

## Administrative report: TC18 – Deep foundations Compte rendu sur la CT-18

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### 1 TERMS OF REFERENCE

The ISSMGE Technical Committee 18 pursues the subsequent goals:

- to promote co-operation and exchange of information on the design principles of pile groups and Combined Pile-Raft Foundations (CPRFs) and on fundamental (soil mechanics) understanding of installation methods for piles.
- to finalize and disseminate survey reports on the design and case histories of CPRFs, giving a comparative overview of present-day design methods applied in practice
- to explore an avenue to the rational assessment of the pile installation process in terms of soil-equipment-material interactions and its resulting influence on the load-bearing behavior of piles under axial loading.

This work will be conducted in close collaboration with ISSMGE ERTC 3, will require the use of data banks on pile load tests, and may be stimulated by the organisation of Prediction Events. Special emphases will be given during the present term to soil displacement screw piles, benefiting from research programs conducted by BBRI (Belgian Building Research Institute) and to vibrated piles.

### 2 LIST OF MEMBERS

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#### Other Core Members:

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Prof. Alessandro Mandolini, Italy  
Prof. Ir. A. Fritz van Tol, Netherlands

#### Members:

Prof. A.A. Bartolomey, Russia  
Riccardo Berardi, Italy  
T.H. Botabekob, Kazakhstan  
Mr Gavin P. Byrne, South Africa  
Enzo Caputo, Italy  
Dr. Fiona Chow, Australia  
Prof. Francisco de Rezende Lopes, Brazil  
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Dr. Mohamed Hesham El Naggar, Canada  
Prof. Jozsef Farkas, Hungary  
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Prof A.L. Gotman, Russia  
Mohamad H. Hussein, USA  
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Professor Dr Ahmet Saglam, Turkey  
Dr J P Seidel, Australia  
Prof. E Toshlov, Bulgaria  
Prof. Paul Varatojo, Portugal  
Professor F. Veric, Croatia  
Professor A. Zh Zhusupbekov, Kazakhstan  
Assist. Prof. Dr. Zhang Limin, Hong Kong

### 3 ACTIVITIES SINCE 2001

The ITC 18 website ([www.geoforum.com/tc18](http://www.geoforum.com/tc18)) has been started in the 2nd quarter of 2003. Its purposes are:

- to provide an effective and efficient, modern means of communicating with all our members.
- to improve administration of society
- to disseminate information on the activities of the TC's and their publications.
- to provide a calendar of activities.

The website provides the members of the TC by all contact information of the remaining members via the member menu in which every member registered on the website is mentioned by address, telephone number and email address. The website is displayed by a screenshot in figure 1.

Moreover, according to the 3rd purpose, the website was used as a publication forum for a compilation concerning the development of the Combined Pile-Raft Foundation (CPRF):

- Case histories of the performance of pile-assisted rafts
- A report by ISSMGE Technical Committee No. 18, January 2001

At present, efforts are undertaken to develop a unique ISSMGE CPRF guideline by harmonising the different standards spread over the globe, e.g. the German CPRF guideline or the Australian know-how.

#### 3.1 Meetings and workshops

The members of the TC 18 have met at several meeting opportunities to discuss the following issues:

- General meeting in Istanbul, Turkey, during the International Conference on Soil Mechanics and Geotechnical Engineering ICSMGE, August 2001
- Meeting in Nice, France, during the DFI Conference, June 4, 2002:
  1. Organisational framework of TC 18
  2. Discussion of the terms of reference
  3. Formulation of future goals
  4. Formal expression of interest within focused goals
- Meeting and session in Ghent, Belgium, during the IVth Conference on Bored and Auger Piles, June 2003:
  1. Introduction to Belgian Research Program on Screw Piles in Stiff Clay, in Dense sand, and Design issues.
  2. Terms of reference of ITC 18
  3. Main results of Belgian Research program on Screw Piles
  4. ERTC3 Issues relating to Screw Pile Design Issues in Europe
  5. Draft Matrix of installation effects of Piles with regards to pile type and soil type

