

DECISION SUPPORT FOR SLOPE CONSTRUCTION AND REPAIR ACTIVITIES: AN ASSET MANAGEMENT BUILDING BLOCK

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ABSTRACT

The objective of this research was to develop a support system to facilitate appropriate decision making for construction, maintenance, and repair of earth slopes along transportation rights of way. The system was to be based on asset management principles to minimize life-cycle costs and maximize the life-cycle performance of geotechnical assets.

In the area of geotechnical transportation infrastructure, there are few decision support systems and little data available to facilitate effective decision-making for maintenance and rehabilitation of highway embankments and slopes. Because of ongoing efforts to improve the required data collection and maintenance, this research focused on the development of appropriate analysis techniques. Through the use of decision tree modeling, two basic forms of analysis were developed to predict the outcomes of alternative stabilization methods. The first form is referred to as the Single Point in Time (SPIT) model that models only a single application of a repair method. In its current form, it does not model the potential costs of alternative stabilization methods over a consistent life-cycle. The second form of model is referred to as the Specific Time Horizon (STH) model. This model was developed to account for the possibility of having to apply a specific repair technique multiple times over a specific time horizon. Both models allowed developing preliminary tools, referred as break-even diagrams, to illustrate one potential application of the techniques.