

**Geo-Institute Geoenvironmental Engineering Committee**  
**March 9, 2008**  
**8:00 pm – 12:00 am**

**Members present:** Susan Burns (Georgia Tech), Milind Khire (Michigan State University), Krishna Reddy (University of Illinois, Chicago), Carsten Floess (Earth Tech), Trish Culligan (Columbia University), Dimitris Dermatas (Waste Management Authority, Greece), Dennis Grubb (Schnabel Engineering), Akram Alshawabkeh (Northeastern University), Dimitrios Zekkos (Geosyntec), Mahmoud Wazne (Stevens Institute of Technology), Hiroshan Hettiarachchi (Lawrence Tech University), Nazli Yesiller (Cal Poly State University), Patrick Fox (Ohio State University), Jeff Evans (Bucknell University), Chris Ryan (Geo-Solutions), Arvin Farid (Boise State University), Beth Gross (Geosyntec), Rami El-Sherbiny (Geosyntec)

**Friends of the Committee in Attendance:** Steve Day (Geo-Solutions), Takeshi Katsumi (Kyoto University), Hossam Abuel-Naga (Monash University), Mohamed Arab (Arizona State University)

**Agenda**

- 1. Congratulations to all members involved in planning GeoCongress 2008**  
The Committee extended congratulations and thanks to Krishna Reddy, Beth Gross, Milind Khire, and Akram Alshawabkeh for their hard work and commitment to the planning and operation of GeoCongress 2008.
- 2. GI webinars**  
ASCE is interested in increasing the number of webinars offered through the GeoInstitute. The committee discussed the concept and implementation of webinars extensively, with Susan Burns requesting that anyone who is interested in offering webinars contact her directly.
- 3. Session for foundation congress March 15-19, 2009 Orlando (due March 31, 2008)**  
The Geoenvironmental Engineering Committee will request two sessions at the International Foundations Congress and Equipment Exposition 2009, which will be co-chaired by Rami El-Sherbiny and Susan Burns. Session descriptions follow:

The Geoenvironmental Engineering Committee of the ASCE Geo-Institute is sponsoring two sessions on *Foundations on Waste* during the *International Foundations Congress and Equipment Expo '09 (IFCEE09)*. The Congress will combine the Geo-Institute of ASCE, the International Association of Foundation Drilling (ADSC), and the Pile Driving Contractors Association (PDCA) 2009 annual meetings and will be held in Orlando, Florida, March 15 to 19. The scope of the sessions is as follows:

***Challenges in Design, Construction, and Maintenance of Foundations on Waste:*** This session is directed towards investigating issues that are of

specific relevance to the design and ongoing operation of foundations on waste. Specific issues to be addressed in this session include: characterization of the waste, estimation of waste properties and design parameters, foundation selection and design, settlement prediction, landfill-gas related issues, liner and final cover system integrity, and challenges related to foundation construction and maintenance.

***Field Performance and monitoring of Foundations on Waste:*** This session is targeted towards case studies of the field performance and monitoring of foundations on waste deposits. The definition of waste deposits is intentionally left general in order to include performance of structures on a variety of waste deposits including, but not limited to, municipal solid waste landfills, construction and demolition waste, mine tailings, or other engineered or non-engineered waste deposits. Issues of relevance to this session include both short- and long-term performance of these foundations. Because design of foundations on waste is often conservative, this session seeks to examine field performance in light of predicted design performance.

Prospective authors are invited to submit a one page abstract of not more than 500 words outlining the scope of their paper. Please include the title of your abstract, your full name and any co-authors' names, affiliation name and address, and your email address. **Abstracts are due by April 30** and should be submitted to <http://www.ifcee09.org/i4a/pages/index.cfm?pageid=3288>. Please also send a copy of the abstract to the session organizers: Rami El-Sherbiny at [rsherbiny@geosyntec.com](mailto:rsherbiny@geosyntec.com) and Susan Burns at [susan.burns@ce.gatech.edu](mailto:susan.burns@ce.gatech.edu). Please share this information with your friends and colleagues who may be interested.

#### **4. Special project funds**

The committee discussed the Committee's use of special project funds to defray costs for the International Waste Mechanics Symposium 2008. Special project funds were used to pay for a portion of the room rental for the one-day post conference workshop. The Committee's request is appended to these minutes.

