

Pressure Distribution Drainfield

Guidelines for Construction and Inspection

Pressure distribution drainfields consist of a pump in the septic tank, a transport manifold, and perforated distribution piping in the drainfield. The distribution piping is pressurized, so that a small dose of effluent is equally distributed throughout the entire drainfield.

Pressure distribution drainfields are used to conserve space on small lots, or in soils that are classified 'rapidly draining.' OAR 340-71-100(139) defines rapidly draining soil as any soil texture equal to or coarser than loamy sand or in soils with more than 35% rock/gravel. Rapidly draining soils drain so fast that the bacteria we rely on to break down the sewage do not have enough time to digest the sewage before the sewage drains into the ground water aquifers.

Pumps are installed in the septic tank in a mesh screened pump vault. Annual cleaning of this screen is **STRONGLY** recommended. The pump is turned on and off using float switches. These float switches also determine the dose volume. Volume of effluent pumped out of the tank during each cycle should not exceed 20% of the daily sewage flow (usually 450 gallons per day, 90 gallons per cycle.) Furthermore, a large pump's rapid intake can stir up the settled solids in the tank, pumping solids out into the drainfield. This will obviously clog the pipes and the gravel and lower the life expectancy of the drainfield. For this reason we require a dose rate of no more than 30 gallons per minute. The dose rate can be altered by two factors:

1. using smaller diameter pipe to reduce the volume of water the pipe can carry and increase head loss due to friction, thus reducing the flow rate.
2. reducing the power of the pump.

Proper sizing calculations of the drainfield and the pump are critical to the long term efficiency and health of the drainfield. For more information see the Design Criteria section.

There is also a high water/pump failure alarm float switch. Should the lower pump switch not engage the pump, and the water level in the tank gets too high, the alarm switch will be activated and an alarm will sound. This alarm is there to warn you to check the pump before the septic tank overflows.

Transport pipe (between the tank and drainfield) may be a maximum of 2 inches in diameter. This line must be freeze protected by:

1. following the water line plumbing installation codes and installing the entire transport pipe below the frost line = trench bottom at 30 inches below grade;

OR

2. installing the transport line so that it drains after each pump cycle.

This requires the transport line to be sloped to drain, either toward the drainfield, or back into the tank. Long transport lines, which contain a large amount of effluent, may require the alteration of the float switch settings in the tank to account for this volume. Anti-siphon valves (not check valves) should be installed in the tank riser to facilitate the drainage of the transport lines.

Drainlines should be laid out as an equal system (see plot plan handout - initial drainfield layout). If long laterals are used, the transport pipe should be placed in the middle of the drainlines (see plot plan handout - reserve drainfield layout). All pipe joints are to be solvent welded. Orifices shall be drilled with a one-eighth inch burless bit and spaced according to individual permit specifications. The eighth inch diameter holes shall all be oriented down, except for one hole pointing up at each end of each lateral. These up pointing orifices are used to verify the residual head of the drainfield. Minimum head (squirt test) shall be 5 feet and vary no more than 10% throughout the drainfield.

Orifice shields are required around each orifice in the drainfield. The ends of each lateral shall have a long sweep elbow or equal method to bring the end of the pipe to finish grade. The ends of the pipe shall be provided with threaded plugs or valve to facilitate flushing the lines. A valve box over each clean out is required.

Required Inspections

Pre-cover and squirt test inspection. Drainfield trenches have been dug, 6 inches of gravel under the pipe has been placed and leveled. The manifold pipe (bedded in soil) and the drainfield pipe, with risers, are in place. Septic tank is placed and filled with fresh water. Pump package and risers are in place. During the inspection the sanitarian will verify the drainfield has been installed to all the permit requirements, and that the residual head (squirt) is a minimum of 5 feet with no more than 10% variation.

After this inspection, 4 inches of gravel shall be placed over the pipe, the filter fabric placed over the entire surface of the gravel, and the system backfilled with a minimum of 12 inches of soil.

The second inspection, if possible, can be combined with the first inspection if:

1. Septic tank is filled with water and there is water to the site which can be used to top off the tank to check the float switches 'on' level, AND
2. The pump and alarm circuit have been hard-wired through the control/alarm panel. Sanitarian will check alarm function (audio and visual) and will check the dose volume setting of the float switch. Results should match the submitted hydraulic design criteria.