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# 深基坑带撑双排桩支护结构有限元分析

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摘要 针对实际基坑工程的带撑双排桩支护结构, 建立有限元分析模型, 土体采用D-P弹塑性本构模型, 通过数值模拟研究这类基坑的变形和土压力分布规律, 并与实测数据进行对比, 最后分析后排桩长度、后排桩间距、前后排桩的排距、联系梁刚度、支撑刚度等因素的影响。分析结果表明, 带撑双排桩支护结构中后排桩位移明显小于前排桩, 且后排桩的排距和支撑刚度对此类支护结构性状的影响比较显著。

关键词 [桩基工程; 带撑双排桩支护结构; 有限元法; 变形; 土压力](#)

分类号

## FINITE ELEMENT ANALYSIS OF DEEP EXCAVATION WITH BRACED RETAINING STRUCTURE OF DOUBLE-ROW PILES

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### Abstract

Braced retaining structure with double-row piles is a new type of retaining structure. The application of this type of retaining structure to an actual case is introduced. The behaviors of the excavation, such as the distribution of the deformations of retaining structure and earth pressure against the structure, are analyzed by FEM. An elastoplastic constitutive model, Drucker-Prager model, is adopted to simulate the behaviors of the soil. The analytical and measured results are compared. The differences between the theoretical data and the measured data are also analyzed. Finally the effects of the length of back-row pile, back-row pile spacing, spacing between the two rows of piles, top beam stiffness, and the strut stiffness are analyzed. The study shows that the deformations of the back-row piles are less than those of the front-row obviously. It also shows that the influences of the spacing between the two rows of piles and the strut stiffness are more distinct than the other factors.

**Key words** [pile foundations; braced retaining structure with double-row piles; finite element method\(FEM\); deformation; earth pressure](#)

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