#### **5. New Initiatives**

New Committee initiatives were discussed, including incorporation of ASCE's drive for sustainability, and other ideas including classic paper collections, and the possibility of generating a photo archive in collaboration with the geoengineer website.

The Committee also spent extensive time discussing a bid for the next International Congress on Environmental Geotechnics (ICEG). The Committee agreed it would like to

go forward with an application to host the conference in the US in 2014. Susan Burns will coordinate with the International Society in order to begin the application process.

**SPECIAL PROJECT PROPOSAL**

**Committee/Task Force/Chair:** Geoenvironmental Engineering/ Susan E. Burns

**TCC Councilor:** Gordon Boutwell

**Description of Activities:** The Geoenvironmental Engineering Committee requests \$5,000 in Special Project Funding to aid in sponsorship of the 1-day international workshop entitled "Waste Mechanics". The workshop will be held on Thursday March 13th, 2008 in New Orleans, in conjunction with the ASCE-GI GeoCongress 2008. The workshop is part of the International Symposium on Waste Mechanics, which also includes three sessions with reviewed papers on waste mechanics and a panel discussion, and will take place during the GeoCongress. The workshop will be attended by leaders in waste mechanics research and practice from US, Canada, Japan, China, UK, France, Italy, Greece, Brazil.

The workshop aims to:

- (1) develop consensus on procedures and guidelines for waste characterization, field testing, and laboratory testing of municipal solid waste;
- (2) summarize the state of knowledge on waste properties; and
- (3) identify research needs in waste mechanics and landfill design practice.

A description and a tentative agenda of the workshop and the symposium is attached to this special project funds request. The workshop will include plenary and breakout sessions

**Schedule and Milestone(s):**

The workshop is scheduled for March 13, 2008 (the day after the end of the conference); the tentative schedule is complete, and invitation letters will be mailed during the first week in December. A draft of the GSP for the workshop proceedings will be completed within three months of the workshop.

**Description of Deliverable:**

A GSP presenting the workshop proceedings will be prepared. The request to prepare a GSP is attached.

**Cost Estimate Detail:**

Room rental and lunch is estimated to be \$7,500. Special project funds will be used to partially defer these costs.

**Analysis of Potential Return on Investment to the Geo-Institute:**

The GSP generated from this workshop will be an invaluable reference for anyone working in the critical area of disposal of solid waste.

*Please return proposal to the appropriate Geo-Institute TCC Councilor for your committee or task force.*

## **APPENDIX I. Request for Approval of a Geotechnical Special Publication**

1. Title of proposed GSP

**“Current Perspectives in Waste Mechanics Research and Practice”** (Proceedings of the International Symposium at GeoCongress’08)

2. Summary of topics to be included in GSP/title of conference for which GSP is proposed (if applicable)

**The GSP will present the proceedings of the International Symposium on Waste Mechanics that will be held in conjunction with GeoCongress '08 in New Orleans. The symposium includes three paper sessions and one panel session during the GeoCongress and a one-day workshop following the GeoCongress. The GSP will include:**

- **A general report on papers presented in the Symposium sessions at the GeoCongress**
- **Summaries of the state of knowledge on major properties of waste. The summaries will include: shear strength, hydraulic properties, deformation behavior and dynamic properties.**
- **Consensus on procedures and recommended guidelines for a) waste characterization; b) field testing; and c) laboratory testing of Municipal Solid Waste.**
- **Identification of research needs in waste mechanics: Attendees at the workshop will also be invited to submit brief (3 page maximum) statements on research and practice needs that will be included in the volume. These statements and the discussions as part of the Panel Discussion session and the Technical Sessions will be also summarized.**

3. Organizing committee/group proposing GSP. If GSP requires collaboration with other groups, clearly indicate the nature and degree of commitment to this collaboration.

**The Geo-Institute Geoenvironmental Engineering Committee in conjunction with the Symposium organizing committee (see attached Symposium description)**

4. Description of proposed peer review process. Include principal source of reviewers (e.g., names of technical committees, local section or branch, and so on).

