



Key achievements

- Keller installed 1400 pcs vertical drains with a total length of 12 000 m
- The drains was installed with Kellers own drilling rig specially adapted to the method

- **The project**

A new housing area were to be established in Fredrikstad in an area with varying soil conditions, varying depths to bedrock and soft/sensitive clay in the ground. Different ground improvement methods to avoid future settlements were considered, but vertical drains were the chosese solution.

- **The challenge**

The main challenge with the project was the gound conditions and the production platform for the 40 ton drilling rig. This was solved effeciently with long rows of wooden mats to track the rig on.

- **The solution**

The solution to prevent future settlements was to install vertical drains in the ground in a pre defined pattern. Vertical drains or also known as wick drains are used to shorten the dissipation path of the excess pore water and to accelerate the consolidation process to a few months instead of many years. The drains consists of a plastic core, which can lead the water, surrounded by a filter cloth. The drains were installed to the bedrock and a layer of sand was put on top. On top of the sand layer, a thick layer of heavy soil/rocks will be placed for about 6 months. The extra load combined with the drains will drain the excess pore water from the ground, out in the sand layer and away. This will lead to the ground being consolidated. It is estimated that the ground in the area will consolidate about 50-60 cm over the course of 6 months.

Application

Ground improvement

Technique

Vertical drains

Market

Ground improvement

Client

Fosby Anlegg AS

Main contractor

Keller Geoteknikk AS

Geotechnical Designer

Multiconsult

Keller companies

Keller Geoteknikk

Keller Grundläggning

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April 2021

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April 2021