



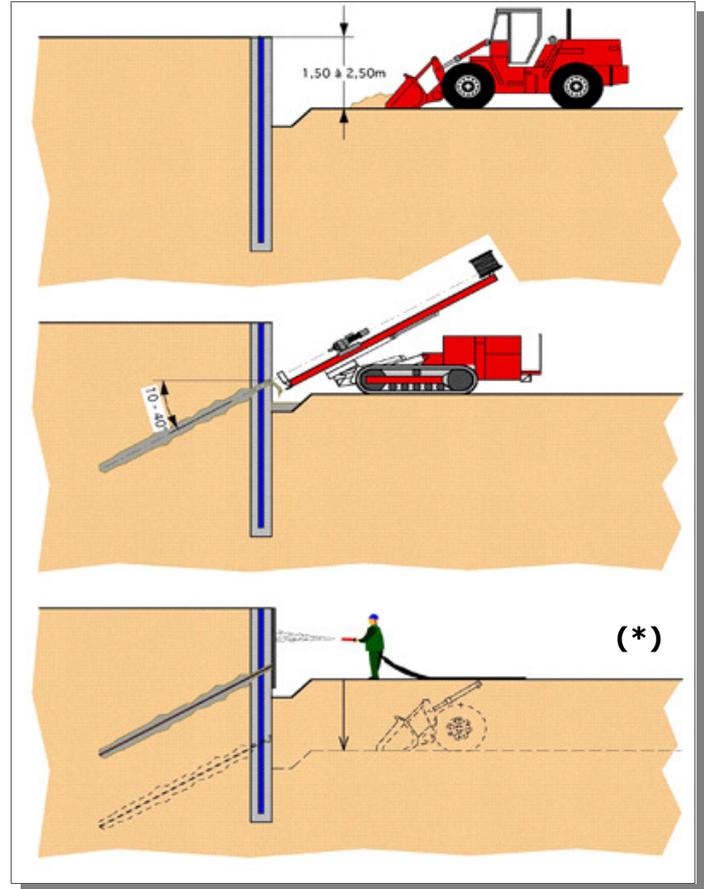
Ground nailing consists of placing a number of nail-like reinforcing elements in the ground to absorb stresses in the ground. Ground nailing creates a reinforced ground body. A layer of shotcrete approximately 10 cm thick is usually sufficient cladding for a ground body reinforced in this way.

Execution

Nailing of an embankment or wall is performed in stages. First the ground is excavated to a depth of 1.5 to 2.5 metres. Then the nails are drilled into the ground at an angle of 10° to 40° to the horizontal. Finally, shotcrete is applied to a reinforcement grid. After these 3 phases, the cycle is repeated until the desired depth is reached. The nails consist of reinforcement rods with a diameter of 28 to 32 mm, steel grade BE500, which are secured in the ground by cement injection under high pressure, enabling them to withstand large tensile forces. If ground cohesion is not sufficient to ensure the temporary stability of the embankment or wall, cohesion can be improved by forming a series of VHP columns or auger piles before nailing.

Applications

- Earth-retaining walls for the revetment of building excavations, bridgeheads, breast walls, etc. (both temporary and permanent)
- If secant piles are used, there is no need for reinforcement grids and shotcrete*
- Reinforcement of embankments with inadequate stability
- Reinforcement of existing earth-retaining structures
- Subrevetments
- Repairing slid embankments



Advantages

- Execution is fully vibration-free.
- Minimal hindrance for surrounding residents.
- The nails are shorter than conventional ground anchors, so there is less likelihood of problems with surrounding residents.
- Fast execution because nailing follows the pace of staged excavation.
- Reliable execution, even in highly heterogeneous ground strata or in the presence of fill material, brick debris, etc.
- Can be done in very confined spaces, including inside existing buildings.
- Permanent structures can be implemented by finishing with shotcrete.

