

Preface

The construction of tunnels involves the resolution of more or less complex technical problems depending on the geological and geological—environmental context in which the work fits.

Only a careful analysis of all the geological and geological—environmental issues and a correct reconstruction of their conceptual model, can lead to optimal design solutions from all points of view (including financial) and to ensure safety to the workers during construction, and to users, in the operation phase.

Therefore, the need to collect the synthesis of current knowledge about underground excavations in a volume is felt, especially with respect to: the geological and environmental issues related to the construction of underground works (Chaps. 1 and 2); the different methodologies used for the reconstruction of the conceptual model (Chap. 3); the underground excavation analysis (Chap. 4); the different risk typologies that it is possible to encounter or that can arise from the underground construction and the most important risk assessment, management and mitigation methodologies that are used in the underground work planning (Chaps. 5 and 6); the ground structure interaction (Chap. 7) and the characteristics and the equipment of the monitoring activity, which should be performed during an underground excavation (Chap. 8).

The authors are aware that the aim of this book is only to introduce the problems related to the construction of underground works rather than finding the solutions from them all and to provide readers useful concepts for a correct scientific approach to the subject.

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