault in the row is clipped in place, the hole for the far-end port must be drilled in the top of the vault as close to the end of the system as possible between the ribs. The lateral is trimmed so the sweep will come up into the port without putting pressure on the lateral.

A bit of practice makes the far end port go in easily. The short riser in the port should rest tight against the far inside wall of the port body. The threaded cap over the male adapter on each end of the lateral must be close to the top of the port under a threaded end cap for access.

**Doing the test**

Some health departments want to inspect the entire lateral network during the final squirt test. How-ever, many inspectors allow the final squirt test to be accomplished through the end ports, especially if the ports are designed to accommodate this test.

Photo C shows such a squirt test in progress after final back-filling with the threaded lateral end cap removed and replaced with a cap drilled to match the orifices. The tape is hooked onto the inside bottom of the port (the same elevation as the top of the lateral) to measure the squirt height.

The inset photo shows the finished appearance of the drainfield port using a 7-inch round irrigation valve box, which provides plenty of space for the 4-inch port and its threaded cap.

Reputations rise and fall on the execution of details. With mostly invisible but highly functional ports, the customer can inspect the system and troubleshoot problems easily. Over the long term, a reputation for building systems that are user-friendly and easily inspected will come back to the installer in referrals from homeowners and respect from regulators. Accurate information from the septic system is critical to long-

term function, and a good port design is the only window into this vital component.