



Key points

- In the project Keller installed around 1.500 pcs steel core piles
- Over 60 000m, Ø273mm piles with Ø150mm and Ø180mm steel core
- Keller executed this project with up to 4 rigs simultaneously using several state of the art drilling techniques

• The project

The Follobanen project is currently the largest infrastructure project in Norway. The project includes 22 km of new high speed railway from Oslo to Ski. The main part of the project consists of a 20 km long tunnel representing the longest railway tunnel in Norway. On the project, Keller has mainly performed DDSM, Steel Core Piles, Jet Grouting and Rock Grouting for stabilizing the present sensitive clay and quick clay.

• The challenge

The tight time schedule for the foundation works in combination with the difficult soil were the main challenges at site. The soil in the area mainly consists of clay. In some parts the clay is soft and quick, but in other parts the clay is medium stiff and low to medium sensitivity. Above the clay there is a layer of dry crust and fill that mostly varies between 1 and 5m in thickness. Beneath the clay there is a moraine layer with a thickness that varies between 1 and 20m, the moraine layer is thickest in areas with largest depth to rock. Due to changing soil conditions at site Keller developed a drilling technique where the drilling fluid is reused and the ground is treated in the most sensitive way, possible.

• The solution

With its large foundation portfolio, Keller assisted the client with several different technologies. Moreover Keller executed several static- and dynamic load tests at site to verify the bearing capacity of the piles. Keller also provides a large machine park, consisting of over 130 drilling machines which created flexibility and security for the client.

Application

Drilling of soft, sensitive and quick clay as well as alumn shale and bed rock

Method

RingBit System, Double head system with water flushing and Reversible Circulation Drilling

Market

Infrastructure for High Speed Railway Tunnel

Client

Bane NOR

Main contractor

Societ  italiana per
Condotte dacqua S.p.A /
Bane Nor

Contract Value

Over 400 million NOK totally
ca. 110 million NOK for Steel
core piles

Keller companies

Keller Grundl gging AB
Keller KFS (Finland)
Keller Grundbau

Contracting project manager

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January 2016

Project end date:
Decemeber 2018