

IGS NEWS



NEWSLETTER OF THE INTERNATIONAL GEOSYNTHETICS SOCIETY

Dedicated to the scientific and engineering development of geotextiles, geomembranes, related products, and associated technologies

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Editorial

by Karina McInnis, Editor

The year 2008 is going to be a very exciting and eventful one for the IGS – 2008 is the year of the IGS regional conferences. Adding to the excitement are four “kick-off” conferences in 2007 – *Sardina 2007* (October, Italy), *IS Kyushu 2007* (Japan, November), the *21st Geotechnical Engineering Conference of Torino* (November, Italy), and the *International Symposium on Geotechnical Engineering, Ground Improvement & Geosynthetics for Human Security and Environmental Preservation* (December, Thailand). All are being held under the auspices of the IGS.

GeoAmericas 2008 (Cancún, Mexico, 3-5 March 2008) will be the first Pan American geosynthetics conference. Program highlights will include Life's Work Sessions, which will be technical sessions honoring contributions by some of the giants of the geosynthetic industry, and Journal Sessions, which will be

technical sessions presenting already published (but never presented) papers in the area of geosynthetics including papers from two of our leading journals *Geosynthetics International* and *Geotextiles and Geomembranes*.

Geosynthetics Asia 2008 (Shanghai, China, 17-20 June 2008) will feature special and keynote lectures, IGS training courses, technical site visits, and a special two-hour forum on Geosynthetics in Environmental Engineering.

EuroGeo4 (Edinburgh, Scotland, 7-10 September) will focus on "Geosynthetics in Civil Engineering Applications" and comprise keynote lectures, paper presentations, discussions, poster sessions, and, last, but not least, a delegates Football match. Please visit the conference web sites (p. 18) for conference program updates as the planning and details of these conferences unfolds. We encourage

you to take every available opportunity to attend these conferences – I am confident that you will not be disappointed!

IGS Council elections for the term 2008 to 2012 are fast approaching; we are requesting nomination information by 31 January 2008. Please consider serving the Society in this important capacity and in shaping the future of the IGS (see for details p. 2).

Also due on 31 January 2008 are nominations of individuals, or groups of individuals, for the 2004 to 2007 IGS Awards. We look forward to receiving your nomination files (see p. 2 for details).

Finally, IGS Chapters are requested to forward names of undergraduate, M.Sc., or Ph.D. students for the IGS Student Awards by 31 January 2008. All successful candidates will attend one of the IGS regional conferences in 2008 (see p. 3 for more details).

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IGS MEMBERSHIP REQUIRES ELECTRONIC COMMUNICATION – PLEASE ENSURE WE HAVE YOUR CURRENT E-MAIL ADDRESS

Visit the IGS WWW site: www.geosyntheticssociety.org

Call for Candidates for IGS Council: Term 2008 to 2012

Nominations due 31 January 2008

The IGS bylaws prescribe that up to half of the Council be elected every two years. IGS Members will have the opportunity to elect eight Members to the IGS Council for a four-year term, starting in 2008.

The IGS Council Members, whose term of office expires in 2008, are:

- A. Bouazza (Australia)
- P. Fantini (Italy)
- M. Kamon (Japan)
- B. Myles (UK)
- M. Sadlier (Australia)

The IGS bylaws stipulate that a Council Member may be elected to two consecutive terms; hence, A. Bouazza, P. Fantini, and M. Sadlier are eligible for re-election. They will have completed one, four-year term as Council Members by 2008.

The IGS encourages any IGS Member, who is able to attend all IGS Council meetings, to consider

standing for one of the Council positions. It is important that all geographical regions are represented on the Council and that its Members reflect the scope of the geosynthetics discipline.

Information/Instructions for All Candidates

Under the bylaws of the IGS, only IGS Members are eligible for these positions. Candidates must be able to travel to and attend the IGS Council meetings, which are held once a year. Meetings of the IGS Council are generally held in conjunction with international and regional conferences.

A signed letter of application together with a biographical note (not exceeding 12 lines) and a photograph should reach the IGS Secretary no later than **31 January 2008**. Candidates must strictly adhere to the 12 line limit to ensure equal presentation space for all candidates. In their letter to the IGS

Secretary, candidates must clearly identify their country of residence and position for which they are seeking election.

Biographical notes and photos will be published in the March 2008 issue of *IGS News*.

The newly formed IGS Council will meet at least four times (typically in Asia, the Americas, or Europe) and, when possible, in conjunction with a major industry event. At least three additional meetings will be held for those Members whose terms expire in 2010.

One ballot for the election of the eight Council Members will be posted electronically in spring 2008.

Should you need further information, please contact the IGS Secretary Peter Stevenson (see contact information on p. 20).

*reported by Karina McInnis
IGS News Editor*

IGS Awards: Call for Nominations 2004 to 2007

Nominations due 31 January 2008

IGS Awards will be granted in 2008 to individuals or groups of individuals who have made an outstanding contribution to the development and use of geotextiles, geomembranes, related products, or associated technologies through their scientific and technological achievements.

The Awards recognize the achievements completed and/or the validity of which has been demonstrated during a four-year period preceding the year of the Award (i.e., 2004 through 2007 inclusive).

The winning entries will be publicized in *IGS News*, in a special press release on the IGS web site, and in other publications.

Timeline and Deadlines

Nominations must be received by the IGS Secretary no later than **31 January 2008**.

