

Numerical modelling techniques of soft soil improvement via stone columns: A brief review

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ABSTRACT

There are a number of numerical studies on stone column systems in the literature. Most of the studies found were involved with two-dimensional analysis of the stone column behaviour, while only a few studies used three-dimensional analysis. The most popular software utilised in those studies was Plaxis 2D and 3D. Other types of software that used for numerical analysis are DIANA, EXAMINE, ZSoil, ABAQUS, ANSYS, NISA, GEOSTUDIO, CRISP, TOCHNOG, CESAR, GEOFEM (2D & 3D), FLAC, and FLAC 3. This paper will review the methodological approaches to model stone column numerically, both in two-dimensional and three-dimensional analyses. The numerical techniques and suitable constitutive model used in the studies will also be discussed. In addition, the validation methods conducted were to verify the numerical analysis conducted will be presented. This review paper also serves as a guide for junior engineers through the applicable procedures and considerations when constructing and running a two or three-dimensional numerical analysis while also citing numerous relevant references.

KEYWORDS:

ABAQUS; Numerical analysis; Methodological approach; Modelling techniques