

Exit Gradient in Anisotropic Porous Medium

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Journal of Hydraulic Engineering, Vol 109, No. 6, 1983

The inclination of flow lines at the exit on the downstream side of a hydraulic structure has been found for a known degree of anisotropy and a given direction for the principal permeability. An analytical procedure is presented to find the exit gradient for steady confined flow in an anisotropic porous medium from known exit gradient of the corresponding fictitious isotropic flow domain. Results have been presented for distribution of exit gradient on the downstream side of a vertical sheet pile embedded in a homogeneous an isotropic porous medium of infinite depth. It is found that the zone vulnerable to piping on the downstream side of a vertical sheet pile is larger for the case of horizontal stratification than for vertical stratification.

Agriculture Management Effects on Soil Water Processes Part I : Soil Water Retention and Green & Ampt Infiltration Parameters

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Transactions of the ASAE, Vol. 26, 1747-1772, 1983

A method for predicting changes in soil porosity caused by different types of tillage is developed. Soil porosity change is incorporated into procedures for estimating soil water retention properties and Green and Ampt parameters based on soil texture, or soil separates, organic matter, and bulk density.