The deadline for receipt of award candidate presentation packages is 31 March 2008. Presentations will be forwarded by the Secretariat to the Award Committee by 15 April 2008, and the Committee will meet in Shanghai, China, in June 2008 to finalize their decisions, draft citations, and report by 30 June 2008. Awards will be presented in Edinburgh, Scotland, UK, in September 2008 at *EuroGeo4*.

The Two IGS Awards

The Young IGS Member Award

This Award is for IGS Members who are less than 36 years of age on 31 December 2007.

The IGS Award

A maximum of five IGS Awards will be granted. Each award will consist of a specially commissioned medal and a diploma.

Candidates

Each entry is restricted to a maximum of four persons, at least one of whom, must be an IGS Member. All IGS Members are eligible with the exception of the IGS President and Members of the Awards Committee.

In the case of a group submis-

sion to the Young IGS Member Award, all members of the group must satisfy the age requirement. Any individual or group that is a candidate for the Young IGS Member Award is automatically considered for both award categories (unless requested otherwise by the candidate). However, a candidate may only receive one award for the 2004 to 2007 period.

Nominations

Candidate nominations must be typed in English on plain paper (i.e., not letterhead paper) and submitted to the IGS Secretariat (see address on page 20). The nomination should include:

- a clear statement of the considered candidate's contribution (e.g., if the contribution is a product, provide a clear definition of the product; if it is a paper(s), book, and/or report, provide a full reference for each; if it is a construction method, provide a clear

description of the method and any references, etc.) and;

- a statement indicating the originality and significance of the candidate's contribution to the discipline (i.e., in the field of geotextiles, geomembranes, related products and/or associated technologies).

Nominations may be made by any IGS Member except for Awards Committee Members. Under the IGS Awards rules, any IGS Member can nominate himself/herself for any award. The Publications Committee, Education Committee, Corporate Members Committee, and IGS Chapters are invited to make nominations.

Nominated candidates will be contacted by the IGS Secretary and asked to agree to stand for an award and will be required to submit materials as directed by the Awards Committee. All correspondence and activity related to nominations and award entries will be carried out in the strictest confi-

dence by the IGS Secretary and the Awards Committee.

IGS Awards Committee

The Awards Committee will be formed in October 2007 at the IGS Council meeting, which will be held in conjunction with the *Sardinia 2007* conference.

The Awards Committee comprises five IGS Members; one of whom serves as Chair. The Committee is appointed by the Council. The Members are selected so as to represent a broad cross section of geosynthetic-related technologies and experience. The IGS Secretary will attend all meetings of the Awards Committee as an observer and coordinator.

Additional Information

The full text of the IGS Awards rules can be obtained from the IGS Secretary, Peter Stevenson.

*reported by Karina McInnis
IGS News Editor*

IGS Student Awards: 2007 to 2008

The IGS Student Awards will continue its success with the sixth award period of 2007 to 2008. The Awards will be assigned in the year 2008, and all successful candidates will attend one of the IGS regional conferences in 2008, i.e., *GeoAmericas 2008*, *EuroGeo4* or *Geosynthetics Asia 2008*. The winner of the IGS Student Award from Australia will attend *Geosynthetics Asia 2008* and the winner from South Africa will attend *EuroGeo4*.

The IGS Student Award was established to disseminate knowledge and to improve communication and understanding of geotextiles, geomembranes, related products, and associated technologies among young geotechnical and geoenvironmental student engineers around the world.

An IGS Student Award will con-

sist of a cheque of US\$1,000 for each winner. This award amount must be used to cover conference participation costs.

An IGS Student Award will be assigned to only one student per Chapter; the selected student could be an undergraduate, M.Sc., or Ph.D. student. Students must be no older than 35 in the year the award is granted.

To ensure student representatives from each chapter participate in the program to the fullest extent possible, the chapters must accomplish the following:

- Chapters must hold a contest or conduct a nomination process to select the student candidate to represent them.
- Chapters must notify the IGS of the name of the student selected by **31 January 2008**.

The IGS will transfer US\$750 to the student immediately upon receipt of chapter notification. IGS Student Awards recipients will be asked to submit a written report to the IGS on the regional conference and on the IGS-related conference activities. Upon receipt of the report, which is due 30 days after the conference, the remaining US\$250 will be transferred to the student.

In recognition of the IGS Student Award winners and to ensure the maximum benefit to the students, the organizers of the regional conferences are required to hold a recognition ceremony as part of the Conference program; must provide the student with a copy of the proceedings and admission to the sessions; must provide award winners with access to the technical sessions, the exhibition, and to some social events; and assist the stu-

dents in locating affordable lodging near the Conference venue.

Please address questions about the Student Award Program to the IGS Secretary, Peter Stevenson.

reported by Karina McInnis
IGS News Editor

ICG - International Conference on Geosynthetics

IGS Chapters Sought as Conference Organizers

The IGS invites Chapters and interested organizations to express their interest in organizing and hosting the 10th International Conference on Geosynthetics (10ICG), which will be held in 2014. The following is the history of the International Conferences on Geosynthetics (ICGs):

- First ICG, Paris, France, 1977
- Second ICG, Las Vegas, USA, 1982
- Third ICG, Vienna, Austria, 1986
- Fourth ICG, The Hague, The Netherlands, 1990
- Fifth ICG, Singapore, 1994
- Sixth ICG, Atlanta, USA, 1998
- Seventh ICG, Nice, France, 2002
- Eighth ICG, Yokohama, Japan, 2006
- Ninth ICG, Brazil, 2010

The IGS Secretary will provide prospective hosts with a detailed information package that informs and instructs interested parties on the proper procedure to prepare a bid to host the Conference. Interested Chapters should contact the IGS Secretary.

