

Minimization of Seepage in Sandy Soil Using Different Grouting Types

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Abstract : One of the major concerns facing dam is the repair of their structures to prevent the seepage under them. In previous years, many existing dams have been treated by grouting, but with varying degrees of success. One of the major reasons for this erratic performance is the unsuitable selection of the grouting materials to reduce the seepage. Grouting is an effective way to improve the engineering properties of the soil and strengthen of the permeability of the soil to reduce the seepage. The purpose of this paper is to focus on the efficiency of current available grouting materials and techniques from construction, environmental and economical point of view. The seepage reduction usually accomplished by either chemical grouting or cementitious grouting using ultrafine cement. In addition, the study shows a comparison between grouting materials according to their degree of permeability reduction and cost. The application of seepage reduction is based on the permeation grouting using grout curtain installation. The computer program (SEEP/W) is employed to model a dam rested on sandy soil, using grout curtain to reduce seepage quantity and hydraulic gradient by different grouting materials. This study presents a relationship that takes into account the permeability of the soil, grout curtain spacing and a new performance parameter that can be used to predict the best selection of grouting materials for seepage reduction.

Keywords : seepage, sandy soil, grouting, permeability

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