Ceramah Teknik (Technical Talk)

Preliminary study on hazard zonation mapping in karst terrain

JEONG HWAN KIM

The importance of geology in the urban development of Hong Kong

C.J.N. FLETCHER

Laporan (Report)

There was a good turnout for the above two talks on Tuesday 25th June 2002, held at the Geology Department, University of Malaya.

Prof. Jeong Hwan Kim is from the Seoul National University while Prof. Chris J.N. Fletcher is Director, Applied Geoscience Centre, University of Hong Kong.

Preliminary study on hazard zonation mapping in karst terrain

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Abstrak (Abstract)

Rock mass classification and its characterization are most important things to evaluate the ground conditions especially foundation design and tunnelling stages. In many cases, these works are carried out with the synthesis of surface geological, geophysical and drilling data, and proposed appropriate methods in these stages. However, in soluble rock masses such as carbonate rocks of limestone and dolomite, the processes described above are not adequate to predict the underground condition in some cases because the underground works of limestone terrain are mainly related to karstic features.

We present a hazard zonation mapping technique in karst terrain and its risk assessment from the detailed surface mapping in engineering point of view. Controlling factors of sink hole and cave formation are discussed and 4 main hazard factors affecting hazard potential are identified, which are prerequisite hazard factor of distributions of pre-existing sink holes and caves, geomorphological factors of slope gradient, vegetation and drainage patterns, geological hazard factors of lithology, geophysical survey data, fracture patterns, and geological structures, and hydraulic conditions of annual fluctuation of ground water table and composition of ground water.

We construct the hazard zonation map around the Jecheon-Maepo area, Korea and present the classification of karst terrain based on the hazard factors. The hazard and risk maps are constructed based on the decision tree model (fish bone model). The cross-sectional hazard and risk assessment are also performed at the specific tunnel-planning site. The rock quality is classified into 5 categories based on the engineering classification and suggest 5 different types of support measures to be applied in an appropriate manner to the different rock qualities with the comparison between RMR and the result of this study.