

## عنوان مقاله:

Finite Element Analysis of Embankment utilizing Small-Scale Centrifugal Dimension

## محل انتشار:

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## خلاصه مقاله:

Physical modelling through full-scale and small-scale models is widely implemented in order to define specific aspects of the prototype behaviour. On other hand, numerical modeling are essentially required to cope with the complex geotechnical problems due to the ability of considering and analyzing all aspects of the model. It can afford more perception about the behavior of geosynthetic reinforced embankment. In this study, four different cases of unreinforced and reinforced embankment models constructed on soft and stiff grounds are studied through physical modelling by means of centrifuge tests and numerical modelling by means of finite element method. As the mini-centrifuge apparatus used in this study is not fully instrumented and has some technical difficulties and limitations, only a quantitative evaluation of stability, deformation pattern and behaviour of these cases are carried out by analysing the variation of vertical displacements and settlements in different stage of construction. A comparison between the results of finite element models and measurements of centrifuge tests is carried out to validate and identifies the reasonableness of the finite element method. To have a realistic and accurate comparison between these two methods, it is rational to consider all-important effective parameters in finite element modeling of centrifuge test. Therefore, this study focuses mostly on accurate finite element modeling of small-scale centrifugal models by considering varying dimensions of model due to the different acceleration field of centrifuge test, sidewall friction of the soil box and small boundary condition and payload capacity of the centrifuge test. The results show the different deformation behavior for these four cases and indicate the significant effect of the geosynthetic reinforcement on increasing the stability of embankment. The comparison analysis presents a good agreement between results of these two methods, which validated the finite element technique in analysis of different embankment cases.

## کلمات کلیدی:

Finite Element Simulation, Centrifuge Test, Numerical modeling, Embankment, geosynthetic reinforcement

## لینک ثابت مقاله در پایگاه سیویلیکا:

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