ABSTRACT:

Numerical Modelling of Slope Uncertainty Due to Rock Mass Jointing

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ABSTRACT:

Analysis of the stability of slopes in jointed rock masses is not trivial and is fraught with uncertainty and risk. This paper evaluates the ability of different probabilistic methods to model slope stability uncertainty caused by randomness in the geometry of joint networks. The stability of slopes is modelled with a Finite Element-based, shear strength reduction method. The probabilistic techniques considered are the point estimate, response surface, reliability, Monte Carlo and Latin Hypercube methods. The intent of the probabilistic analysis is to calculate the statistical moments of the distribution of factors of safety.
The paper establishes that Monte Carlo simulation is the most appropriate method for analyzing uncertainty caused by joint network randomness. Because of the diversity in factors of safety and failure modes that stem from joint network randomness, it is concluded that probabilistic analysis must be applied more regularly to improve understanding and the robustness of design.

To read the full paper, click on the link below:
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