

عنوان مقاله:

An investigation into a Geocell-reinforced Slope in The Unsaturated Numerical Model

محل انتشار:

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خلاصه مقاله:

Considering unsaturation conditions of soil significantly helps to produce relatively real results. Numerical methods have been assumed as conventional methods in soil mechanics to examine soil behavior. However, the accuracy of numerical methods dramatically depends on applying the appropriate behavioral model to solve problems. One of the known elastoplastic models for unsaturated soils is the Barcelona Basic Model which is added to FLAC^{3D} software through codification. Geocell-reinforced slope functions as a beam in the soil due to the three dimensional nature of the reinforcement, i.e. height is included. Furthermore, the reinforcement causes a reduction in slope displacement and an increase in the factor of safety of slope due to its bending characteristics including moment of inertia and consequently bending strength. Moreover, soil unsaturated conditions are applied to the modelling and suction variations in soil are incorporated. This makes the maximum horizontal displacement of slope occur in the upper part of the Geocell layer while the horizontal displacement values for the slope height are substantially reduced below the Geocell layer. Increasing suction, geocell axial force declines by at most ۱۸.۵%. As overhead pressure increases, there is an increase in the force concentrated at the soil-geocell interface and the tensile force is consequently enlarged in reinforcements.

کلمات کلیدی:

Unsaturated soil, Barcelona Basic Model, suction, Geocell, FLAC^{3D}

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