

降雨条件下复合土钉支护受力变形特性试验研究

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摘要 在完成填土边壁(坡)破坏模式及土钉支护作用机制试验基础上, 应用所建立相似模型的相似法则, 进行持续降雨及强降雨条件下土钉支护受力变形特性试验研究。研究表明: 施做地面混凝土封闭层及超前竖直锚管, 是复合土钉支护填土边壁(坡)取得成功必不可少的工序之一; 填土颗粒经渗透雨水作用后, 具有取得最小势能的趋向, 即具有流动性, 表明刚体转动假设不适用于此类介质边壁(坡)的稳定性分析; 渗水速率增量的临界点是控制雨致滑坡的关键, 渗水速率增量的临界点值为15.5 cm/d。当达到此临界值时, 地表将发生显著沉降, 边坡将发生滑塌。

关键词 [边坡工程](#); [降雨](#); [复合土钉支护](#); [填土边壁\(坡\)](#); [试验研究](#)

分类号

TEST STUDY ON STRESS AND DEFORMATION BEHAVIORS OF COMPOSITE SOIL-NAILED SUPPORT WITH PRECIPITATION

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Abstract

Based on the established similarity law and tests of filled up slope failure model and soil-nailed supporting mechanism, test study on the stress and deformation behaviors of soil-nails in continuous and intensive precipitation was conducted. The achieved results are listed as follows: (1) it is one of necessary working processes to construct the closing concrete layer and the advanced vertical anchor pipe for supporting backfilled sidewall or slope with composite soil-nailed technique; (2) after being permeated with precipitation, the backfilled soil grains have the tendency to obtain the minimum potential energy, which means the soil has liquidity tendency and the rigid motion assumption is not suitable for analyzing the stability of backfilled sidewall or slope; and (3) the critical point of penetration speed increment is the key factor to control landslide. It is found that the critical point of the precipitation speed increment is 15.5 cm/d; and sedimentation and landslide will happen when the precipitation speed increment reaches or exceeds the critical point.

Key words [slope engineering](#); [precipitation](#); [composite soil-nailed support](#); [backfilled sidewall \(slope\)](#); [test study](#)

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