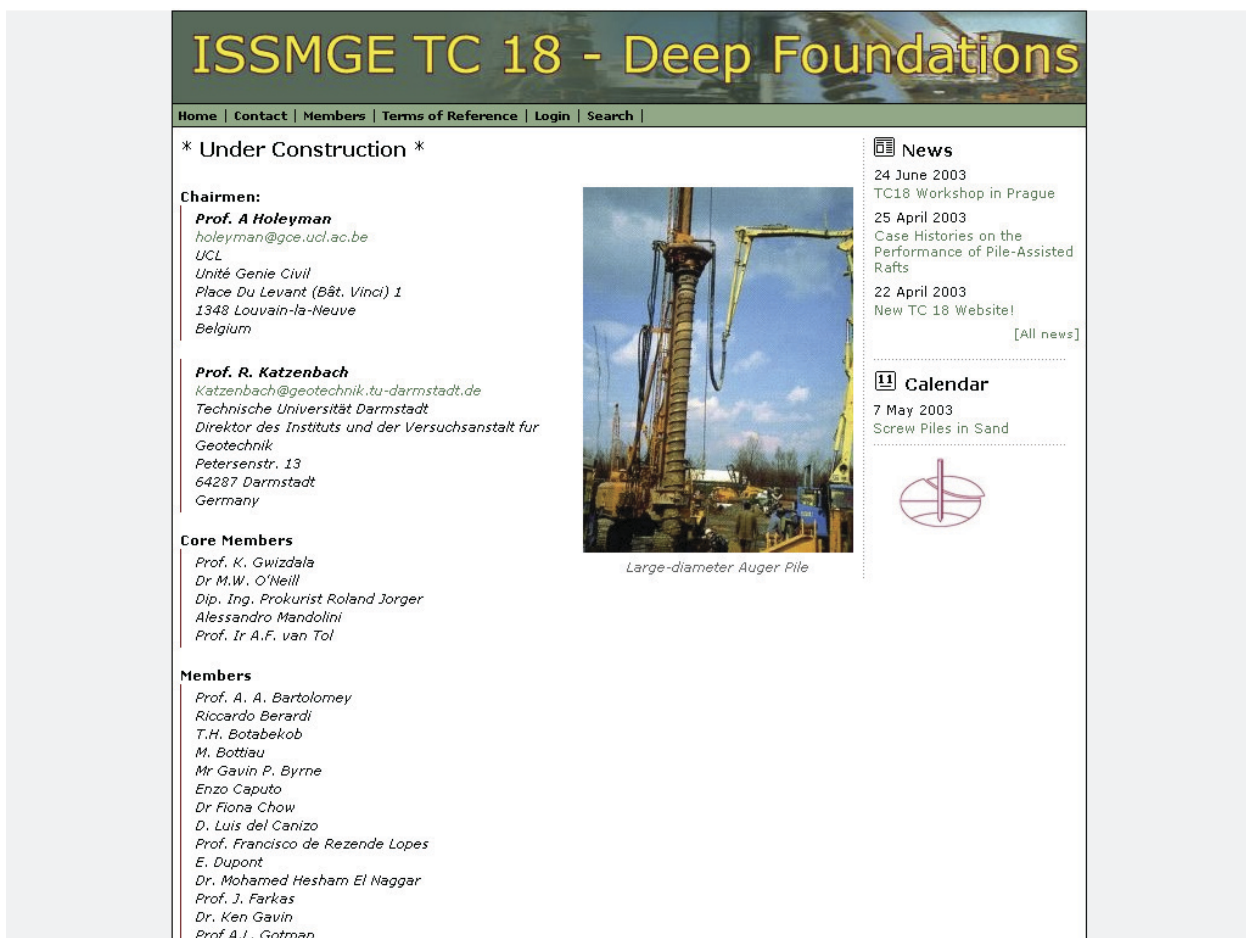


Figure 1: Screenshot of the ISSMGE TC 18 website

- Meeting in Prague, Czech Republic, during the XIIIth European Conference on Soil Mechanics and Geotechnical Engineering ECSMGE, August 26, 2003:
  1. Fundamental understanding of installation effects, with special emphasis on cast-in-place soil displacement screw piles, thanks to observations conducted in Belgium upon excavation of various piles installed using that technology
  2. Report on installation effects comparing pile performance of identical tube and sheet piles installed in Merville, France, using both impact and vibratory driving. Two presentations detailed (a) the pile testing program and interesting differences in load-settlement behavior and ultimate bearing capacity and (b) the results of the international pile prediction regarding penetration logs, vibration levels and load-settlement behavior.
  3. Documentation of case histories through a simple matrix format, aiming at characterizing the installation effects in terms of load-settlement behavior and ultimate bearing capacity
  4. Recent developments in the field of Combined Pile-Raft-Foundations.
- 3. Another wish of the members was to try to post on the website a compilation (limited number) of reference papers on key subjects related to pile design and construction, as well as a list of the Tables of Contents of different magazines and conference proceedings.

### 3.2 Other activities

#### 3.1.1 Pile installation matrix

According to the decision of TC18 to try and disseminate the information that has already been prepared in the course of the previous tenures, a proposal of a "Pile Installation Matrix" was presented during the session of BAP IV by M. Bottiau and discussed during the session and afterwards.

A revised version taking into account the various comments was presented in Prague.

The purpose of the Matrix is to collect and gather existing information on case studies (with a special focus on projects with detailed soil investigation and pile load tests), in a standardized and predetermined format. The Matrix is not a database of pile load tests.

Based on this concept, an extensive pre-analysis of a dedicated computer tool has been conducted at the UCL university as a final year project with the help of three students under the direction of Prof. Holeyman and M. Bottiau. The results of this work will be presented during session 2h, in Osaka.

#### 3.1.2 State-of-the-Art on the design of Pile Rafts

During the 2003 meeting in Ghent, it was agreed that "a sort of internationally accepted design rules for pile raft construction" should be produced.

## 4 SUGGESTIONS FOR FUTURE ACTIVITIES

1. Continue work on the Pile Installation Matrix. More precisely, this includes the development of the computer tool based on the extensive pre-analysis conducted during this term.
2. Pursue the harmonisation of the CPRF know-how in the course of the development of a globally unique ISSMGE CPRF guideline. Also, the website should be utilised more efficiently, e.g. for publications of the members with a view to disseminate know-how and share experience and to announce relevant conferences and workshops.