

Administrative report of TC6 - Unsaturated soils

Compte rendu sur la CT 6

Eduardo Alonso

Department of Geotechnical Engineering and Geosciences. UPC. Barcelona, Spain

S.L. Houston

Arizona State University, Tempe, AZ, USA

1 INTRODUCTION

The international geotechnical community has made substantial advances in understanding of the general fundamental aspects of unsaturated soil behavior, and in demonstrating the capabilities of current theoretical frameworks and prediction methodologies in unsaturated soil mechanics as applied to geotechnical and geoenvironmental engineering. The TC6 committee promotes cooperation and exchange of knowledge in the area of mechanics of unsaturated soils, including, as examples, expansive, collapsible, residual, and arid soils, and its relevance to the solution of engineering problems. TC6 cooperates with other professional organizations and other technical committees of ISSMGE in dissemination of information about unsaturated soils, with activities focused on exchange of information about testing of unsaturated soils and prediction methodologies in applications of unsaturated soil mechanics theory.

2 COMMITTEE ACTIVITIES

This report on the TC6 begins with the Committee meeting held in Istanbul, Turkey, on August 28, 2001, in conjunction with the XVth International Conference on Soil Mechanics and Foundation Engineering. During the Fall of 2001 and the Spring of 2002 a great deal of the energy of TC6 members was focused on the Third International Conference on Unsaturated Soils, UNSAT'02, which was held March 11 – 14, 2002, in Recife, Brazil. This Third International Conference was highly successful and was well attended by the international unsaturated soils community. The TC6 held a committee meeting in Recife to plan future activities for exchange of knowledge on the mechanics of unsaturated soils.

The recent TC6 Committee activities have been focused on demonstration of modeling capabilities using modern unsaturated soils mechanics theory, and applications to real-world engineering problems, including the planning of benchmarking and case histories events. Additionally, the committee cooperates with other organizations interested in dissemination of information on modern sampling, testing, and modeling methods for unsaturated soils. The committee has been involved in sponsorship and co-sponsorship of several conferences and workshops of interest to researchers and practitioners dealing with unsaturated soil issues.

3 CONFERENCES AND WORKSHOPS ON UNSATURATED SOILS

Conferences and workshops on unsaturated soils developed in cooperation with the TC6 subcommittee during 2001 to 2005 and planned events for the future included the following:

1. NSAT2001, Brazil, March 22-24, 2001.
2. The 3rd International Conference on Unsaturated Soils, Recife, Brazil, March 10 – 13, 2002. This International Conference is a major activity of the TC6 for the years 2000, 2001, and 2002.
3. Geotechnique Symposium in Print on Unsaturated Soils, May 6, 2003, London.
4. Conference on Problematic Soils, Nottingham, July, 2003.
5. International Regional Conference on Unsaturated Soils, Weimar, Germany, Sept., 2003.
6. Second Asian Conference on Unsaturated Soils, November 10 - 12, 2003, Japan.
7. Sessions on Unsaturated Soils, Transportation Research Board (TRB), Washington, D.C., January, 2004.
8. Second International Workshop on Unsaturated Soils, June 23, 2004, Naples, Italy.
9. Fifth Regional Conference on Unsaturated Soils, Sao Carlos, Brazil, August 25 – 27, 2004.
10. International Conference on Problematic Soils. GEO-PROB May 2005. N. Cyprus
11. International Symposium on Advanced Experimental Unsaturated Soil Mechanics, EXPERUS. Trento, Italy, June 2005
12. 16th ICSMGE. Osaka. Japan. September 2005. TC6 Session on Case Histories in Unsaturated Soil Mechanics
13. 3rd Asian Conference on Unsaturated Soils, Nanjing, China, April 2007
14. USS2007. 2nd International Conference. Mechanics of Unsaturated Soils. Weimar. March 2007

The Proceedings of the above Conferences and Symposia have been published as follows:

- 1. University of Porto Alegre (1 volume)
- 2. Balkema (3 volumes)
- 3. Géotechnique (2 issues)
- 4. Balkema (1 volume)
- 5. Springer Verlag (2 volumes)
- 6. Published by Organizing Committee (1 volume)
- 8. Balkema (1 volume)
- 9. University of Sao Paulo. Sao Carlos (1 volume)
- 10. Eastern Mediterranean University Press (3 volumes)
- 11. Papers in a Balkema book. State of the art lectures in Special Issue of "Geotechnical Engineering" Journal

In addition to conferences and short course activities, the TC6 web site continues to be maintained and well-utilized. The Unsaturated Soils web site can be accessed at

www.dur.ac.uk/~des0www4/unsaturated/. The web site includes information on upcoming events, publications, and communications of interest to those in the field of unsaturated soil mechanics. The activities of the TC6 and minutes from recent meetings of the committee are posted on the site. The web site is used extensively for timely and meaningful interchange of ideas amongst unsaturated soils researchers. In addition, outreach to other geo-professional is facilitated through the web page.

The TC6 committee will meet in conjunction with the XVIth International Conference on Soil Mechanics and Geotechnical Engineering, Osaka, Japan, Sept. 2005. The committee has organized a session on Case Studies in Unsaturated Soils for the Osaka Conference. The emphasis for this session will be on analysis of practical problems in unsaturated soils, demonstrating current predictive capabilities.

4 SUMMARY

The importance of unsaturated soil behavior to the solution of geotechnical and geoenvironmental problems is well-recognized, and successful applications of current prediction methodologies in unsaturated soil mechanics to these problems have been demonstrated and documented. The TC6 committee exists to promote exchange of knowledge in the area of mechanics of unsaturated soil. The committee has many successful accomplishments for the past 4 years as well as many exciting future challenges and endeavors.

5 TERMS OF REFERENCE AS ACCEPTED AT THE TC6 MEETING MAY 7, 2003, LONDON, ENGLAND

1. To promote cooperation and exchange of knowledge in the area of mechanics of unsaturated soils including, as examples, expansive, collapsible, residual, arid, and compacted soils, and its relevance to the solution of engineering problems.
2. To promote the exchange of information about testing of unsaturated soils for geotechnical and geoenvironmental purposes.
3. To participate actively in the technical program of the next International Conference on Unsaturated Soils.
4. To promote benchmark exercises to establish the capabilities of current theoretical frameworks and prediction methodologies in unsaturated soil mechanics.
5. To promote TC6-sponsored sessions on unsaturated soils at ISSMGE sponsored international and regional conferences on soil mechanics and geotechnical engineering, and to support special geotechnical and geoenvironmental conferences on unsaturated soils.
6. To cooperate actively with other technical committees whose field of activity involves important questions related to unsaturated soils, for example, TC5 on the Geoenvironment, TC25 on Residual Soils, TC11 on Landslides, and TC7 on Tailings.