BeauDrain

Project report

A2, Vinkeveen, The Netherlands

The system
The BeauDrain concept is an innovative combination of existing, proven methods to accelerate the consolidation process of soft, compressible soils. It combines vertical drainage (wick drains) with atmospheric loading (vacuum consolidation).

The BeauDrain system consists of a number of drainage curtains. Each curtain includes a row of vertical drains, all connected to a horizontal collection drain. The horizontal collection drain is installed at a depth of approximately 2 m below the surface and is connected to a vacuum pump. A liner is placed just above the horizontal drain to ensure a proper airtight seal.

To install the BeauDrain system a multifunctional plough has been developed that cuts through the ground, installing the vertical drains, the horizontal collection drain and the liner all in one pass.

The project
The existing highway A2 between Amsterdam and Utrecht will be widened to two times 5 lanes. The first section of 5 lanes is situated on the present embankment of the highway. For the second section, a new embankment had to be build. With a design height of the embankment of 8 meters on top of 6 meters of peat, the BeauDrain system ensured the stability of the embankment during its construction.

The client, the Ministry of Transport, Public Works and Water Managements, required furthermore a low residual settlement to be met in a short period of time.

The BeauDrain system, due to the application of an atmospheric load, enabled the contractor to apply thicker lifts and reduce the amount of surcharge required. Specialized pumps were used to insure a high vacuum throughout the consolidation period. The total settlement achieved, was between 3 to 4 meters in a period of less than one year.

Equipment
In total 107,000 m2 were installed on this project, using two BeauDrain machines of the type CAT245. The stichers were especially developed for quick installation.