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Administrative report: TC28 – Underground construction in soft ground

Compte rendu sur la CT 28

R.J. Mair
Cambridge University, UK

1 INTRODUCTION

The aims and objectives of the Technical Committee are principally to organize, at three year intervals, International Symposia on Geotechnical Aspects of Underground Construction in Soft Ground. The main purpose of these International Symposia is to promote the interchange of ideas and latest developments, drawing on new research advances and on recent experiences in the field from case histories.

The Technical Committee has been very active in the period 2001-2005 and has organized two major International Symposia on Geotechnical Aspects of Underground Construction in Soft Ground. The first was held in Toulouse in October 2002, and the second in Amsterdam in June 2005. Details of these are very successful Symposia are given later in this report.

2 TERMS OF REFERENCE

The Terms of Reference for TC28 are as follows:

1. To promote the International Conference on Geotechnical Aspects of Underground Construction in Soft Ground, Toulouse 2002.
2. To respond positively to, and promote suggestions for, smaller Regional Conferences or Workshops on Aspects of Underground Construction in Soft Ground.
3. To use the various conferences and other events to provide a data source of information concerning the design, construction and analysis of deep excavations and tunnels with particular emphasis on the development, effects and control of ground movements.
4. To encourage the production of National Reports on the design and monitoring of deep excavations and tunnels from the ISSMGE Member Societies, and to disseminate and discuss these at the next International Conference on Geotechnical Aspects of Underground Construction in Soft Ground, to be held probably in Spring 2005.
5. To make contact with and encourage the participation in TC28 of societies and groups promoting trenchless technology.
6. To report on the outcomes of the National Reports and other activities at the International Conference on Soil Mechanics and Geotechnical Engineering, Osaka 2005.

3 INTERNATIONAL SYMPOSIUM IN TOULOUSE 2002

The Fourth International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground was held in Toulouse in October 2002. This very successful Symposium was attended by 170 delegates from 24 countries. The Symposium was organized, under the Chairmanship of Dr A.Guilloux, by the French Committee of Soil Mechanics and Geotechnical Engineering (CFMS). It was held at the same time as the Annual

Meeting of AFTES (the French Tunnelling Association), and this enabled a very strong interaction between ISSMGE members and members of the International Tunnelling Association (ITA). Members of the International Society of Trenchless Technology (ISTT) also attended the Symposium. The themes of the Symposium, in line with the Terms of Reference for TC28, were addressed in technical sessions as follows:

1. Design methods of tunnels: stability, settlements and tunnelling
2. Bored tunnel construction.
3. Ground movements caused by tunnelling: measurements and back analysis.
4. Deep excavations: design and analysis.
5. Deep excavations: construction.
6. Numerical and physical modelling.

The first two days of the Symposium were devoted to technical sessions. The third day was dedicated to technical site visits, mainly to sites for construction of the Toulouse metro.

The Proceedings of the Symposium, containing 145 papers, together with General Reports for each of the technical sessions, have been published (Kastner et al, 2002).

A Special Edition of *Soils and Foundations* was published in 2004 containing selected papers from the Toulouse Symposium; these are listed at the end of this Report.

4 INTERNATIONAL SYMPOSIUM IN AMSTERDAM 2005

The Fifth International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground was held in Amsterdam in June 2005. Over 200 delegates attended this highly successful Symposium from 38 countries. A local committee, under the Chairmanship of Dr K-J Bakker, organized the Symposium. The themes of the Symposium, in line with the Terms of Reference for TC28, were addressed in technical sessions as follows:

1. Design methods for tunnels, influences on foundations
2. Bored tunnels: construction
3. Mitigating measures
4. Numerical analysis of tunnels and deep excavations
5. Monitoring of underground constructions
6. Deep excavations

The first two days of the Symposium were devoted to technical sessions. The third day was dedicated to technical site visits, to sites for construction of the RandstadRail, HSL-South and the Amsterdam North/South Line projects.

A Pre-print volume of the Proceedings of the Symposium, containing 122 papers, together with General Reports for each of the technical sessions, was produced for the Symposium. It is anticipated that the final Proceedings will be published before the end of 2005.

