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Foreword

Engineering geology and applied geology are areas of increasing importance today: 21st century development requires a good understanding of geology, since most of our new constructions are built on geologic formations. Geology is a historical science and in most cases it deals with unitless values. For their part engineers require well-defined values for design and planning. Engineering geology must bridge this gap and provide data for design, construction and sustainable management of engineered structures. Besides providing real values, engineering geology as a science must provide new ideas and considerations in order to facilitate future engineering work, and to allow sustainable development of areas and protection of the environment. This volume presents selected papers dealing with various fields of engineering geology; the aim is to show the wide ranges of present-day research in these areas.

One paper (Görög) addresses the engineering geologic and rock mechanical properties of Oligocene clay (Kiscell Clay). It is a particularly important rock formation since the Tunnel Boring Machine (TBM) of the new metro line being constructed in Budapest must penetrate Kiscell Clay throughout most of its path on the Buda side of the city.

Laboratory testing of rock types is covered by two papers. The first one (Gálos and Kárpáti) deals with two methods of aggregate testing, the micro-Deval and the Los Angeles tests. The paper provides an overview of the qualification of railway ballast aggregates according to the European Norm. Monument stone conservation is the focus of the other paper (Pápay and Török). The performance of five stone consolidants and changes in physical properties of porous limestone are discussed by means of non-destructive laboratory tests.

A new water balance calculation method, which considers the effects of urbanization in addition to natural processes, is described in detail (Hajnal). The calculation method, which is based on field data and hydrogeologic considerations, was applied to Hungarian cities where cellars are common.

Fissures and fractures can adversely affect rock mass properties; therefore their classification in rock engineering is of great importance. Two methods of core analysis, the RQD (Rock Quality Designation) and the C (Kiruna) are compared in the Vásárhelyi et al. paper, in order to obtain adequate information in support of the design of the Radioactive Waste Repository at Bátaapáti.

A case study from Australia (Fityus et al.) provides an international example how to use geologic data in highway design. Complex analyses of structural geology, weathering and rock mechanical properties of clastic sediments and volcanites are used in the interpretation of the engineering geologic conditions and in the choice of the best alignment.

In the hope that all readers will find much to interest them among this selection of papers I wish them good browsing in the wide field of engineering geology.

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