Big, Big Leach Field

By Bob Oertel

AT first glance the sloping field behind the Argenta-Oreana High School in Argenta, Illinois looked like a regular farm field. The only difference, though, was the many scattered marker flags. What I was soon to learn was that this was actually one of the largest septic tanks and leach fields in the state.

"We've put in a lot of leach fields, but this is by far the largest one," says Jon Seevers, Seevers Farm Drainage, Argenta, IL. Jon and his wife, Veronica, are longtime members of the Illinois Chapter LICA (Land Improvement Contractors of America). "Actually, there are 8,000 linear feet of leach field lines in this field handling the effluent from a 30,000-gallon-capacity concrete septic tank that we built as a part of this system. As I said before, this is one of the biggest and most complicated system we've ever put in," says Jon.

The village of Argenta, with a population of less than 1,000, has no village-wide sanitary sewer system. Each house and business has its own septic tank and leach field. Thus, a large system was needed for the new 750-student capacity $13 million consolidated junior and senior high school building now being built. Construction of the septic system began in May 2004 and was completed in August 2004.

Started with an Open Field

The engineering firm SKS Engineers of Decatur, IL was hired by the school to make the initial design. Seevers worked with them, programming the depth of each line in the leach field. Lines would vary from 100 to 200 feet in length.

Open access to concrete septic tank. Control panel is in center background. Photo credits: Issy Weaver.

The school purchased land adjoining their property on which to install the septic tank and leach field. Once scrub growth and unwanted vegetation was cleared away, installation began on the tank. Concrete was poured on site to build the 16-foot-wide, 54-foot-long and 19-foot-deep tank. The tank has three chambers. Sewage comes into the first chamber where a baffle screens off the solids. The effluent drains into the second and finally into the third chamber or wet well. Filters keep particulates from entering into the wet well.

There are four pumps in the wet well. Each of the pumps lifts the effluent into its own specific zone in the three-acre leach field. The pumps are controlled by alternating mechanisms that, as the wet well fills up, a pump kicks out 3,000 gallons of effluent into one of the zones. Each time the wet well fills up again another pump kicks the next 3,000 gallons into the next leach field zone. Usually, a week passes before a zone gets its next 3,000 gallons of effluent.

The pumps are equipped with a safety mechanism that sends a warning signal to the school if for some reason there is a malfunction of any kind. Since the tank will hold all the sewage from one day, the school has enough time to determine the problem and to make repairs.

The Leach Field Itself

There are four separate zones, each with 2,000 feet of chamber pipe for a total of 8,000 feet in the field. The capacity of this leach field is able to handle the sewage from about 750 junior and senior high students, or about the same as that of 31 residential houses.

An 8-inch-diameter sewer carries the sewage from the school by gravity about a quarter mile to the concrete septic tank. Four 3-inch PVC pipes carry the effluent from the tank, one pipe to each zone. At each zone, the effluent then goes into 1 1/2-inch-diameter pipes to dose each leach field line. The leach field chamber pipes are buried in depth from 18 to 36 inches, depending on the slope of the surface soil.

A laser-controlled trencher with automatic grade control and leveling function digs the trenches. The laterals are buried on 9-foot centers. As soon as a trench is dug, the 1 1/2-inch pressure pipe is laid assembled in the trench. Then, Biodiffuser 3 chambers, manufactured by ADS, are placed over the pipes and the pipes are secured to the ceiling of the chambers. Once this is done, the trench is ready to be filled with dirt.

Jon rigged up a simple attachment to the trencher that guides the excavation of each new lateral trench so that it will always have the 9-foot-on-center separation. It consists of a 9-foot-long bar fastened horizontally to the trencher with a plumb bob hanging down on the end of the bar. The operator simply guides his trencher so that the plumb bob follows the center of the previously dug trench. The previously dug line is backfilled with dirt from the new line as it is

Outlet to newly installed storm drain from school, riprap around headwall and slopes.

being dug.

In addition to the septic tank and leach field installation, Seevers installed a 30-inch storm sewer to handle all the runoff from the school grounds. The sewer empties into an existing open ditch alongside the edge of the school property. They built a new headwall through which the new sewer line now empties. Rock riprap, hauled from the Nokomis Quarry about an hour's drive away, was placed on the banks of the open ditch below the headwall.

Diverse Operation

As the name implies, Seevers Farm Drainage, Inc. is an agricultural drainage contractor, a leader in technological advances, being one of the first contractors in the nation utilizing CAD for nearly 15 years in their sub-surface drainage designs. "Our name may sound like all we do is agricultural drainage," Jon tells me, "but we do all types of excavating such as building erosion control structures, dredging open channels and other conservation work for farmers. We do a lot of that type of work, along with our tiling, when there are no crops in the fields."

"This means that if we are going to have a steady business, keeping eight to ten employees busy, we have to do other types of work. Some of the other types of work we do include site prep for commercial developments, residential and commercial waste treatment and septic systems, and digging basements. We are licensed to install and remove underground storage tanks and remove contaminated soil from gas stations."

Recently, Seevers dug a detention basin to catch the storm water runoff from the site of a new 650,000-bushel grain storage bin in Cisco, IL. so there would be no adverse flooding to the village. A John Deere 650H LGC dozer and a John Deere 200LC hydraulic excavator were used to dig the 3-foot-deep by 2 acres in size detention basin. Jon's father, Stanley Seevers, started Seevers Farm Drainage in 1975 when several neighbors convinced him to go into business. They felt the neighborhood needed a drainage contractor of its own. Over the intervening years, Stanley developed a noteworthy reputation as a drainage contractor for his high quality of work. He received many awards and recognition, especially from LICA.

Jon started working with his father after graduating from high school in 1980. The two have worked together ever since. Stanley is now retired and enjoys going to auctions, but still helps Jon whenever needed.

Jon was a LICA affiliate member for many years and became a full member five years ago when his Dad retired. He is currently a director of the Illinois Chapter and serves on the Education Committee. His wife Veronica is the Office Manager for their company. **L&W**

For more information, contact Jon Seevers, President, Seevers Farm Drainage, Inc., 10669 E. Washington, Argenta, IL. 62501 (217) 669-2290 or (800) 531-2290.

John Deere hydraulic excavator loading excavated dirt into truck.