

## 爆炸地震波荷载下饱和砂土液化有效应力法分析

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收稿日期 2004-9-6 修回日期 2005-1-7 网络版发布日期 2008-3-21 接受日期 2004-9-6

**摘要** 基于有效应力动力分析法, 采用Byrne体变孔压模型, 运用二维显式有限差分程序FLAC对饱和砂土分别在单点、两点(微差)和多点(微差)爆炸地震波荷载作用下进行有效应力法分析, 分别考虑了水平、微倾以及斜坡场地3种工况, 数值模拟结果表明, 少量参数的体变模型在进行液化分析时具有简单实用等特点, 并且不同场地的砂土特性不尽相同。

**关键词** [土力学](#); [爆炸地震波](#); [饱和砂土](#); [数值模拟](#)

分类号

## ANALYSIS OF EFFECTIVE STRESS METHOD FOR SATURATED SANDY SOIL UNDER EXPLOSION SEISMIC WAVE LOADINGS

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### Abstract

Liquefaction in saturated sandy soil can also be caused by explosive loadings. Compared with the investigation of seismic liquefaction, the study of explosive liquefaction is still in testing and its theoretic study is also primary and obvious. It is still unreported about the study of explosive liquefaction using effective stress models all over the world. In fact, because of its few parameters, sample and practical, the effective stress models are widely used. According to effective stress dynamic analysis method, Byrne's volume strain model is used to simulate the effective stress analysis of saturated soil under single-point, two-point and multi-point explosion seismic waves, respectively, with FLAC code which is a two-dimensional explicit program. Three kinds of fields are considered, such as the level, little-obliquity, and slope ground. The results of numerical simulation indicate that it is simple and practical to analyze liquefaction using volume strain model with few parameters, and the characteristics of saturated sandy soil are different with fields. For some depths of calculated soil, it has little effect on liquefaction with small angle while its effect can not be ignored after exceeding a certain degree. So the characteristic of liquefaction in saturated sandy soil is widely varied with different obliquity while the other conditions are the same. The graphs of isoline states after simulating can be presented with the effective stress and pore water pressure in dams under dynamic loadings while the effective stress analysis of dams are performed under explosion loadings.

**Key words** [soil mechanics](#); [explosion seismic waves](#); [saturated sandy soil](#); [numerical simulating](#)

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