

However, additional validations through case studies are necessary to support the results of this study. Nonetheless, future developments are important and could expand this study. From a structural level, other tunneling conditions can be considered, such as the lagged distance between tunnels face or examining the impact of the proximity of these faces on the convergence of the gallery. Another aspect, relevant to time-dependent behavior, is to simulate the excavation of the tunnels and gallery with variable excavation speeds. On a material level, incorporating the effects of rock pore pressure and rock bolts through homogenization technique would improve the analysis.

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