Manner for Conducting Percolation Tests

Only persons certified by the state of South Dakota may perform percolation tests.

Soil percolation tests must be made in at least three test holes within five feet (5') of where the proposed absorption field is to be located. The holes must be randomly located in soil similar to the rest of the area where the field will be sited.

A separate soil profile hole (deep hole) must be made to a depth of four feet (4') beneath the bottom of the proposed absorption system. The deep hole should not be more than eight feet (8') deep. The deep hole determines the type of absorption system required and the depth at which the system will be located. The deep hole should remain open for approximately twenty-four hours in order to determine whether groundwater is present. Should groundwater or bedrock be encountered before the deep hole has reached an appropriate depth, the location of the absorption system must be changed or an unconventional system installed.

The three percolation test holes must be located in unfrozen soil. They must be from six to twelve inches (6"-12") in diameter. The vertical sides of the percolation test holes must extend to the maximum depth of the proposed absorption field, or to a depth of thirty inches (30"), whichever is *greater*.

At least eight hours before conducting the percolation test, fill the percolation test holes half full with water (50% of the volume). Immediately before making the test, refill each hole half full with water. When the water reaches the lower twenty-five percent (25%) of the test hole (one-quarter of the volume), the percolation test begins.

The *percolation rate* is determined by the number of minutes it takes the level of water to drop one inch (1") in the test hole. In each of the three test holes, the percolation rate must be measured for at least 120 minutes (two full hours). The percolation rate for the area of the proposed absorption field is the average percolation rate of all the test holes.

For example, if the level of water in the first hole drops 8 inches in 120 minutes, the percolation rate is expressed as, "fifteen minutes per inch." (120 ÷ 8 = 15). In the second hole, if the level of water drops eleven inches in two hours, the percolation rate is 10.9 minutes per inch (120 ÷ 11 = 10.9). If the level of water in the third hole drops nine inches in two hours, the percolation rate is 13.3 minutes per inch (120 ÷ 9 = 13.3). The average percolation rate for all three test holes is 13.06 minutes per inch (total minutes per inch of all test holes divided by three: 15 + 10.9 + 13.3 = 39.2 ÷3 = 13.6).

If it takes longer than forty-five minutes for the water level to drop one inch in any of the holes, the test must continue in that hole for at least four hours (240 minutes).

Note: After filling the test holes half full for the first time, at least eight hours, *but not more than sixteen hours*, must pass before the percolation tests can begin.