“Applications of Image Analysis in Geosynthetics Engineering and Remediation of High Water Content Geomaterials Using Geotextiles”

by Dr. Ahmet H. Aydilek, 2006 IGS Award Recipient

Editor's Note

Dr. Ahmet H. Aydilek received the IGS Award at the 8ICG in Yokohama, Japan, in September 2006, for the development of image analysis techniques for geosynthetics testing and for his work on geotextiles for remediation of high water content geomaterials.

Dr. Aydilek has developed rapid and automated image-based techniques to determine the strain distribution in geosynthetics during tensile testing and to evaluate the pore structure of geotextiles under load. The research on filtration and dewatering of high water content geomaterials has demonstrated the importance of the critical selection of pore structure parameters for design.

The methodology developed by Dr. Aydilek will have an impact on the approach to filtration evaluation of natural soils and waste materials such as sludge and dredge spoils.

I am honored to be selected as a recipient of the 2006 IGS Award.

Below is a summary of our research on image analysis in geosynthetics engineering and remediation of high water content geomaterials using geosynthetics, which were the basis for the IGS Award.

Image Analysis in Geosynthetics Engineering

Geosynthetics are expected to offer certain mechanical properties that will provide satisfactory performance when exposed to field conditions. Primarily, the stress-strain behavior and strength properties determined from laboratory tensile tests are defined at a particular strain or elongation level, and strains are usually calculated on an average basis for the entire specimen. The accurate determination of the deformation (therefore strain) zones is necessary and becomes more important in the presence of seams, defects, and anomalies in the specimen. Due to limitations in the current test methodologies, these zones usually remain undetected in tensile testing, which

results in incomplete characterization of mechanical performance.

Strain gages and extensometers have occasionally been used to determine local strains; however, concerns have been raised due to possible disruption of the specimen integrity resulting in inaccurate measurements. As well, these methods have inherent strain limits and cannot define strain anisotropy. Recently, commercial techniques, such as video extensometry and laser extensometry, have been available to manufacturers. These techniques provide measurements for a selected length (e.g., gage length) of a specimen, as opposed to the limited displacements measured by extensometers or strain gages. They do not, however, provide the strain distribution in the entire specimen length. Additionally, a manual calibration procedure is generally needed for a particular optical field of view and the high cost of the devices makes it less attractive to geosynthetic manufacturers and other testing laborato-

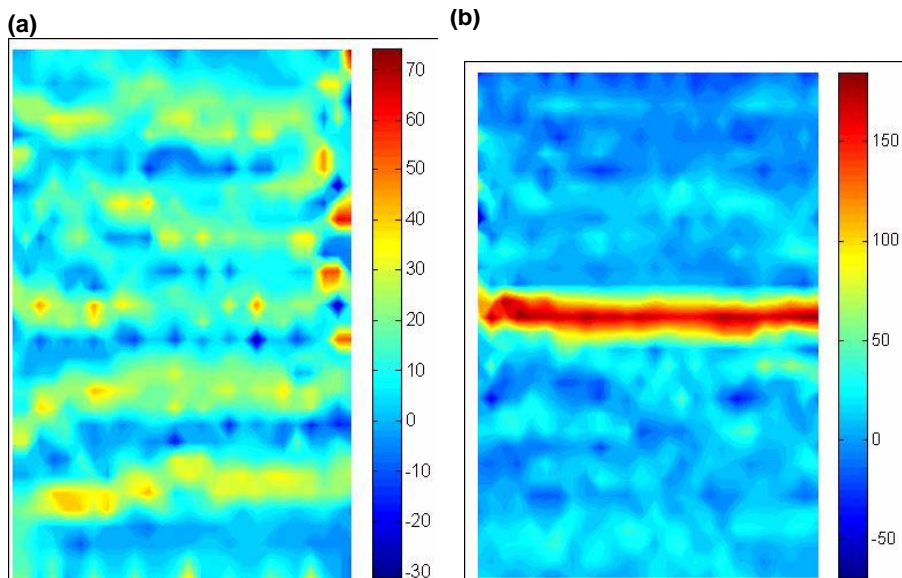


Figure 1. Distributions of axial strain at failure for a woven geotextile tested in hydraulic grips: (a) no seam, (b) butterfly seam (all strains are given as percentage values).

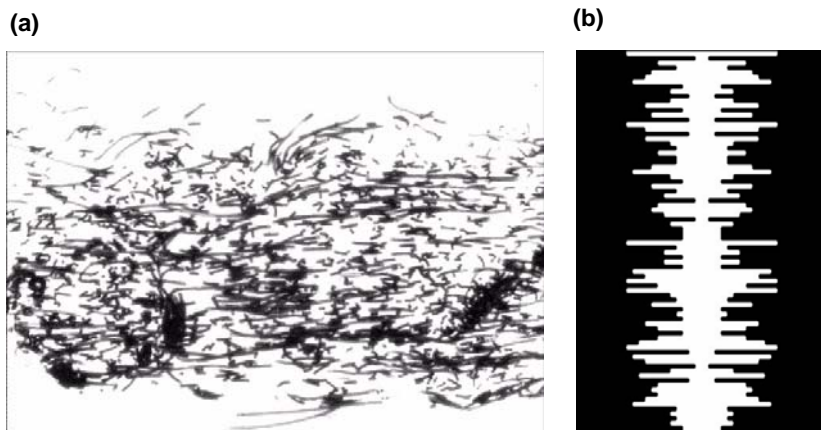


Figure 2. (a) Cross-sectional image of a nonwoven geotextile and (b) simulated pore channels along the depth using Markov chain processes.

ries. Therefore, the particle tracking (optical flow) techniques often used in computer science can be adapted for their use in the analysis of strain distribution in geosynthetics during a tension test.

