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REPORT ON TC 28 INTERNATIONAL SYMPOSIUM ON UNDERGROUND CONSTRUCTION IN SOFT GROUND

COMPTE RENDU DU COMITE TECHNIQUE - 28 SYMPOSIUM INTERNATIONALE SUR LA CONSTRUCTION SOUTERRAINE EN SOL MOU

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1. Organization of TC-28

ISSMFE, TC-28 was formed right after the ICSMFE at Rio de Janeiro in 1989, consisting of 11 members chaired by Prof. Keiichi Fujita (Science University of Tokyo, Japan) working with the Secretary, Prof. Osamu Kusakabe (Hiroshima University, Japan). One of the term of references was to organize an international symposium. The JSSMFE has hosted the TC-28, of which activities was supported by the Japanese domestic committee, consisting of 11 members.

2. International Symposium

The International Symposium on "Underground Construction in Soft Ground" was held at Ashok Hotel, Convention Hall, in New Delhi on January 3, 1994, two days before the 13th ICSMFE, participated by 75 delegates from 18 countries. Table-1 summarizes the outline of the symposium.

Table-1

	Morning Session Braced Wall Excavation	Afternoon Session Tunnel Excavation
Chairman	Prof. Shen (Hong Kong) Prof. Kastner (France)	Prof. Kusakabe (Japan) Dr. Niyama (Brazil)
General Reporter	Prof. Som (India)	Dr. Mair (UK)
National Reports	7 reports presented (11 submitted)	7 reports presented (11 Submitted)
Technical Papers	7 papers presented (17 submitted)	5 papers presented (18 submitted)
Opening Address	Prof. Fujita (Japan)	
Closing Address	Prof. Kusakabe (Japan)	

Preprint volumes were sent to those who had registered before mid-December, 1993. The final Proceedings will be published by Balkema Publisher.

3. Outline of Session on "Braced Wall Excavations"

In his General Report, Dr. Som introduced the case history of Calcutta Metro Project and explained the influence of the duration of unsupported period on the settlement characteristics. He also reported some of the results revealed by the questionnaire survey, by plotting the data on Pecks diagram and pointed out the general trend of increase in excavation depth throughout the world in recent years. During the floor discussion, it was reported that UK uses the factor of safety of 2 based on the experience that the factor of safety of 1.5 results in unacceptable deformation in some cases. Mr. Day (South Africa) commented on this point, saying that the magnitude of deformation should be examined in view of the stability of the total system of the braced wall excavations.

4. Outline of Session on "Tunnel Excavations"

Dr. Mair presented a well-organized General Report giving an overview of the papers presented to the session and summarized the key issues in tunnel excavations. Some of the main points discussed during the floor discussion are in the following. Dr. Taylor reported a UK experience of using compensation grouting as a countermeasure for the settlement due to tunnelling in London clay.

Dr. Kusakabe and Dr. Iwasaki (Japan) asked the influence of compensation grouting on long-term settlement and the difficulty of controlling horizontal displacement due to grouting. Answering to the questions, Dr. Mair explained why the case was successful because London clay has fissures dominantly developed in the horizontal direction where the grouting agent penetrates in, resulting in vertical ground movements. Much of discussions on shield tunnelling methods focused on the presentations by Japanese participants, including the reasons why expensive steel segments are frequently used, the definition of coefficient of lateral earth pressure, the magnitude of design value, the selection for the ground before the excavation, the ambiguous use of total and effective stresses. Adequate explanations for Japanese design concept were not fully given, although the papers attracted the audience.

5. Others

In the closing address, Dr. Kusakabe mentioned that the TC-28 successfully collected the information on current practice in underground construction with useful case histories in various parts of the world, from which we understood that local design practice and experience differs from one region to another mainly due to different geotechnical conditions. He also drew the audience attention to the recent European move toward limit state design. It should be mentioned here that the President of ISSMFE expressed his appreciation to the activities and successful symposium, which TC-28 has achieved, at the Council Meeting. The participants from UK expressed their hope to host the 2nd International Symposium on the same subject in London in April 1996.