**Submission to the proceedings, including general reports and contributions from individuals (e.g. discussions or statements of research needs) will be reviewed for content and format by at least two members of the Symposium Organizing Committee. Breakout session summaries will be circulated to breakout session participants to develop consensus among the participants and then reviewed by at least two Organizing Committee members for content and format.**

5. Names, titles, affiliation, address, telephone, fax, and e-mail of proposed editors. Indicate the designated contact editor.

**Contact Editor:** **Dimitris Zekkos, PhD, PE**  
**GeoSyntec Consultants**  
**475 14<sup>th</sup> Street Suite 400**  
**Oakland, CA – 94612**  
**Tel: 510-836-3034**  
**Fax: 510-836-3036**  
**Email: zekkos@geoengineer.org**

**Additional Editors:**

**Jonathan Bray**

**R. Jeffrey Dunn**

**Edward Kavazanjian, Jr.**  
**Associate Professor of Civil Engineering**  
**Arizona State University**  
**empe, AZ 85287-5306**  
**Tel: 480-727-8566**  
**Fax: 480-965-0557**  
**Email: edkavy@asu.edu**

**Ellen Rathje**

6. Schedule (specify if a call for papers is planned)

**Date of Symposium: March 12 and 13, 2008**

**Receipt of Individual Contributions**

**Discussions on papers from GeoCongress Sessions: April 14, 2008**

**Individual Submissions on Research and Practice Needs: February 3 2008**

**Discussions on Breakout Session Summaries: May 12, 2008**

**General Reports on GeoCongress Sessions: April 14, 2008**

**Workshop Session Summaries**

**Drafts Circulated for Review to Participants: March 31, 2008**

**Final Version: April 28, 2008**

**Final Draft Submitted to ASCE Publications: June 16, 2008**

7. Proposed Venue

**Geo-Congress '08**

8. Estimated number of sales at the meeting

**N.A. Post-Conference Sales: 50 immediately and 200-300 in the long term.**

(For GSP Types 2 and 3) On an additional page list anticipated invited authors, paper topics, length of papers, and the degree of certainty of each of the contributions.

**See Appendix III**

9. Submitted By (Name, G-I affiliation, address, date).

Susan E. Burns, Ph.D., P.E.  
Associate Professor, Civil and Environmental Engineering  
790 Atlantic Drive  
Georgia Institute of Technology  
Atlanta GA 30332-0355  
Tel: (404) 894-2285  
Fax: (404) 894-2281 (fax)  
Email: [sburns@gatech.edu](mailto:sburns@gatech.edu)

## **APPENDIX II. INTERNATIONAL WASTE MECHANICS SYMPOSIUM DESCRIPTION**

We propose to conduct an International Workshop on Waste Mechanics on March 13, 2008 in conjunction with the GeoCongress '08, the Annual Meeting of the Geo-Institute (G-I) in New Orleans. The workshop will be conducted on Thursday following the GeoCongress and will be coordinated with four technical sessions at the GeoCongress and together they will constitute an International Symposium on Waste Mechanics. The proceedings the Workshop, which will include state-of-the-art / state-of-the-practice summaries of procedures for waste characterization and measurement of waste properties as well as statements on research needs in these areas, will be published as a Geotechnical Special Publication (GSP) under the auspices of the G-I Geoenvironmental Engineering Committee.

The symposium will provide a unique opportunity for international participants to discuss their recent findings and identify research needs in the field of waste mechanics. The symposium will attempt to achieve consensus on the procedures for the characterization and testing of MSW and will identify areas where consensus cannot be reached as of yet. Finally, the symposium will provide a summary of our understanding of waste mechanics for use in engineering practice.

The Scope of the Symposium is:

- Scope #1: To summarize/integrate the state of knowledge and state of practice on waste mechanics.
- Scope #2: To develop procedures and guidelines for waste characterization and for field measurements and laboratory testing for the mechanical properties of Municipal Solid Waste.
- Scope #3: To summarize future research needs in waste mechanics and means to integrate research findings in landfill design practice.