One of the original works pioneered by our research team is the development of optical flow methods for strain determination in geosynthetics. A rapid and automated image-based particle tracking software program was developed to define strain distribution in geosynthetics during tensile testing (Aydilek et al. 2004). The method consists of a unique non-contact approach that quantifies strain anisotropy in a geo-

synthetic more accurately than is currently being done. For instance, the methods provide valuable information about nonhomogeneities in the entire length of a specimen (Figure 1), which can be of tremendous help to manufacturers for the quality control of their products.

The methodologies can also define strains at different locations in a specimen, which in turn, can be used to define grip efficiency (Kutay et al. 2006). Further, accurate strain measurement in geosynthetics results in improved material specifications and design reliability. This allows better construction of civil engineering structures where

geosynthetics are heavily used, thus facilitating safer and more cost-effective designs. Measurement of strain distribution through the application of these techniques allows for better material characterization and assists in predicting and assessing boundary instabilities for their potential use in numerical geomechanical models.

Another promising application avenue for image-based methodologies is their utilization in determination of pore structure parameters of geotextiles. This permits measurement of percent open areas of woven geotextiles and pore sizes and porosities of woven and non-wovens (Aydilek et al. 2002, Aydilek and Edil 2004).

Filtration performance of non-woven geotextiles strongly depends on pore constriction size, i.e., the minimum opening size of flow channels across the geotextile. Currently available methods of pore characterizations do not provide accurate information about the constriction size. An image-based stochastic technique was developed to define these constriction sizes (Figure 2). High magnification microscopic imaging techniques were used to capture the 3D images of nonwoven geotextiles, and recent advancements in imaging science were utilized to process those images. Due to the probabilistic nature of the pores in geotextiles, discrete Markov chain processes were employed to define the randomly oriented pore channels (flow pathways) through their thicknesses (Aydilek et al. 2005). The predictions of the model were in close agreement with laboratory bubble point test-based data independently produced by other researchers, as shown in Figure 3 (Aydilek et al. 2007).

Remediation of High Water Content Geomaterials Using Geotextiles

The retirement of large industrial waste storage facilities in accordance with environmental regulations has become a critical cost

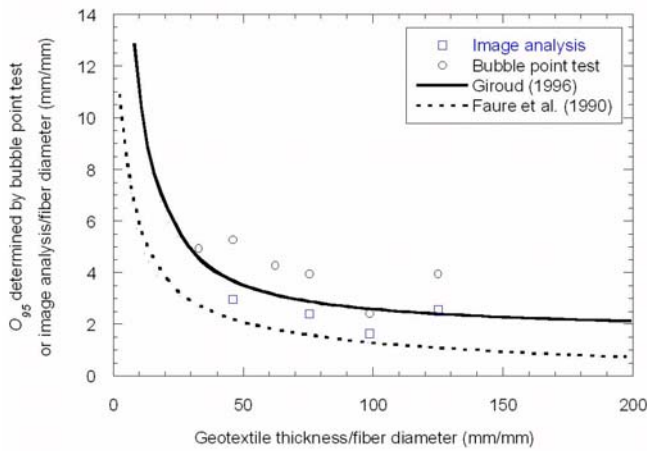


Figure 3. Bubble point-based and image-based O_{95} values versus thickness for staple fiber nonwoven geotextiles.

(a)



(b)



Figure 4. (a) Challenges during construction on extremely soft ground, and (b) capping of sludges using geotextile and wood chip-soil mixture.

issue for industry and a challenge to the geotechnical community. Many facilities were constructed prior to the emergence of modern environmental regulations and contain variety of contaminated high water content materials. Some examples are PCB (polychlorinated biphenyl) containing wastewater treatment sludges and contaminated harbor dredgings, waste pickle liquor slud-

ges, asbestos-containing sediments, and contaminated river bottoms sediments. These materials are contained typically in surface impoundments such as lagoons, ponds or old quarries. Some of the remediation alternatives include beneficial reuse, *in situ* chemical stabilization, *ex situ* treatment, landfill disposal,

and capping. The last alternative is typically the least costly; however, the soft and highly compressible nature of these materials gives rise to a variety of technical and environmental challenges for cap design and construction (Figure 4a).

Some of these challenges were experienced in the context of capping PCB-contaminated wastewater treatment sludge lagoons in a U.S. EPA Superfund Project located in Wisconsin, U.S.A. The lagoons covered an area of 52 ha with about 18.4 ha already having a vegetative cover and requiring no further action. The remaining lagoon areas consisted of 25.6 ha of uncontaminated sludge that was removed for land application and 8 ha of sludge (1.2 to 1.5-m deep) with a PCB concentration of 50 mg/kg or higher that required capping.

