TUNNELLING IN SQUEEZING AND SWELLING ROCK BY USING HIGH DEFORMABLE CONCRETE ELEMENTS

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Sprayed concrete support of high bearing capacity

**hiDCon - high deformable concrete**

Yielding support is the state of the art technique for tunnelling in heavily squeezing rock. hiDCon elements are being used successfully as yielding support in a number of projects.

Example project: Saint Martin la Porte access tunnel - LTF (Lyon-Turin-Ferroviaire) Base Tunnel

The tunnel support system was changed to yielding shotcrete to manage the difficult, heavily squeezing rock conditions. This support system consists of steel ribs or lattice girders, hiDCon elements and shotcrete. The final lining is cast in place 80 – 100 m behind the face.

**hiDCon properties**

- Yielding stress level between 2.5 – 18 N/mm² and deformation 35 – 55%.
- Precasted elements: wide range of element shapes.
- Resistant to shear stress.
- Uniform load transmission to the shotcrete.