Progressive – the Old-Fashioned Way

Dixie Septic Tank Inc. adapts to challenging site conditions with innovative twists on conventional septic system designs

By Doug Day

Kixie Septic Tank Inc. has been installing conventional gravel septic systems for 38 years isn't about to change. The company, under the leadership of Todd Evans, has done a great dea improve those systems and the way they are installed.

While the company does install aggregate mour systems when necessary, Evans has been work on making conventional trench-and-gravel syste better and easier to build. He and the company nine patents for plastic pipe, a new type of head pipe, various installation methods, and a pipe cl that Evans invented.

Dixie makes its own septic tanks, pipes and fittings; crushes recycled concrete to make trench medi and uses the latest equipment, remote-control technology, and lasers in its assembly line approach system installation. The company also sells its products to many local installers.

"I was out riding tractors installing systems with my dad when I was four or five years old," says Eva His father, Gene, a licensed master contractor, started the company in 1968 and still shares his thoughts and insights about the industry. Todd's mother, Marilyn, works in the office, and his wife, L helps run the growing company.

Faith in aggregate

After all those years, Evans still believes that aggregate systems are best. "They've only been arou for about 3,000 years," he quips.

Dixie Septic Tank operates in three counties of north central Florida between Daytona Beach and Orlando, an area of sandy soils and high groundwater. "We encounter water at 12 inches, and 6 inc isn't unusual," says company estimator Paul Holt, who believes alternative systems don't seem to d very well in the Florida soil.

Dixie installed 925 systems in 2005 and averages 650 to 1,000 systems a year. The firm's specialty is conventional gravel systems, but in recent years, sand mounds have increased to nearly half of the installations because of rising groundwater (see sidebar). System repair accounts for about 30 percent of the business and is expanding as older

systems wear out or fail.

Even when installing a sand mound, however, the company uses its gravel system for the soil absorption unit. “It works the same as the in-ground system except most of the time it has a pump hooked to it,” Evans says. “With some new innovations that we’ve done and the new pipe that we m it’s a very easy installation.”

Holt says it helps that the company manufactures most of what the crews use. “We control the qualit everything that goes into our systems with the exception of electrical pumps for mound systems,” he says.

Manufacturing

Dixie is alone in Volusia County in precasting tanks. The firm may be unique in the country when it comes to innovations, such as a patented filter port that lets the homeowner service the filter without digging or having to lift a heavy manhole cover.

The company began crushing its own gravel in 1986 after years of importing it from out-of-state. “We would ship rock in by railcar, and the expense was unbelievable,” says Evans. Today, the company makes its own gravel by recycling concrete and has a hard time keeping up with the demand of 200 tons a day.

“We can’t even make enough,” Evans says. “When a load hits the ground, it’s put in a truck and it’s gone.” The concrete comes as scrap from projects such as road and bridge repairs and building demolition.

Dixie, through its subsidiary company KTE Plastics, started making pi in 1995 after three years of development work. When Evans got his fi patent for a 2-inch ridge along the top of the pipe, the U.S. Patent Offi sent him a letter saying it was the first innovation to plastic tubing sinc its inception in 1947.

“Corrugated plastic tubing has been the same for years, and now we’v done something to improve it,” he says. “We were looking for a better way to install gravel systems because we knew we wanted to stick wit them.” The pipe is a standard 4-inch corrugated black pipe, except for the ridge along the top.

The clamp

Evans developed a patented clamp that attaches to the ridge and holds the pipe in place while grave being poured around it (see photograph below and on following page). Holt says the arrangement solved a problem commonly seen with standard aggregate systems.

“They would take the backhoe and lay aggregate in the bed, not knowing exactly how much was put down,” Holt says. “The installer would come along and lay the pipe on top of that. Then they’d drive back over and lay rock over the top.” Since the pipe was just resting on the gravel, Holt says, it coul twist and turn and even roll over so that the drain orifices would no longer be aligned properly.

Evans’ invention is used to install the pipe before the gravel is poured, and to hold it in place during gravel pouring operation. The pipes are laser leveled every 2 or 3 feet before the rock goes in.

Evans’ clamp attaches to the ridge, keeping the pipe at the proper grade and the drain holes at a precise angle, even around corners. This allows the water to flow through all the pipes in the drainfield until the water rises to the level of each hole. The water then flows out evenly throughout the system, distributing it evenly through the drainfield.

