

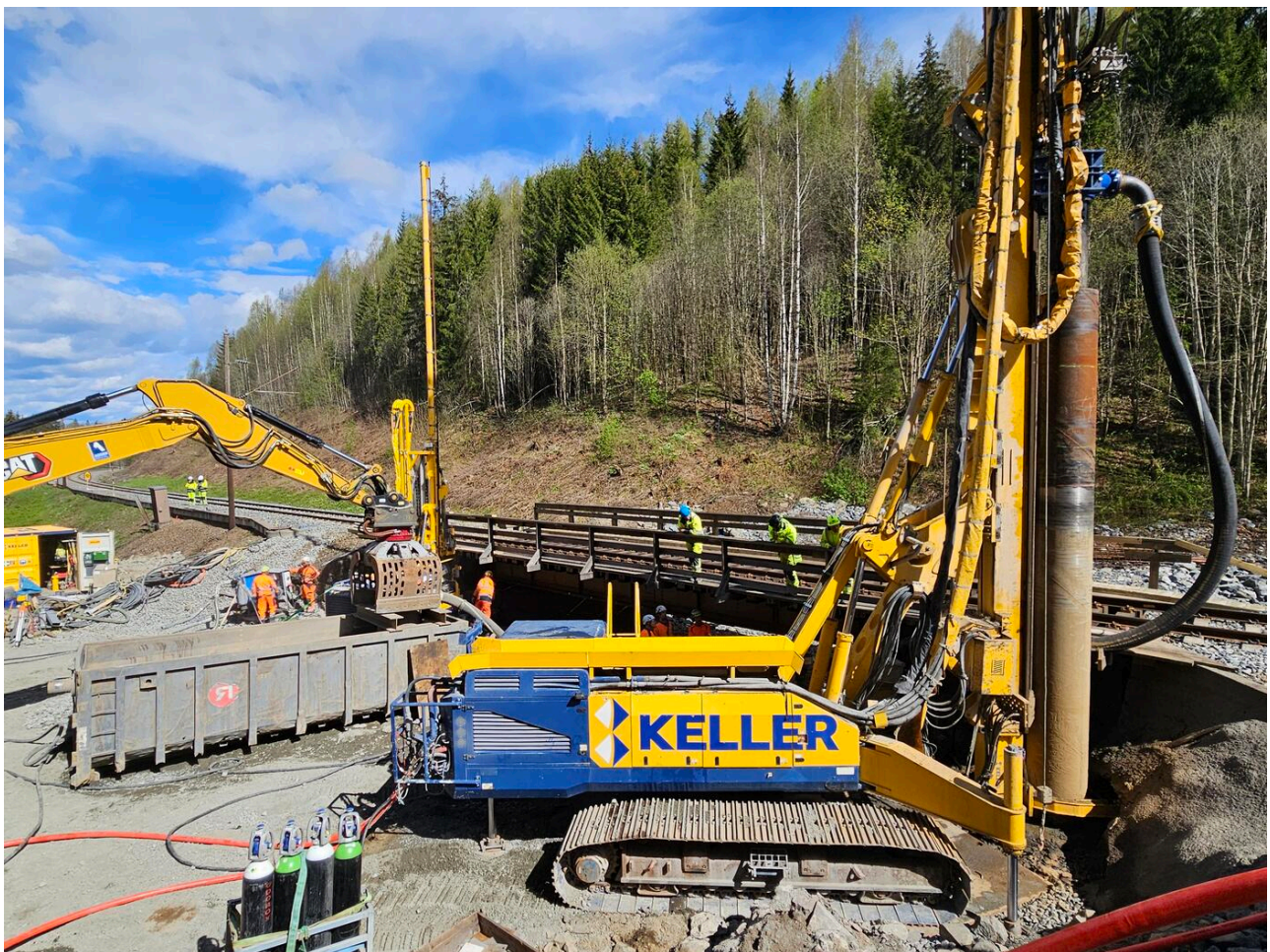
Brubytte Riselva

Dal, Norway

KEY ACHIEVEMENTS

Keller installed 4 piles for a future railway bridge over the river Riselva in Dal, in cooperation with BMO Entreprenør on behalf of Bane NOR.

Due to challenging ground conditions and the great depth to bedrock, an innovative solution was developed: four Ø2000 mm jet grouting columns forming the foundation, topped with four Ø711x14.2 mm casings filled with reinforced concrete.



The project

BMO Entreprenør was contracted by Bane NOR to carry out the replacement of a railway bridge over the river Riselva in Dal. Before the new prefabricated bridge could be lifted into place, the foundations had to be constructed in advance alongside the existing operational railway. Norconsult, serving as the geotechnical and structural designer for the project, faced a challenging task in designing the foundations due to difficult ground conditions.

The challenge

The main challenge in this project was the ground conditions. The site consisted of sand and gravel in a valley with great depths to bedrock, steep bedrock slopes, and artesian pore water pressure. These factors made it difficult to drill steel casings down to bedrock, as is normally done in this type of project.

The solution

Norconsult designed an innovative solution using 10 m long Ø711x14.2 mm casings cast with concrete and reinforcement. As a foundation for the floating piles, 4 m long Ø2000 mm jet grouting columns were installed to provide high tip resistance. Reinforcement extended into the jet grouting columns to transfer loads between the elements. The jet grouting columns were designed for a compressive strength of 20 MPa and an E-modulus of 5 GPa. Tests on production samples and core samples confirmed that these requirements were met, with measured E-modulus and compressive strength values three times higher than specified.

Project facts

Owner(s)

Bane NOR

Keller business unit(s)

Keller Geoteknikk

Main contractor(s)

BMO Entreprenør AS

Engineer(s)

Contracting Project Manager

Solutions

Heavy foundations

Markets

Infrastructure

Techniques

Jet grouting

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