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以數值分析方法再論林肯大郡坡地破壞

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摘　　要　以往之坡地穩定數值分析多僅以單一地下水位線且在不考慮土壤滲流狀況下，採用極限平衡法來進行。實際上，邊坡災害通常是伴隨著降雨而發生，且降雨入滲及地下水滲流皆爲時間之函數。本研究採用颱風降雨歷時曲線，並考量現地地層各層次具有不同水力傳導係數之情況下，應用數值分析工具建立一套降雨歷時～滲流～邊坡穩定之分析模式。分析模式之可靠性及有效性可藉由數值分析結果與 1997 年汐止林肯大郡坡地災害現地調查資料之比對來予以確認。同時透過參數研究來探討各項坡地穩定措施之設計參數及地質材料參數對林肯坡地災變之影響。

關鍵詞：數值分析、降雨歷時、滲流分析、穩定分析。

Recap of Slope Failure in Lincoln Residential Construction Project Using Numerical Analysis Method

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ABSTRACT　It is common to perform limit equilibrium slope stability analysis under specified static groundwater table without considering the seepage effect. In fact, the slope instability is frequently associated with the precipitation. Meanwhile, infiltration and seepage of groundwater are significantly dependent on the elapsed time duration. Considering a specific typhoon hyetograph and the permeability of ground strata, this study attempted to establish a numerical model to encompass precipitation/seepage/stability analyses in an entire slope stability analysis procedure. The validity of the numerical model can be verified by comparing the numerical results with the investigations of the disastrous slope failure of Xizhi Lincoln Residential Construction Project in 1997. In addition, a series of parametric studies on various design parameters of stabilization countermeasures and geological material were carried out to investigate the influences on the disastrous slope failure event.

Key Words:　numerical analysis, precipitation, seepage analysis, stability analysis.

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