

覆盖层上面板堆石坝趾板与基础连接方式的研究

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摘要 采用三维弹塑性有限元分析, 对那兰水电站混凝土面板堆石坝趾板与基础的两种连接方式——刚性连接与柔性连接进行了比选及技术论证。不同连接方式下的坝体应力与变形计算结果表明: 两种连接方式对坝体、坝基及混凝土面板的应力与变形影响很小; 但对防渗墙和趾板的变形有较大影响, 刚性连接下防渗墙与趾板的变形要小于柔性连接情况; 两种连接方式下防渗墙和趾板的应力总体上没有很显著的差异, 都在其应力允许范围内; 两种连接方式下, 面板周边缝变位差别较大, 采用刚性连接方式时, 面板周边缝有较大沉陷, 甚至超过一般止水构件所能承受的变形能力。综合对比两种连接方式下的坝体应力、变形计算结果, 建议采用柔性连接方式连接趾板与基础。

关键词 [水电工程](#); [混凝土面板堆石坝](#); [趾板](#); [基础](#); [刚性连接](#); [柔性连接](#)

分类号

NUMERICAL ANALYSIS OF JOINT TYPES BETWEEN TOE SLAB AND FOUNDATION OF CFRD IN ALLUVIAL DEPOSIT LAYER

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Abstract

Two types of joints, the rigid joint and the flexible joint, between toe slab and foundation of the concrete-faced rockfill dam(CFRD) of the Nalan Hydropower Power Station are analyzed by 3D elastoplastic finite element method. Numerical results show that the joint types make small difference to stress-strain behavior of dam, dam foundation and face slab, and they have no obvious influence on stress behavior of toe slab and diaphragm wall, but obvious influence on deformation behavior of toe slab and diaphragm wall. The deformations of toe slab and diaphragm wall in the rigid joint are smaller than the flexible joint. The results of the rigid joint show that deformations of facing joint are quite big, even exceed the deformation capacity of common sealing structure. The flexible joint is recommended based on this numerical analysis.

Key words

[hydraulic engineering](#); [concrete-faced rockfill dam \(CFRD\)](#); [toe slab](#); [foundation](#); [rigid joint](#); [flexible joint](#)

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