5 COMMITTEE MEETINGS OF TC28

Committee meetings of TC28 were held in Toulouse in October 2002 and Amsterdam in June 2005. The following points should be noted:

1. At the Amsterdam committee meeting, it was agreed that the production of National Reports (as had been previously envisaged) presented problems for many National Societies. It was noted, however, that the Japanese National Society had produced an impressive National Report; this was presented as a Special Lecture by Professor H. Akagi at the Toulouse Symposium and reproduced in the Proceedings of the Symposium and in a Special Edition of Soils and Foundations (Akagi, 2002).
2. At the same meeting it was agreed that further links with the International Society for Trenchless Technology (ISTT) should be pursued, and that the next Symposium could have a technical session devoted to this area.

6 FUTURE WORKSHOPS AND SYMPOSIA

Plans are in place for a Regional Workshop in Budapest in Spring 2007 and for the Sixth International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground to be held in Shanghai or Hong Kong in 2008.

7 SUMMARY

Much has been achieved by Technical Committee 28 (Underground Construction in Soft Ground) in recent years. In 1994, under the leadership of the then Chairman, Professor K. Fujita, a one-day International Symposium was held in New Delhi – just before the 13th ICSMGE. Following the success of this, under the Chairmanship of the author it was decided to initiate a series of two-day International Symposia on Geotechnical Aspects of Underground Construction in Soft Ground, with a third day devoted to technical site visits to underground construction projects. These International Symposia have been held every three years over the past 10 years as follows:

1996	London
1999	Tokyo
2002	Toulouse
2005	Amsterdam

In each case there has been a wealth of information published in the Proceedings, with a total in excess of 400 papers published on a wide variety of topics of major technical interest, mainly on case histories and new research.

Significant technical advances have been made over the 10 year period 1996-2005, and in the period 2001-2005 TC28 has been particularly active through its organization of two major International Symposia in Toulouse and Amsterdam.

Plans are already in place for continuing TC28's activities for the period 2005-2009: a Regional Workshop in Budapest in 2007 and an International Symposium (continuing in the series) in China in 2008.

8 PUBLICATIONS ARISING FROM THE WORK OF TC28

1. *Proceedings of International Symposium at Toulouse, 2002*: Geotechnical Aspects of Underground Construction in Soft Ground, Kastner, Emeriault, Dias, Guilloux (eds) © 2002 Spécifique, Lyon. ISBN 2-9510416-3-2 (145 papers)
2. *Soils and Foundations, Vol.44. No. 1, February 2004, Special Issue on Geotechnical Aspects of Underground Construction in Soft Ground*:

Committee Report:

Geotechnical Aspects of Current Underground Construction in Japan. Hirokazu Akagi (National Report of Japan)

Technical Papers:

The Influence of Building Weight on Tunnelling Induced Ground and Building Deformation. J.N. Franzius, D.M. Potts, T.I. Addenbrooke and J.B. Burland

Field Measurements of Grout Pressures during Tunnelling of the Sophia Rail Tunnel. A. Bezuijen, A.M. Talmon, F.J. Kaalberg and R. Plugge

Centrifuge Modelling of Tunnelling near Driven Piles. S.W. Jacobsz, J. R. Standing, R.J. Mair, Toshiyuki Hagiwara and Tadashi Sugiyama

Raticosa Tunnel, Italy: Characterization of Tectonized Clay-Shale and Analysis of Monitoring Data and Face Stability. D. Boldini, A. Graziani and R. Ribacchi

Numerical Modelling of Settlement Compensation by Means of Fracturing Grouting. H. F. Schweiger, C. Kummerer, R. Otterbein and E. Falk

Analysis of Wall and Ground Movements due to Deep Excavations in Soft Soil Based on a New Worldwide Database. C. Moormann

Technical Report:

Field Instrumentation and Numerical Analysis of an Elliptical Shaft Constructed for the Texas Superconducting Super Collider Project. G. R. Teetes, K. Soga and M.J. Mrugala

3. *Pre-print volume of Proceedings of International Symposium at Amsterdam, 2005*: Geotechnical Aspects of Underground Construction in Soft Ground (122 papers)

9 MEMBERS OF TC28 FOR PERIOD 2001-2005

Chairman:

Professor Robert Mair UK

Secretary:

Dr Jamie Standing UK

Core Members:

Dr Adam Bezuijen The Netherlands

Dr Alain Guilloux France

Dr Arsenio Negro Jr. Brazil

Dr Jozef Meesi Hungary

Dr Walter Steiner Switzerland

Members:

Dr Ir Klaas Jan Bakker The Netherlands

Professor Giovanni Barla Italy

Dr Marco Barla Italy

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Prof. In-Mo Lee Korea

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Dr N. Som India

Professor M. Sugimoto Japan

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