

EXFILTRATION DESIGN REQUIREMENTS

Georgetown County is establishing new design requirements for exfiltration systems. The County's requirements will include soil borings to be done by a soil testing company to determine the Permeability of the soil at the depth of the exfiltration system to be installed, a determination of the Seasonal High Ground Water Table (SHGWT) and a determination of the Hydraulic Gradient using the ground water profiles taken at the time of the borings across the site.

The Design shall require the following:

- The bottom of the exfiltration trench shall be a minimum of 1.0 FT above the SHGWT unless a means for a passive positive drawdown is provided such as using sock wrap under drains.
- Under drains if installed shall be located outside of and one foot below the bottom of the trench using a sock wrap perforated piping and provided with clean outs no further than 100' apart.
- Exfiltration Systems must be assessable from catch basins spaced no further than 100 FT apart to allow for maintenance. Catch basins shall not be smaller than 2' X 3' and the system must terminate at a catch basin.
- The slope of exfiltration systems shall be designed with zero slope between catch basins.
- The design of the exfiltration system shall provide an Emergency Overflow from the system.
- The Treatment Volume shall be calculated using the void volume of the rock in the exfiltration trench, volume of the pipe and a portion of the voids of the in situ soils not exceeding the volumes as based on the permeability rates as follows:
 - 10 In/Hr = 10% of the total treatment volume
 - 20 In/Hr = 20% of the total treatment volume
 - 40 In/Hr = 40% of the total treatment volume
- The Voids Ratio of No.5 rock and washed No. 57 stone shall not exceed 40% and 33% respectively.
- The Permeability of soil cannot be greater than 40 In per Hour
- The Permeability of soil cannot be less than 10 In per Hour
- The Recovery Time Calculation shall be based on Darcy's Law, $Q=KiA$
 - $Q = \text{CFS}$
 - $K = \text{CFS} / \text{SF} - \text{LF}; \text{Permeability Rate} \times 0.00002315$
 - $A = \text{SF} (1/3 \text{ the Area of the side of the trench})$
 - $i = \text{Hydraulic Gradient based on field measurement or } 0.5 \text{ Height of the Trench} \times \text{Permeability of the soil} \times \text{Slope of the Land}; \text{FT/FT}$
- The Recovery Calculation can only consider Horizontal Flow through the one third of the side area of the exfiltration trench.
- The Recovery Calculation must have a factor of safety of 2.
- Installation of the Exfiltration System shall require continuous on site observation by the Engineer or his representative and Site Inspection Reports shall be provided to the County for the entire installation of the exfiltration system.
- Filter Fabric must be laid perpendicular to the direction of the trench.
- Weight tickets shall be required for the rock to be installed and only wash stone or rock without fines shall be approved for the exfiltration trench. Weight tickets must be provided prior to installation otherwise material placed shall be removed.