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堤防失事风险分析和风险管理研究

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摘要 摘要: 基于堤防渗透破坏和岸坡滑动失稳风险的数学模型, 提出了场地砂土地震液化和堤防失事综合风险分析的数学模型, 以及堤防风险管理的概念; 以南京市板桥河左岸堤防加固工程为例, 应用风险分析理论和方法对该段堤防渗透破坏风险、岸坡滑动失稳风险、场地砂土地震液化风险以及堤防失事综合风险进行了分析研究; 通过1995年板桥河左岸堤防典型破坏实例建立整个板桥河堤防渗透破坏风险率临界值、岸坡滑动失稳风险率临界值以及堤防失事综合风险率临界值; 同时基于风险分析的结果和所建立的风险率临界值, 根据风险管理的理论, 针对板桥河左岸堤防加固工程提出降低风险的措施, 对堤防汛期洪水水位运行管理提出建议。其理论、方法、思路和结论可供同类工程借鉴。

关键词 [关键词: 岩土力学](#) [风险分析](#) [风险管理](#) [渗透破坏](#) [砂土液化](#) [滑动失稳](#) [综合风险](#)

分类号

RISK ANALYSIS AND RISK MANAGEMENT FOR LEVEES

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Abstract

Abstract: Based on the mathematical models of seepage failure risk and slide instability risk for levees, the mathematical models of sandy soil seismic liquefaction risk and comprehensive failure risk for levees were developed; and the conception of risk management for levees was established. The risks of seepage failure, slope slide instability, sandy soil seismic liquefaction and comprehensive failure in Banqiao River levee were analyzed; and critical risk coefficients for seepage failure, slide instability and comprehensive failure in Banqiao River levee were found on the failure case of Banqiao River levee in 1995. In addition, according to the results of risk analysis, and approaches of risk management, measures to decrease the failure risk of the levee and suggestions to the levee operation management in flood seasons were proposed. The analytical approach and the results will be practical and helpful in levee engineering practice.

Key words [Key words: rock and soil mechanics](#) [risk analysis](#) [risk management](#) [seepage failure](#) [liquefaction](#) [slide instability](#) [comprehensive risk](#)

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