



Keynote 6: New Technologies for Shallow to Deep Underground Construction in Urban Area

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Tadashi Hashimoto

Geo-Research Institute(GRI), Japan

Tadashi Hashimoto, Director of Geo-Research Institute(GRI) in Japan. After getting his Master Degree at Tokushima University in 1972, he worked for Kyoto University as a research assistant. From 1973 till now, he has been serving continuously in GRI. He has specialised in underground constructions, providing technology advice involving urban tunnel, mountain tunnel, geotechnical investigation, on-site monitoring, ground water, landslide and etc. In the past 30 years, He worked actively as technology consultant in underground constructions in Osaka, Kobe, Kyoto, Fukuoka, Nagoya and Tokyo in Japan. At the same time, he came forward with numerous technical advices on the underground construction projects for railway and express way in the UK, the Netherlands, South Korea, China and Singapore.

He has been a member of ISRME, and is currently Co-Chair of The Research Committee of Groundwater and Geo-environment in Japan. Now he is Overseas Expert of Science and Technology committee of Shanghai Municipal Commission of Construction, and also the Transportation and International Adviser for Singapore Land Transport Authority on the underground construction.

ABSTRACT

The utilization of underground space becomes a more important issue in megacities worldwide in order to build up the megacities more functional and advanced. However, in the developed megacities, because of the existence of a lot of underground structures such as lifelines, the demand of new underground development is considered to effectively utilize the deep underground space and the large span shallow underground space. For this reason, it becomes important to establish the technology to construct large depth structures and/or the large cross section structures with the possibility to combine underground and above ground structures, to avoid the influences on the natural environments of groundwater. Moreover, the geology condition of almost all the megacities in Asian countries, particularly, consist soft deposits such as clay, silt, sand and gravel layers with high groundwater level. Therefore, it is necessary to develop advanced technology related to soil investigation, design, measurements for safety management and environmental preservation, underground construction method, water strategy connected to the uplift pressure and avoiding the piping, as well as the techniques for underground water environmental preservation and ground improvement etc. According to this necessary and the conditions, in this paper, serial of the advanced technology of Japan is going to be collectively introduced. It is expected that these technologies can be shared by not only the advanced developed megacity but also all of the megacities on the way of development to challenge the new type of underground construction project which cause few loads to the environment safety with low-cost.