Since the pipe is securely suspended in the drainfield before the rock is put in, the installer can be sure of proper alignment and of correct rock distribution: a minimum of 6 inches of rock under the pipe, 4 inches beside the pipe, and 2 inches above it, for a total of 12 inches. As a final check, the system is laser-

leveled again.

The clamps are then removed and reused for the next job. “You can lift the clamp out with two finger says Evans. “When you unlock it, a little handle slips up and you just grab hold of it and pull it right o

Holt says system failures due to depth and thickness of drainfield rock have been eliminated. He hin that improvements to come will make the invention even better.

Organized installation

Like a daily game of follow-the-leader, Dixie Septic uses an assembly line approach to each system. The backhoe crew and tank delivery truck go out first. “They set the tank, excavate the drainfield are and then leave for the next job,” says Evans. “Our backhoe stays moving all the time.”

The tank truck is brand new and features an articulating arm operated by a remote-control joystick carried by the driver. “He can lift the tank, set it in the hole, completely level it, and never have to get back in the truck until he’s ready to leave,” Evans says. A laser leveling system makes the job even easier.

The drainfield crew arrives next to set the pipe with the clamp system, also using laser levels. The gravel crew then arrives with a 19-foot, remote-controlled conveyor belt on the back of their truck. “We can lo raise and move the conveyor belt and control the speed,” says Evans “The installer can put the rock right down at his feet, or he can throw t gravel up to 40 feet from the end of truck. There’s no need to put a tra down into that drainfield.”

Evans says two people can install the gravel in about 15 minutes — a that used to take up to six people and a lot of shoveling. “I’ve shoveled a few yards of gravel in my li Evans says. “That’s one reason most of this stuff came about. I liked being in the septic business bu didn’t like the shovel work. We install more jobs today than most people can do because of the way do it.”

The assembly line approach means Dixie can put in three or four systems a day without back-breaki labor. Since the tank and backhoe crew stay ahead of the rest, there is work for the drainfield crew a gravel truck when they get to work the next morning. “When our guys get home at 5 o’clock, they’re laughing and joking with each other instead of being worn out from shoveling,” Evans says.

Dixie has made a large investment in the remote-controlled gravel conveyor and tank delivery trucks and in new dump trucks. “It’s important to have the right type of equipment and a ready supply of tar pipe, and fittings at our disposal,” Holt says.

Equal distribution

Another Dixie Septic innovation is the equal distribution system that prevents overloading of one drainfield area with effluent. In such a system, the entire network of pipe fills equally before anything seeps out through the drain holes.

Traditional systems, Evans says, have a header pipe higher than the pipes at the end of the drainfie Florida regulations require that the pipe’s drain holes be offset from the bottom of the pipe by 65 degrees — at the 3:30 and 8:30 clock positions. As Evans explains, “In other systems, water runs al way down to the far end where it drains out, and the area up near the header doesn’t get much or ar drainage.”

With equal distribution, Holt says, “All of the pipe is at the exact height that it’s supposed to be throughout the whole drainfield. So the whole drainfield is getting wet at the same time.” That prever one or several areas from becoming overloaded so that the system fails to work properly.

Evans’ new header pipe is 6.5 inches in diameter with the 4-inch outlet bells about 1.5 inches off the bottom. He says that aids in the equal distribution of effluent by holding 1.5 inches of effluent in the header and 3/8 of an inch in the drainfield pipe before the effluent enters the gravel.

Customer education

With more than 1,000 people a day moving to Florida, Holt says many customers have no experienc with septic systems. Deltona, the largest city in Volusia County, has 80,000 people and about 50,00(homes — about 85 percent on septic systems.

Holt gives his customers several pieces of literature telling them what to expect throughout the installation process, how septic systems work, how to take care of them, and the truth behind comm myths.

“Nobody else in the area does that,” he says, “but I just feel that it’s important that we keep our customers aware. A lot of people think once they run that water or flush that toilet, that’s the end of i Really, that’s just the beginning.”

Evans, born and raised in Orange City, wants to stay there and “be able to sleep at night. We want t what’s right and definitely want to install gravel systems, so we came up with a better way.”