There will be four sessions on Waste Mechanics at the GeoCongress, including three paper sessions and one panel discussion. Sixteen papers have been accepted for presentation at these sessions by international leaders in waste mechanics from US, Canada, UK, France, Japan, China, Italy, Australia and Greece. The authors of these papers will attend the ASCE conference and participate in the workshop on Thursday. Invitations to attend the workshop will also be sent to a broad spectrum of representatives from the US and international research and practice community (including consultants, landfill owners and regulatory agencies) to attend the workshop.

Symposium proceedings, to be prepared after the Geocongress by the workshop organizers, will include a general report on papers presented in the Symposium sessions at the GeoCongress, summaries of the panel discussion and discussions at the paper sessions during the GeoCongress, and summaries of the general sessions and breakout sessions at workshop. The Symposium Proceedings will be published by ASCE as a GSP.

## **Symposium Approach**

A general reporter has been assigned for the Waste Mechanics sessions at the GeoCongress, including the panel discussion. The general reporter will prepare a summary of the papers presented at the session and of the discussions during the session. The general report will be included in the workshop proceedings. Attendees at the session will also be invited to submit brief technical discussions on papers presented during the session for inclusion in the proceedings.

To achieve scope #1, workshop participants will be divided in breakout sessions, one for each major category of engineering properties of MSW (e.g. hydraulic conductivity, shear strength, deformation behavior, dynamic properties). There may also be a separate session on the impact of degradation on waste properties to address bioreactor landfills. Session leaders will make a preliminary review of the state of practice and knowledge. Breakout session participants will be invited to briefly present their views and enhance the review. These presentations will be followed by a general discussion. Following completion of the session, the leader of the group will have the responsibility to author a first draft of a summary in the state of knowledge on each property group based on the information presented at the session. The summary will be circulated for review by other symposium attendees. The session leader will then prepare a final summary for the proceedings, noting points of agreement and points of contention.

To achieve scope #2, participants will be divided in three breakout sessions with the following subjects: a) Procedures and guidelines for field measurements; b) Waste characterization procedures and, c) Laboratory Testing Procedures. Each session leader will submit a set of preliminary recommendations for consideration by the session participants. A discussion will follow and each participant will have the opportunity to provide additional recommendations. Session findings will be summarized by the leader and presented to the entire symposium. After the symposium, the leader will prepare a draft summary of the session findings. The draft summary will be circulated for review and comment. The session leader will then prepare a final set of basic guidelines for the proceedings, again noting areas of consensus and areas of disagreement.

To achieve scope #3, participants will be requested to prepare prior to the symposium a brief opinion paper on research needs in waste mechanics. The opinion papers will be summarized and will be presented in a general session at the workshop to stimulate additional discussion. All opinion papers and a summary of the workshop discussions on research needs will be included in the proceedings.

Workshop participants will be assigned to breakout sessions prior to the workshop based upon their interests. A notification of session assignments will be sent to the participants before the symposium so that they can prepare for the sessions to which they are assigned.

## **Conclusion**

The International Symposium is expected to establish much needed consensus in the procedures for the characterization and testing of MSW and also a unique opportunity for the international waste mechanics research groups to identify research needs, interact and present the State of the Art in our current understanding of the behavior of MSW.

## **Organizing Committee**

Dimitrios Zekkos, Geosyntec Consultants  
Susan Burns, Associate Professor, Georgia Institute of Technology  
Ed Kavazanjian, Associate Professor, Arizona State University  
Jonathan Bray, Professor, University of California at Berkeley  
Ellen Rathje, Associate Professor, University of Texas at Austin  
R. Jeffrey Dunn, Kleinfelder Associates

## WASTE MECHANICS SYMPOSIUM TENTATIVE AGENDA

**8:15-8:45 PLENARY SESSION:** Introduction –Presentation of the symposium scope

**8:45-10:00 BREAKOUT SESSIONS A.**

Session #A1: Procedures and guidelines for field measurements; - **Matasovic, USA**

Session #A2: Waste characterization procedures; **Dixon, UK**

Session #A3: Laboratory Testing Procedures; - **Athanasopoulos, Greece**

**10:00-10:30 BREAK**

**10:30-12:00 PLENARY SESSION:** SUMMARY AND DISCUSSION OF BREAKOUT SESSIONS A: 15 min presentation of findings and expected report structure. 30' total additional discussion.