A composite cap, consisting of a woven slit-film geotextile and an approximately 0.45-m thick mixture of soil and wood chips, were selected (Figure 4b). The cap was intended to isolate the sludge and provide a base for

vegetation and development of a root mat. Design of such a cap typically involves use of geosynthetics to provide essentially three functions: reinforcement, filtration and separation. While reinforcement is an important function for providing a good construction platform on soft sludge, filtration is another function that is critical for the long-term performance (Aydilek and Edil 2002 and 2003). Currently, there is no published clogging criterion specifically applicable to sludges. Sludges are often contaminated materials and the piping limits set for uncontaminated soils should be reevaluated for these geomaterials. The findings of the laboratory and field analysis have resulted in the development of geotextile filter selection criteria for high water content contaminated sludges (Figure 5).

Proper dewatering of high water content geomaterials, such as fly ash slurries, wastewater treatment sludge, and dredged sediments opens new avenues for their possible beneficial uses in geotechnical construction. One of the popular methods of dewatering high water content materials is the use of geotextile containers. Evaluation of dewatering performance has traditionally been based on the amount and clarity of effluent dissipating from the container during its settlement. However, the hydraulic compatibility of a geotextile with the contact soil is also an important issue and should be considered in

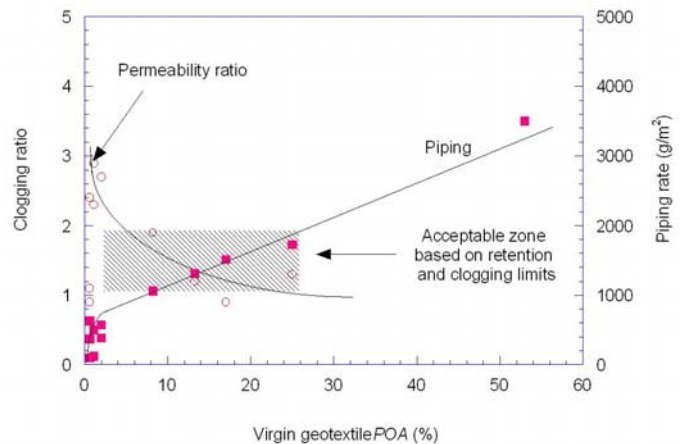


Figure 5. Acceptable filter zone for the sludge-geotextile systems.

the design. This compatibility ensures long-term dewatering performance and is usually analyzed through laboratory soil filtration tests. The experimental analyses suggested that double layer systems, i.e., a combination of woven and nonwoven, perform better than single layer systems, i.e., woven, in geotextile container design. The presence of a nonwoven geotextile significantly increased retention and anti-clogging performance due to their three-dimensional structure (Kutay and Aydilek 2004 and 2005).

Overall, the research studies clearly indicated that geotextiles can be successfully used in remediation of high water content geomaterials. However, the nature of these unusual materials necessitates the knowledge of their geotechnical and environmental properties before design.

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Comprehensive Design Guidance for Geosynthetic Materials

GSE Lining Technology, 2006 IGS Award Recipient

Editor's Note

The IGS corporate member, GSE Lining Technology, received the IGS Award for compiling and publishing a series of manuals that provide design guidance, technical information and installation methodologies for a broad range of geosynthetics applications. This information was compiled in a set of four CDs that are freely available to the geosynthetics community. Collectively, the manuals are a valuable resource that organizes a large body of theoretical and practical knowledge, and product information that advances the use of geosynthetics and is of great value to design engineers.

GSE Lining Technology has been involved with geosynthetics for

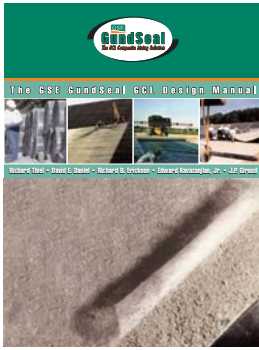
many years and a corporate member of the IGS since 1988. An important aspect of this history is the development of a collection of technical literature addressing a broad range of different circumstances and concerns regarding geosynthetic use. In recent years, a group of distinguished scientists and authors have collaborated, under the direction of GSE, to refresh, organize and expand this resource into an organized set of reference and educational documents.

GSE publishes this information on a set of four CDs. The CDs address the following four topics: (i) geomembrane installation and

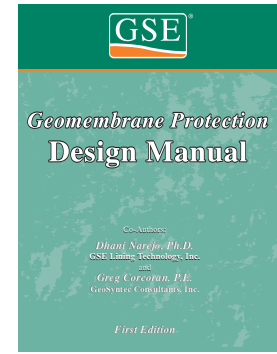


puncture protection; (ii) GCLs; (iii) drainage products; (iv) geosynthetic manufacturing and installation quality control and assurance and installation guidelines and suggested installation details for all geosynthetic product varieties. For topics (i), (ii) and (iii), theory, performance, and application specific design suggestions are provided. All of these documents are available from GSE and can be requested through the website at www.gseworld.com.

The engineers and scientists, under the coordination of GSE, addressed the task of making the pool of information more compre-



theoretical information is presented in the initial chapters and appendices of the various manuals. Each manual presents application specific information such as how these products would be used in a liquid containment application. Finally, the manuals address specific topics of concern on an individual basis. For example, slope stability calculations have their own dedicated chapter.



hensive. The main result was the idea of identifying and organizing the theories, assumptions and basic equations that cover many of the engineering practices concerned with geosynthetics. Generally, the

The technical sections of the manuals were authored by well-recognized geosynthetic experts: Dr. Dhani Narejo, Mr. Greg Corcoran, Dr. J.P. Giroud, Dr. Edward Kavazanjian, Dr. David E. Daniel, Mr. Rich-

ard Thiel, Mr. Richard B. Erickson, Dr. Robert C. Bacchus, Dr. Te-Yang Soong and Dr. Mengjia Li. These engineers deserve recognition for their respective contributions to advancing our industry.

