Subsurface Sewage Treatment System (SSTS) Self-Install Guide

Hubbard County Environmental Services

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Introduction

The purpose of this guide is to familiarize the homeowner with some of the important items involved when planning and installing an onsite sewage treatment system and more importantly after a permit has been issued, passing inspection.

The licensed designer you hire should be aware that you are planning to do your own installation so that s/he can provide you with a more detailed design plan and information about code requirements, both state and local. The designer will also do a "to scale" or dimension site sketch showing the locations of the proposed system (i.e. tank, lift station [if required] and soil treatment area [drainfield]). These locations should be marked out on your property and **must be followed exactly.**

During construction, any deviation from the approved plan will require a new site evaluation, design, and approval by Hubbard County Environmental Services before work can continue. This could delay your project and cost you extra in terms of time, materials, and re-inspection fees. If you are not sure of something, call your designer.

Since most self-installs take longer than a professional job, give yourself plenty of time to complete the task. Be aware of the weather forecast. The drain field **must not** be exposed to any form of precipitation until it is backfilled.

Important – before you start

- Call Gopher State One for utilities location two (2) working days prior to start time at 1-800-252-1166.
- Call Hubbard County Environmental Services to schedule an inspection. Call either the day before or before 9:30AM on the day you want your inspection. (A call received after 9:30AM may result in no inspection due to scheduling.)
- Be aware of overhead power lines.

The Septic Tank

Before you set the tank, be sure that all rocks are removed from the bottom of the hole and the bottom is raked smooth and level. The tank must be level in all directions or you will not pass inspection. If soils are stony, excavation must be bedded with 6" of sand.

A word about polyethylene tanks-these have different installation requirements so be sure to get instructions from the tank manufacturer. If you backfill incorrectly, the tank could collapse. Also, these tanks may not come with inlet and outlet baffles, so you will have to construct them. Have your designer provide the required baffle dimensions.

The following must be done to pass inspection:

- Schedule 40 pipe across excavated areas.
- Six-inch inspection pipes over inlet, outlet, and manhole.
- Manhole to be at finished grade. A riser will be required if over twelve (12) inches. Manhole must be secured.
- Seal around inlet, outlet, manhole riser, and around all inspection pipes.
- Tank level in all directions.
- Required setbacks from all wells (50 feet), dwellings (10 feet), and property lines (10 feet).
- Air test required on any building sewer line or lift line within 50 feet of any well head. No part of the system is allowed closer than 20 feet from a well.

Lift Station (if required)

If you have to lift effluent to the soil treatment area, be sure to get a pump sheet from your designer. This will have information to help you set the pump floats correctly. Be sure to use the correct pipe size and length (the distance from pump to point of discharge). Call your designer if there is a variation in length of lift line and elevation from the calculated specifications on the pump sheet. Using the wrong size pump could cause you trouble.

You must also have an alarm system installed. Any electrical wiring must be done to State code.

All the requirements for the septic tank (listed above) apply to the lift tank as well with the manhole at finished grade.

Soil Treatment Area (drainfield)

This area must be protected from heavy equipment to minimize soil compaction. This is the most critical part of your new system and great care should be taken when working in this area. Do not excavate if the soil is wet and do not allow open trenches to be exposed to any form of precipitation or you will not pass inspection.

Trench Construction

- Serial distribution must be used to load individual trenches (e.g. one trench at a time.) Using drop boxes or end caps on chambers.
- Trenches shall not be less than eighteen (18) inches and no more than thirty-six (36) inches wide if using rock as the distribution medium. If using anything other than rock as the distribution medium, follow manufacturing design guidelines.
- All trenches must be in original soil.

Trench Construction (continued)

- Total depth shall not exceed forty-eight (48) inches below existing grade. The only exception is if the water table or restricting layer will not allow.
- Trenches must be level.

- Must have at least six (6) inches of cover and be crowned to allow for settling.
- In sandy soils, you must have pressure distribution.
- Trenches shall not be exposed to precipitation prior to backfilling.
- A four (4) inch inspection pipe with 3/8 inch or larger perforations spaced vertically no more that six (6) inches apart must be installed at the end of each trench. At least two (2) perforations must be located in the distribution medium. No perforations shall be located above the geotextile cover or wrap. The pipe must extend to the bottom of the trench and be capped flush with or above finished grade.

If your design calls for rock-filled trenches, the rock depth of six (6), twelve (12), eighteen (18), or twenty-four (24) inches is a measured depth **below the pipe**. Then rock is added to completely encase the top and sides of the distribution pipes to a depth of at least two (2) inches. The total thickness of rock-filled trenches must not exceed thirty (30) inches, and drainfield rock must be covered with a durable non-woven geotextile cover. Clean washed rock must be used. Rock must be sized per specifications in Chapter 7080.

Drop Boxes

- The invert (bottom) of the inlet pipe must be one (1) inch higher than the invert of the outlet pipe to the next drop box.
- The invert of the outlet pipe to the next drop box shall be no greater than two (2) inches higher than the crown (top) of the outlet pipe of the trench in which the box is located.
- In cases where effluent is delivered by pump to a drop box, the discharge shall be directed against a wall or side of the box on which there is no outlet.
- A four (4) inch inspection pipe must be installed on each drop box and capped flush or be above finished grade.

• Drop boxes must be: 1. set level and on a firm base, 2. backfilled, and 3. compacted by hand to minimize settling.

Soil Treatment Setbacks

- Twenty (20) feet from dwellings this includes an attached garage.
- Ten (10) feet from property lines.
- Fifty (50) feet from a deep well.
- One hundred (100) feet from a shallow well.
- One hundred fifty (150) feet from a lake or river.

Note: Above distances also pertain to neighboring wells.

Pressure Bed

A pressure bed is a rectangular excavation with a level rock base of six (6) or twelve (12) inches. Perforated laterals of one and one-half (1 $\frac{1}{2}$) or two (2) inch pipe are laid level on the rock bed and covered with additional rock. Effluent is then delivered by pump and dispersed over the entire rock bed.

Listed below are some important things you need to know:

- Perforation holes must be drilled straight into the pipe, not at an angle. Perforations must be no smaller than 1/8" and no larger than 1/4".
- Laterals must be level with the holes downward.
- Holes must be free of burrs.
- Holes shall be spaced no more than three (3) feet apart.
- A method to introduce air into the pipe after dosing must be provided and one (1) hole on end cap.

- Laterals must be spaced no further than three (3) feet apart, and no further than twenty-four (24) inches from the edge of the rock bed.
- Laterals must not be installed closer than twelve (12) inches from the edge and end of the rock bed.
- Total bed depth shall not exceed forty-eight (48) inches from existing grade.
- Entire rock bed must be covered with a non-woven geotextile fabric.
- One four (4) inch inspection pipe installed at center end of bed.
- Same setbacks apply.
- Pressure distribution pipe clean outs must be provided. Clean outs must be accessible from final grade.

Mound System

• Recommend you hire a professional installer.

The Inspection

You must schedule an inspection the same day as the installation. The inspector will want to see all components before you backfill so pictures and setback measurements can be taken. You can backfill some trenches partially, but leave the last one open. The inspector must witness any required air tests.

If you need a weekend inspection, call in advance as we will need to see if an inspector is available. Weekend inspections are not guaranteed.