



R.J. Mair & R.N. Taylor, editors

Geotechnical Aspects of Underground Construction in Soft Ground



PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON GEOTECHNICAL ASPECTS
OF UNDERGROUND CONSTRUCTION IN SOFT GROUND/LONDON/UK/15-17 APRIL 1996

Geotechnical Aspects of Underground Construction in Soft Ground

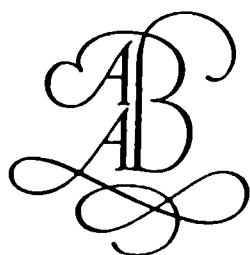
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Preface

Technical Committee TC28 on Underground Construction in Soft Ground was established by the International Society of Soil Mechanics and Foundation Engineering in 1989. Its main purpose was to provide a forum for interchange of ideas and discussion using representatives in many countries with active interest in tunnelling and deep excavations. In 1994, TC28 organised a very successful Symposium which coincided with the International Conference then being held in New Delhi. The one-day Symposium was principally aimed at discussing codes of practice and methods of construction of underground excavation adopted in different countries. National Reports were canvassed and also more general papers were included. The success of that Symposium led to the strong feeling that organising a second event would be both productive and well received. The Symposium in April 1996 organised at City University, London and these Proceedings are the outcome of that decision to hold a second event.

The themes for the Symposium were established in line with the terms of reference of TC28 as:

1. Case histories and other information concerning the design and construction of tunnels and deep excavations in the urban environment, with special emphasis on the relationships between ground improvement schemes and excavation methods used and the displacement of surrounding ground and of the adjacent structures.
2. The roles and interrelationships of analysis and physical and numerical modelling.

The call for papers drew an overwhelming response and over 130 abstracts were received. This resulted in 116 refereed papers being included in the Symposium, which were received from 23 countries. The Symposium attracted an attendance of 235 delegates from 27 countries.

The Symposium was organised over a period of three days. The first two days were dedicated to 5 main discussion sessions covering braced excavations and shafts, and construction aspects, ground treatment, modelling and prediction, and settlement effects of bored tunnels; a sixth session gave an overview of the Jubilee Line Extension Project (JLEP), under construction for London Underground Ltd, and served as an introduction to the third day of the Symposium which was devoted to visits to a number of different construction sites of the JLEP. The papers of the Symposium were circulated in advance as a pre-print volume and papers were taken as read. Each session was introduced by a reporter who summarised the main points of the papers in a session; the remainder of the session was then devoted to open discussion on key points identified by the reporter. This volume of the proceedings includes the written versions of the session reports, and any written contributions to discussion received after the Symposium. The papers cover a wide range of topics, and it is particularly pleasing that there are so many papers concerning case histories which give very valuable insights and detailed field measurements associated with underground construction.

The success of the Symposium was due in no small part to the efficiency and hard work of the members of the organising committee and the tremendous support from all members of the

Geotechnical Engineering Research Centre at City University. Special thanks are due to London Underground Ltd (LUL). In particular, Mr M.C.F.Smith, Project Manager (Construction) for JLEP, gave invaluable support in arranging financial sponsorship, publication of findings from JLEP and the site visits. Also, Mr L.F.Linney provided an important link between the organising committee and LUL and ensured smooth running of the site visits.

The collection of papers and reports contained within this volume should provide a major source of reference on underground construction in soft ground. We are grateful to the International Society of Soil Mechanics and Foundation Engineering and to TC28 to have been given the opportunity to hold the Symposium and to gather together and exchange ideas with so many people concerned with deep excavations and tunnels.

R.J. Mair, Chairman TC28

R.N. Taylor, Secretary TC28

Editors

Organisation

The Symposium was organised by the International Society for Soil Mechanics and Foundation Engineering, Technical Committee TC28 on Underground Construction in Soft Ground.

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This volume contains a collection of 116 papers and 5 reports presented at the International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground held at City University, London in 1996, organized by the Technical Committee 28 of the International Society for Soil Mechanics and Foundation Engineering. The papers have been contributed by research workers and practitioners from 23 countries who are involved with the design and construction of underground structures in soft ground. The contributions cover braced excavations and shafts, together with construction aspects, ground treatment, modelling and prediction, and settlement effects of bored tunnels; the final section includes an overview of the Jubilee Line Extension Project, recently constructed in London. The volume provides a valuable source of reference on the current practice of analysis, design and construction of deep excavations and tunnels in soft ground.

Cover photographs courtesy Jubilee Line Extension Project:

Top: Cofferdam and excavation for the Canary Wharf Station

Bottom: Tunnel enlargement for eastbound platform tunnel, Bermondsey Station