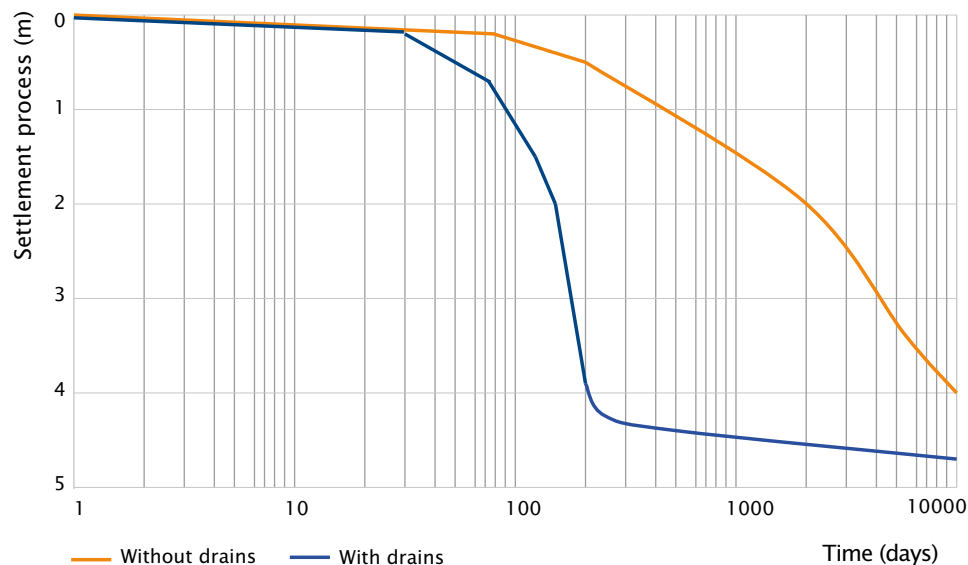




Product information

Vertical drainage

Accelerated consolidation



Vertical drainage

Depending on the permeability of soil strata, the period during which the settlement process takes can vary from a few years to a few decades from stratum to stratum. This period is referred to as the consolidation or hydrodynamic period.

The purpose of vertical drainage is to promote the transport of water in the soil, thereby speeding up the consolidation process. A stable situation is achieved more quickly, considerably reducing the filling time, while the accelerated settlement process allows work to start sooner on finishing the fill. This results in a shorter construction period, which can be of both economic and social benefit.

The way vertical drainage works is based on the principle that drains are installed vertically into the ground a regular distance apart. These drains have the task of absorbing the inflowing water without significant resistance and draining it away vertically. The use of drains changes the route that water particles have to take through the low-porosity soil. Vertical drains are used to change the direction of flow from a mainly vertical direction to a mainly horizontal direction. Depending on the depth, the water flows across half the distance between drains in a horizontal direction and then flows vertically out through the drains having passed through all or half of the stratum thickness without much resistance.

Moreover, a vertical drainage system can also be used for the vertical transport of free water. This type of drainage is known as dewatering.

Vertical drainage can be used in embankment projects when the natural settlement process cannot be completed properly within the available time. Vertical drainage also provides a solution when a site does not become stable fast enough, while the embankment must be completed quickly within a tight time schedule.

The areas in which this method is mainly used are:

- embankments for roads and railways;
- construction and reinforcement of dyke bodies;
- banking for construction sites.

If vertical drainage of water is all that is required, i.e. with no need for rapid consolidation, the following can be regarded as special applications:

- drainage of surplus rainwater to deep, water-bearing soil strata;
- dewatering of reclaimed land on low-porosity subsoil;
- filtration of fresh river water in the dunes to supply drinking water;
- enhancing the effect of drainage work in large construction pits;
- infiltration of water to steepen the gradient during drainage work, thereby minimising the affected area.

Vertical drainage can be installed both from the land and from a pontoon on the water.

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