Decision Support System for Optimum Soft Clay Improvement Technique for Highway Construction Projects

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Abstract

Identifying a soft clay improvement strategy is a main challenging in highway construction projects due to the various conditions involved. Hence, the objective of this paper is to present a Decision Support System (DSS) to select the optimum soft clay improvement technique for this type of projects. Value Engineering (VE) is integrated with Analytical Hierarchy Process (AHP) for the proposed (DSS). Using the AHP provides a robust means of identifying the relative importance of any criteria or factors for soft clay improvement alternatives. The scope of this study includes four of the most commonly used techniques for soft clay improvement: soil replacement, pre-loading, vertical drains, and the construction of embankments on piles. The proposed methodology was verified using four case studies of highways under construction in northern Egypt. The results show that the proposed (DSS) successfully predicted the optimum soft clay improvement technique in three out of the four cases.

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