Synopsis of the Second *Lifetime of Geosynthetics* Seminar Held on 24-25 April 2007, Würzburg, Germany

The second *Lifetime of Geosynthetics* seminar was held in Würzburg, Germany on 24 to 25 April 2007. Following the successful one-day, *Life Prediction of Geosynthetics* seminars held in Leatherhead, England (2003) and the first *Lifetime of Geosynthetics* held in Würzburg, Germany (April 2006, official language being German), the second *Lifetime of Geosynthetics* seminar was held in Würzburg with the official language being English.

In total, there were over 50 participants from Belgium, Denmark, Finland, Germany, Italy, Korea, Luxembourg, Netherlands, Norway, South Africa, Spain, Switzerland and United Kingdom.

The program included:

- Requirements on geosynthetics
- Environmental factors in soil

- Chemical degradation of polymers
- Loads and mechanical damages
- Stabilisation of polymers
- Ageing of UV-exposed polymers
- Fundamentals of lifetime prediction
- Accelerated creep tests
- Accelerated ageing tests
- Evaluation of clay geosynthetic barriers in landfill cover systems
- Lifetime prediction of covered and exposed geosynthetics
- Evaluation of geosynthetics for reinforcements
- Observations in the field on lifetime and durability of geosynthetics
- Evaluation of drainage geocomposites in landfill cover systems

All participants received docu-

mentation including a CD containing the seminar lectures.

*reported by Helmut Zanzinger
IGS Member*



Seminar speakers (from left to right): Dr. John Greenwood, ERA (UK); Helmut Zanzinger, SKZ (Germany); Professor Dr. Robert Koerner, Geosynthetic Institute (USA); Dr. Hartmut Schröder, BAM, Berlin (Germany); missing from photo is Peter Trubiroha, BAM, Berlin (Germany).

Geo-Environmental Engineering 2007 Held on 22-24 May 2007, Grenoble, France

Geo-Environmental Engineering 2007 (GEE 2007, the *Seventh Japan-Korea-France Joint Seminar on Geo-environmental Engineering*) was held

on 22 to 24 May 2007 at the LTHE-Lirigm, University Joseph Fourier, Grenoble, France.

The Conference was jointly organized by University Joseph

Fourier, France, Kyoto University, Japan, Seoul National University and Korea Institute of Construction Technology (KICT), Korea, under the auspices of the IGS and Techni-

cal Committee 5, ISSMGE, and supported by Region Rhône-Alpes, Ambassade de France au Japon, and Japanese Geotechnical Society (JGS).

The Conference provided an international forum to discuss the problems of waste management, remediation of contaminated lands, geosynthetics and mineral confinement barriers and hydro-mechanical related problems. The main goal of *GEE2007* – “Bringing together complementary experience and research from Asia and Europe” – was successfully achieved.

A total of 76 registrants from 9 countries participated in the Conference. Fifty one people were invited to contribute an oral presentation, and the 57 accepted papers are published in the Conference proceedings.

Conference Program

The paper presentations and discussions were organized into eight Plenary Sessions:

- Landfills Engineering (Chaired by Prof. Jean-Pierre Gourc, University Joseph Fourier, France)
- Geosynthetics in Environmental Applications (Chaired by Dr. Daniele Cazzuffi, CESI, Italy)
- Geotechnical Reuse of Solid Waste (Chaired by Dr. Ha Ik



Chung, Korea Institute of Construction Technology, Korea)

- Remediation (Chaired by Prof. Catherine Mulligan, Concordia University, Canada)
- Landfill Covers & Confinement Barriers I (Chaired by Prof. Masashi Kamon, Kyoto University, Japan)
- Geotechnics & Environment (Chaired by Prof. Mario Manassero, Politecnico di Torino, Italy)
- Groundwater and Pollution (Chaired by Prof. Junbom Park, Seoul National University, Korea)
- Landfill Covers & Confinement Barriers II (Chaired by Prof. Lyesse Laloi, Swiss Federal Institute of Technology, Switzerland)

The contributions were not only on laboratory tests, theoretical modeling and numerical analyses, but also on field monitoring results and practical applications. All of the contributions were very comprehensive

and interesting. The Conference provided a considerable number of young researchers, including students, the opportunity to present an oral presentation.

Technical Visit

On the third day of the Conference, participants visited the landfill site of Chatuzanges, where the research group of Prof. Jean-Pierre Gourc, Chair of *GEE2007*, had conducted field monitoring of waste settlements.

Next Conference

Geo-Environmental Engineering 2008 (GEE 2008) will be held on 12 to 14 June 2008, at Kyoto University, Japan. *GEE 2008* will be an international conference, involving participants from a variety of Asian and European countries.

*reported by Masashi Kamon
GEE 2007 Organizing Member and
IGS Council Member*

Synopsis of 8th International Geotechnical Conference Held on 4-5 June 2007, Bratislava, Slovak Republic

On 4 and 5 June 2007, the *8th International Geotechnical Conference* took place in Bratislava on the occasion of the 70th anniversary of the Slovak University of Technology. The theme of the Conference was “Improvement of Soil Properties” and was organized by Prof. Eng. Jozef Hulla and Prof. Eng. Peter Turček.

