

How Grinder Pumps Cut Down Infrastructure Costs

Installing grinder pumps can reduce sewer-system costs and turn unbuildable sites into productive building lots.

by Eric L. Benderoff, Staff Editor/New Products

Making the most of buildable land is a challenge builders and developers meet every day. They also are finding ways to build on land previously thought undevelopable.

One available method for salvaging land is improving sewage removal systems. Grinder pumps, a technology available since the late 1960s, are cheaper and more flexible than traditional gravity sewer systems that have been around since the Roman Empire.

"Sewage removal is not the most exciting subject," said George Vorsheim, of Environment/One, a manufacturer of grinder pumps. "But increasing profits is exciting."

Though sewage removal may not be very exciting, builders realize proper waste removal is critical to code acceptance and successful projects. On most building sites, deploying sewage systems poses few problems. But for difficult terrain, sewage removal can be a major detriment to building.

Grinder pumps condition sewage, and then move it through low-pressure sewer systems. The wastewater moves in small, 1 1/4-inch diameter, pipes installed below the frostline, making this method ideal for difficult terrain. In traditional gravity sewer systems, waste moves through large-diameter piping in deep trenches.

In gravity systems, the large mains require extensive earth removal and labor costs. By placing the smaller piping along the land contours, in much smaller trenches, costs are greatly reduced.

In addition, upfront costs for burying small diameter pipes as opposed to large diameter pipes are much less. "That (cost savings) could be the difference in getting a project started," Vorsheim said.

According to Vorsheim, grinder pumps, about the size of a washing machine and installed inside or outside a home, can be used successfully in three different applications: on difficult terrain, on flat lands (to reduce costs) and to salvage previously unusable lots.

On difficult terrain, the low-pressure sewage system avoids rocky and sometimes steep land by utilizing shallow trenches for the narrow pipes. The grinder pump grinds the sewage, then moves it to the treatment plant.

Peter Ahnert, who builds in six states including Pennsylvania, has used more than 1000 grinder pumps to date for his developments.

Ahnert builds in the Pocono Mountains. "They're easier to use," he said of the pumps. Ahnert builds 400 units a year, half of which use grinder pumps.

How grinder pumps cut infrastructure costs

One developer originally called Ahnert's land in the Poconos undevelopable, he said. Now, after using grinder pumps, Ahnert's Saw Creek project, which began in the 1970s, is among the most popular sites in the area.

Ahnert was able to offer all the homes at Saw Creek a view of it's namesake, or another scenic view. He also incorporated a ski run, with homes alongside, into the project.

Bill Hopkins, an architectural and engineering consultant, works closely with Ahnert in his Poconos developments. "We used grinder pumps for everything," Hopkins said. "We were able to pump uphill and downhill."

"The total costs for the two systems (gravity and low pressure) are about the same," Hopkins said.

The difference between the two systems, Hopkins said, is that a developer pays for the whole gravity system. The homeowner only pays to hook-up to the sewer.

In a low-pressure system, a developer puts in the lines, but the cost of laying them is much less. In addition, the cost of the grinder pump, about \$2500, is paid by the home buyer.

In a situation where a builder produces 100 homes, for example, a savings of \$250,000 is feasible, Hopkins said. Figured another way, Hopkins said a complete gravity sewer system, including manholes, would average \$35 a linear foot. Low-pressure systems would cost half that.

On a project with a 100-foot-wide lot frontage, which includes 75 lineal feet of roads, the cost of installing a gravity system would average \$2450 a lot, Hopkins said. A low-pressure system would average \$1225 a lot.

Hopkins, who helped write one manufacturer's grinder pump manual, also said the units are viable for unusable lots and flat lands.

Unusable, or orphaned lots (lots not usable after site development), can be salvaged with minimal landscaping. Grinder pumps installed on low-lying lots force sewage uphill, eliminating expensive grading.

In a tract housing project, typically one, two or three lots may not be used because extensive site grading prevents normal sewage access. Grinder pumps can be used to connect to the main sewer line where sewage hook-up was previously impossible.

On flat land, pumps save developers excavation cost and potential environmental damage, Vorsheim said. Gravity sewers, which need downhill grading, become increasingly expensive as trenches are dug deeper and steeper to create a downward grade.

Grinder pumps force the sewage to its destination, either uphill or along a level surface, eliminating the need for downhill grading.

An additional savings attributed to grinder pumps is a smaller wastewater treatment plant, Hopkins said, because infiltration, which often adds 50% to wastewater flow, is completely eliminated in a low pressure sewer system.

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