**12:00-13:00 LUNCH BREAK**

**13:00-14:30 BREAKOUT SESSIONS B.**

Session #B1: Hydraulic properties – **Powrie, UK**

Session #B2: Shear strength, - **Bray, USA**

Session #B3: Deformation behavior, - **Dunn, USA**

Session #B4: Dynamic properties, - **Zekkos, USA**

**14:30-15:00 BREAK**

**15:00-16:30 PLENARY SESSION:**

SUMMARY OF BREAKOUT SESSIONS B: 15 min presentation of findings (total 1 hr).

DISCUSSION ON BREAKOUT SESSIONS B

16:30-17:30 DISCUSSION AND SUMMARY ON RESEARCH NEEDS -  
**Kavazanjian, USA**

**17:30 WORKSHOP COMPLETION**

*Note: Leaders of each session are identified with bold*

Appendix III  
Workshop Participants

Confirmed (as of 12/06/07) (alphabetically)

- **George Athanasopoulos**, Professor, Dept of Civil Engineering, University of Patras, Greece, GREECE; *Break-out session leader*
- **Richard Beaven**, Principal Research Fellow, School of Civil Engineering and the Environment, University of Southampton, UK; *Break-out session leader*
- **Susan Burns**, Associate Professor, Georgia Institute of Technology, GA, USA; *Symposium Organizing Committee Member and Chair of the Geoenvironmental Engineering Committee*
- **Jonathan Bray**, Professor, Dept. of Civil and Environmental Engineering, University of California at Berkeley, USA; *Symposium Organizing Committee Member*
- **Yunmin Chen**, Professor, Key laboratory of Soft Soils and Geoenvironmental Engineering, Zhejiang University, Hangzhou, CHINA;
- **Neil Dixon**, Professor, Department of Civil and Building Engineering, Loughborough University, Leicestershire, LE11 3TU, UK; *Break-out session leader*
- **Jeff Dunn**, Principal, Kleinfelder, USA; *Symposium Organizing Committee Member*
- **Ian R. Fleming**, Assoc. Professor, Dept Civil & Geol. Engineering, Univ. of Saskatchewan, Saskatoon, Canada;
- **Jean-Pierre Gourc**, LTHE Laboratory, Grenoble University, BP 53 - 38041 Grenoble Cedex 9, FRANCE;
- **MD Sahadat Hossain**, Assistant Professor, Department of Civil and Environmental Engineering, University of Texas at Arlington, TX, USA;
- **Edward Kavazanjian, Jr.**, Associate Professor, Department of Civil and Environmental Engineering, Arizona State University, Tempe, AZ 85287-5306, USA; *Symposium Organizing Committee Member*
- **Neven Matasovic**, Associate, Geosyntec Consultants, Huntington Beach, CA, USA; *Break-out session leader*
- **Michele Maugeri**, Professor, Department of Civil and Environmental Engineering, University of Catania, ITALY;
- **C. F. Mahler**, Professor of Geotechnical Engineering of the Civil Engineering Department and Coordinator of the Group of Waste Technology (GETRES) Federal University of Rio de Janeiro. Cidade Universitária, Centro de Tecnologia, Rio de Janeiro, RJ, Brasil; *Panel Session Speaker*
- **John McDougall**, School of Engineering & Built Environment, Napier University, Edinburgh, UK;
- **Ellen Rathje**, Associate Professor, Dept. of Civil, Architectural and Environmental Engineering, University of Texas at Austin, USA; *Symposium Organizing Committee Member*
- **Krishna Reddy**, Professor, University of Illinois, Chicago, USA;
- **Ikuo Towhata**, Professor, Department of Civil Engineering, University of Tokyo, JAPAN; *Panel Session Speaker*

- **Dimitrios Zekkos**, Engineer, Geosyntec Consultants, PhD, PE, Oakland, CA 94612, USA; *Symposium Organizing Committee Member (Chair)*
- **Tony L. T. Zhan**, Associate Professor, Key laboratory of Soft Soils and Geoenvironmental Engineering, Zhejiang University, CHINA;

Invited:

**Approximately 60 more individuals mostly from the Consulting/landfill design industry, landfill companies, organizations related to the waste industry, and researchers in geoenvironmental engineering have been identified and will be invited in early December.**