



Turfgrass Series

How to drain water from frequently flooded lawns and other areas

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Effective surface drainage can eliminate many potential problems on lawns and almost any other sections of the garden. Home lawns and garden grounds should slope by at least 1% away from the buildings (that is, should descend by at least 1 foot per 100 feet of lateral distance). Sometimes, despite having a proper slope, surface drainage is not sufficient. In residential areas, adjacent properties are sometimes located with one on higher ground. In this case, water can flow to the property below. If soil contains large amounts of clay, rainwater does not drain quickly enough and remains on the surface. In such circumstances, a subsurface drainage system would be needed.



Figure 1. Perforated plastic tubes and connectors used for drainage.

Lawns and other relatively small areas are often drained by perforated plastic tubes (Figure 1) buried below the surface. Drainage systems usually consist of small subsurface channels, called **laterals**, arranged in parallel lines connected to larger main channels called **collectors**. Laterals are typically four inches in diameter and available in most hardware stores. The proper diameter of the collector depends upon the number of laterals connected to it, and the size of the area from which water must be removed.

Usually, in residential situations the same four-inch pipes are sufficient. To provide unrestricted water flow, lines should slope by at least 1%. Collector lines should be installed at depths beginning at 30 inches below the soil surface and generally should not go deeper than 48 inches.

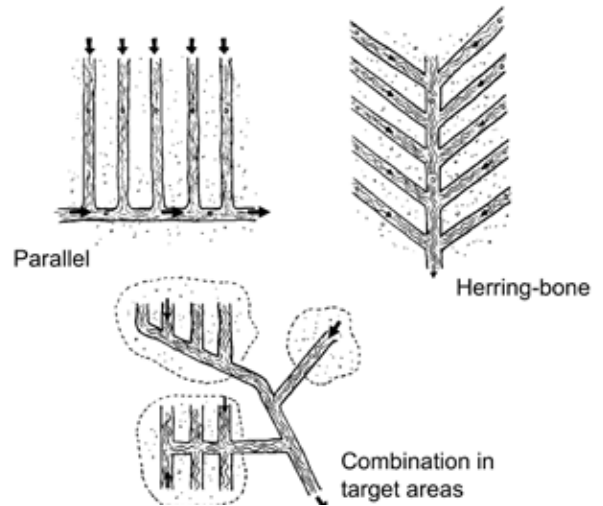


Figure 2. Different arrangements of lateral drains.

Smaller laterals should start at the depth of around 20 inches and the depth should gradually increase toward the collector line. The distance between lateral drains usually ranges from 10 to 20 ft, depending mostly upon soil permeability. Lines are typically designed in a herring-bone pattern, sometimes in a parallel arrangement or combinations (Figure 2). Two critical rules govern design and installation of drainage systems. The primary rule is that water flows only downhill. Second, the terrain and other topographic conditions must allow for adequate outlet of the collected water. The second rule is the most often forgotten, and the resulting error is the most difficult and the most expensive to correct.

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