# Frevar KF

Fredrikstad, Norway

Ground improvement by drainage, applying prefabricated vertical drains (PVD). Quantities: 3183 pcs were installed and anchored at 20m depth. Required pre-drilling due to hard soil conditions.

## The project

The Frevar KF project is land extension project, next to the coastline located in Fredrikstad, Norway. The score of Keller works, is to expedite the soil consolidation, by draining the ground, applying prefabricated vertical drains (PVD).

## The challenge

- Required pre-drill due to hard ground layer at 3.5m depth.
- Anchoring issues of the prefabricated drains, due to soft soil conditions for some of the points at the depth of 20m.
- Working platform preparation works in parallel with the pre-drilling and installation works. Safety challenge due to the works of 3 machines at the same area.
- Requirement of good coordination between the machines the to fulfil the commitment to complete the project in 3 weeks.

## The solution

- Pre-drilling of 20% of the points drilling with auger.
- Use of anchor plates with extended area to overcome the anchoring issues.
- Good coordinate was achieved, completing the project in time and safe.

## Project facts

**Owner(s)**
Park og Anlegg AS

**Keller business unit(s)**
Keller Geoteknikk AS

**Main contractor(s)**
Park og Anlegg AS

**Engineer(s)**
Contracting Project Director:
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**Solutions**
Bearing capacity / settlement control

**Markets**
Industrial

**Techniques**
Wick / PVDs / band drains

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