

Paper Title: Quantitative risk analysis for a cut slope

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Abstract:

Landslides may result in adverse consequences to the population including injuries and fatalities. Estimating the factor of safety of a slope without considering failure consequences falls short of addressing the totality of adequate slope design. Quantitative risk analysis (QRA) combining hazard frequency and failure consequences is a more rational basis for judging the acceptability of a slope. An example site-specific QRA study for a cut slope in Hong Kong is undertaken using an event tree analysis. The assessment focuses on estimating the risk of loss of life for the residents of a housing block located at the foot of the slope as a result of slope failure. The study addresses the temporal and spatial distribution of the population at risk, the development of signs of slope distress, the efficiency of warning and emergency response measures, the travel distance of the slide debris and the amount of protection offered by the building.