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Tunnelling Concepts in Overstressed Weak Rocks

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Abstract : When tunnelling in overstressed weak rocks ("squeezing ground"), two basic design approaches are available: the resistance principle, and the yielding principle. The resistance principle relies on rigid support systems to withstand the ground pressure. Alternatively, the yielding principle prioritizes controlled deformation, allowing the ground to deform without compromising tunnel integrity. This paper highlights the beneficial factors of the yielding principle for conventionally excavated tunnels in overstressed weak rocks. Especially the application of a ductile shotcrete lining with yielding elements is analysed in detail. Construction costs, safety, short- and long-term stabilities are discussed.

Keywords : squeezing ground, yielding principle, yielding element, conventional tunneling
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