

Title: 3D numerical analysis of centrifuge tests on embankments on soft and stiff ground

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Abstract: The behavior of reinforced and unreinforced embankment on soft and stiff grounds has been investigated using the centrifuge tests and verified using numerical simulations. Four different cases have been investigated in this study based on various types of foundation materials and reinforcement condition. Two-dimensional (2D) and three-dimensional (3D) finite element programs, Plaxis 2D and Plaxis 3D Foundation respectively used to simulate and analyze the prototypes behavior provided by centrifuge tests. Deformation behavior, settlements and effect of reinforcement have been studied in this study. Comparison of the results of the numerical analysis with the measurements obtained from the centrifuge tests shows good agreement in terms of settlement and the reduction of settlement due to geosynthetic reinforcement.