BARNES®

WHITE PAPER

ADVANTAGES OF PRESSURE SEWER SYSTEMS

Gravity Sewer Systems

Conventional gravity sewer systems collect wastewater from homes and transport it to a collection line by allowing gravity to force the flow of liquid and solids. There are no pumps or pressurized components in tradition gravity sewer systems but this method requires the digging of wide, downward-sloping trenches to serve as an underground path for sewage to travel to its final collection destination. Traditional gravity sewer method is adequate for downhill grades but can be ineffective when there is an uphill slope or ground conditions differ. In addition, gravity sewer systems are not an effective method for wastewater transport in areas with rocky terrain and sandy soil or for application with close proximity to water or with long piping runs.

Pressure Sewer Systems

Pressure sewer systems provide an alternative, innovative method for transferring residential wastewater through small diameter pipes to collection or treatment facilities where other techniques like traditional gravity sewer systems are less capable. Pressurized sewer systems utilize a network of submersible grinder pumps to reduce particulate size allowing for transport through small diameter pipes set in shallow trenches just below the frost line.

Grinder Pumps

Grinder Pumps are high pressure/low volume submersible solids handling pumps designed with a cutting mechanism, typically rotating blades, that grind raw sewage into a slurry before passing it through a discharge line. Grinder Pumps are designed to handle the same type of material as a Sewage Ejector Pump, but the cutting mechanism allows for the pump to pass tougher and more troublesome solids. Grinder Pumps are used in pressure sewer systems when pumping from a home or residence to a city sewer main due to their ability to pump low volumes of sewage over long distances but at a high enough pressure to pump wastewater into the already pressurized city sewer main.

Advantages of Pressure Sewer Systems

1. Smaller pipes: Pressure Sewer systems utilize smaller pipes which allow for much more narrow and shallow trenches to be dug which reduces installation costs. When roads or streams separate a new lot from an existing system it can pose a challenge for a traditional gravity sewer system. Pressure sewer systems can reduce the need for road repairs and traffic disruptions due to the directional boring of the small diameter piping.

2. Compatible with existing collection systems: Pressure and gravity sewer utilities can be mixed and matched into site-specific designs to provide a complete solution to wastewater collection challenges. When a worn out septic system is at the end of its useful life, a pressure sewer system will provide a cost effective method to connect to a municipal system with minimul disruption to the existing landscape shortening remediation.

3. Eliminates risk of infiltration/inflow: In residential pressure sewers, the only required extraneous water entry points in the system between the homes and the treatment plant are the homes. Gravity-based systems require manholes to be placed specific distances and at every pipe-turn, and these are potential entry points for infiltration/inflow

4. Reduce upfront capital costs: The low up front cost of a pressure sewer system force main compared to a more traditional gravity main represents a true cost savings for builders and developers. This combined with the deferred installation and cost of the grinder pump station to just prior to closing reduces cash outlay. Not only does the pressure sewer system cost less to install, but the cost savings grow proportionately as the number and size of lots increases.

5. Odor control: Odors can be an occasional problem in any wastewater system, as large-diameter, long-distance gravity mains can be a source of gas generation and odor. Pressure sewers are less likely to produce odors due to their shorts retention time and closed network of the small-diameter pipelines.

6. Flexibility: Modern homeowners want options and pressure sewer systems provide flexibility. To build lakeside vacation homes or cabins in hillsides it requires a level of flexibility that traditional, gravity sewer systems can't provide. A pressure sewer can travel long distances with lesser costs than a gravity system, hugs the terrain, and can move up, down and sideways.