The opening address was given by Prof. A. Kopáček, Dean of the Civil Engineering Faculty. Keynote lectures were presented by:

- Prof. Georg Heerten (Vice Chair of the German Geotechnical Society, DGGT, and long-standing member of the IGS and IGS Council), “Improving the Bearing Capacity of Soils with Geosyn-

thetics,” demonstrating that construction technology with geosynthetics is of increasing importance and acceptance in geotechnics.

- Prof. H. Brandl (President of the Austrian National Society of the ISSMGE), “Long-term behaviour of soil improvement and recent innovations”

Conference topics were:

- Dewatering and reinforcement
- Compaction
- Stone columns
- Soil mixing

- Grouting
- Miscellaneous

Two hundred participants from 12 countries attended the anniversary Conference. The 57 papers have been published in a proceed-

ings, which can be obtained from the Slovak University of Technology (contact: olga.rikovska@stuba.sk).

*reported by Georg Heerten
IGS Member*

Third Romanian National Symposium on Geosynthetics

Held on 7-8 June 2007, Bucharest, Romania

The Third Romanian National Symposium on Geosynthetics, *GeoSint 2007*, was held 7 to 8 June 2007 in Bucharest, Romania at the Technical University of Civil Engineering Bucharest – Faculty of Railways, Roads and Bridges. The Symposium was jointly organized by the Romanian Association of Geosynthetics – Romanian Chapter of IGS (ARG) and the Technical University of Civil Engineering Bucharest (UTCB).

The Symposium had significant international participation, with several specialists being invited to participate and share their experiences during the two-day event. Approximately 150 delegates attended the Symposium, representing academia, practitioners, designers, manufacturers, and students.

The opening ceremony was chaired by Prof. Valentin Feodorov, President of the Romanian Association of Geosynthetics. Also present was the Rector of the Technical Uni-

versity of Civil Engineering, Prof. Dan Stematiu, and the Dean of the Faculty of Railways, Roads and Bridges, Prof. Anton Chiriă.

The first day of the Symposium commenced with the Terzaghi Lecture “Geosynthetics engineering: successes, failures and lessons learned” presented by our special guest, Prof. Jean-Pierre Giroud. Just before the Symposium, Prof. Giroud received the academic title and distinction *Doctor Honoris Causa* from the Technical University of Civil Engineering of Bucharest in recognition of his merits in the field of geotechnical and geosynthetics engineering.

The first day of the Symposium continued with three other lectures on geosynthetics in landfills and reinforcement presented by:

- Prof. Karl Josef Witt from Bauhaus, University Weimar, Germany, “Impact and resistance of CCL and GCL barriers in landfill final cover system”
- Prof. Georg Heerten, Naue GmbH, “Improving the bearing capacity of soils with geosynthetics”
- Dr. ing. Dimiter Alexiew, Huesker Synthetic GmbH, “Selected topics on geosynthetic reinforcement in transportation engineering”



The second day of the Symposium commenced with a lecture by Prof. J.P. Giroud on the use of geosynthetics in transportation applications (main applications and related problems). Two other papers were presented by:

- Prof. Horst Düllmann, Faculty of Georesources and Materials Engineering RWTH Aachen University, “Geomembranes in landfill engineering”
- Eng. Chris Jenner, Tensar International Ltd, “Modular faced reinforced soil walls”

A discussion session was held at the end of each day.

The Symposium proceedings will be issued post-conference and includes all lectures presented and Romanian contributions. In addition, a small exhibition was jointly organized; several geosynthetics producers attended as well as an edition house for scientific books.

*reported by Loretta Batali
IGS Member*



Dr. JP Giroud (right) receiving a Doctor Honoris Causa from Prof. Dan Stematiu (left), Rector, Technical University of Civil Engineering of Bucharest.

IGS Vietnam Training Course

“Geosynthetics in Civil and Environmental Engineering”

An IGS Vietnam training course was held on 12 June 2007 at Hanoi University of Science, Hanoi, and on 14 June 2007 at Hochimihn City University of Technology, Hochimihn. Held under the auspices of the IGS Asian Activities Committee, the course was jointly organized by Hanoi University of Science and Hochimihn City University of Technology. The Course was a success with a total of 200 participants (approximately 100 participants in each city) and provided an excellent opportunity to exchange opinions and ideas.

The long-term goal is to build awareness of the IGS in Vietnam and establish the IGS Vietnam Chapter. The main purpose of the Course is to promote the advantages of geosynthetics applications in construction and the benefits of IGS activities to Vietnamese researchers and engineers. The support of 14 exhibitors (IGS Corporate Members and contractors in Asian countries), as well as the support of the IGS and IGS Japanese Chapter, are greatly acknowledged.

Training Course Program

Opening Remarks: Prof. Masashi Kamon (Chair of Asian Activities Committee of IGS)

Lecture 1: “Outline of geosynthetics and their applications in civil and

environmental engineering” by Prof. Masashi Kamon (Kyoto University, Japan)

Lecture 2: “Geosynthetics applications in Vietnam: Proposal to start the IGS Vietnam Chapter” by Dr. Vu Cao Minh (Vietnam Institute of Geology, Vietnam), Dr. Do Minh Duc (Hanoi University of Science, Vietnam) and Dr. Pham Van Long (Vina Mekong Construction Company, Vietnam)

Lecture 3: “Erosion and flood control using geosynthetics” by Prof. Kazuya Yasuhara (Ibaraki University, Japan)

Lecture 4: “Landfill liner design with geosynthetics” by Mr. John Cowland (GeoSystems Ltd., Hong Kong, China)

Lecture 5: “Design and construction of embankment on soft ground with reinforcement by geosynthetics, Fiber-reinforced dredged soil and its application to barrier material” by Prof. Masashi Kamon (Kyoto University, Japan)

Lecture 6: “Innovative techniques of thermal and electro-osmotic consolidation of soft clay with PVD” by Prof. Dennes T. Bergado (Asian Institute of Technology, Thailand)



Lecturers/speakers at the IGS Vietnam Training Course (from left to right): Prof. Tran Nghi, Mr. John Cowland, Prof. Masashi Kamon, Prof. Kazuya Yasuhara, and Prof. Denis Bergado.

