

Reliability Analysis of Partial Safety Factor Design Method for Slopes in Granular Soils

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Abstract : Uncertainties in the geo-structure analysis and design have a significant impact on the safety of slopes. Traditionally, uncertainties in the geotechnical design are addressed by incorporating a conservative factor of safety in the analytical model. In this paper, a risk-based approach is adopted to assess the influence of the geotechnical variable uncertainties on the stability of infinite slopes in cohesionless soils using the “partial factor of safety on shear strength” approach as stated in Eurocode 7. Analyses conducted using Monte Carlo simulation show that the same partial factor can have very different levels of risk depending on the degree of uncertainty of the mean values of the soil friction angle and void ratio.

Keywords : Safety, Probability of Failure, Reliability, Infinite Slopes, Sand.

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