Closing Remarks: Dr. Do Minh Duc (Hanoi University of Science, Vietnam)

The current number of IGS members in Vietnam is only four; however, their commitment and contributions to the Course were key to its success and resulted in lively discussions among lecturers, exhibitors and participants. The author has great hopes of the continued successful development of IGS activity in Vietnam.

*reported by Masashi Kamon
organizing member of IGS Vietnam
Training Course*

Synopsis of Second Portuguese Seminar on Geosynthetics

Held on 19-20 June 2007, Lisbon, Portugal

The *Second Portuguese Seminar on Geosynthetics* was held on 19 and 20 June 2007, at the *Laboratório Nacional de Engenharia Civil* (LNEC), in Lisbon, Portugal. The Seminar was jointly organized by the IGS Portuguese Chapter, *Sociedade Portuguesa de Geotec-*

nia (SPG), and LNEC. More than 125 participants, including researchers, designers, engineers, manufacturers, contractors, practitioners, installers and students, attended the Seminar.

The main purpose of the Seminar was to disseminate knowledge and experience, as well as stimu-

late communication and discussion about the engineering behaviour and multiple applications of geosynthetics.

The Seminar included oral presentations (invited experts from Portugal and abroad), poster sessions, four-hour training course, and three technical sessions. The



Opening ceremony of the *Second Portuguese Seminar on Geosynthetics*.

The first technical session focused on the use of geosynthetics in road and railways. One keynote lecture and eight papers were presented. The topic of the second technical session was the use of geosynthetics in landfills. It started with a keynote lecture, followed by a presentation of six papers. Finally, the third technical session focused on geosynthetics in hydraulic applications. Again, it

started with a keynote lecture and was followed by the presentation of five papers. The proceedings were published into a hard cover book (380 pages), as well as into a CD-ROM.

training course was presented by Dr. J.P. Giroud and focused on geomembranes in canals, i.e., use of geomembranes in canals, state of practice, design and construction aspects, and several case histories.

Fruitful and interesting discussions took place after each session, during the breaks, and during the social events.

A technical exhibition also took place, where geosynthetics manufacturers, designers, installers and practitioners presented their technologies in new and creative ways. Sixteen companies and organizations attended the exhibition.

This event was considered a success by the participants and the organizing committee. The *Third Portuguese Seminar* is scheduled for 2009, at the University of Coimbra, Portugal.

*reported by Madalena Barroso
IGS Member and Organizing
Committee President*

Sardinia 2007

11th International Waste Management & Landfill Symposium 1-5 October 2007, S. Margherita di Pula, Cagliari, Italy

Sardinia 2007 is being held in S. Margherita di Pula, Cagliari, Italy, 1 to 5 October 2007. The Conference is being organized by the International Waste Working Group and the Environmental Sanitary Engineering Centre and is being held under the auspices of the IGS.

For Information - Contact

[www.sardiniasymposium.it/
SARDINIA_eng/index_eng.html](http://www.sardiniasymposium.it/SARDINIA_eng/index_eng.html)

General Manager:
euowaste@tin.it

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21st Geotechnical Engineering Conference of Torino

“Geosynthetics and the Environment” 27-28 November 2007, Torino, Italy

The 21st Geotechnical Engineering Conference of Torino (CGT 2007), “Geosynthetics and the Environment,” will be held 27 to 28 November 2007 at the Politecnico of Torino and held under the auspices of the IGS, the Associazione Geotecnica Italiana (AGI), and the ISSMGE.

More than 150 researchers, technicians, and experts from Italy and abroad will attend the Confer-

ence. The panel of speakers includes experts from all over the world, who will be speaking on the various theoretical and practical issues concerning the application of geosynthetic materials and technologies in environmental engineering. The official languages will be Italian and English.

The Conference objective is to provide an occasion for updating the general framework on “Geosynthet-

ics and the Environment” through the contributions of some of the most outstanding national and international experts, and to provide an opportunity for discussion between geosynthetics professionals from universities, institutions, manufacturers, design-



ers and contractors concerning future developments in geosynthetics.

Two working days are planned: the first is devoted to landfills and the second to the control and reclamation of polluted subsoils. There will be a particular focus on:

- Geosynthetics and geocomposites for drainage and barriers used within lining and capping systems for landfill facilities, including issues on the short- and

long-term behaviour and performance comparison with traditional materials in light of the requirements of the National and European norms; problems related to geosynthetic and geocomposite applications in steep slopes and/or on very compressible foundation materials; geotextile containment units for dewatering, confinement and mechanical reinforcement of mining and industrial by-products.

- Lateral containment and control of subsoil pollutants using drainage trenches and composite cut-off walls; composite capping systems, for sea, river and lake bottoms; flushing and extraction systems for liquid and gaseous pollutants.

For More Information

Visit the Conference web site:
www.cgttorino.org

IS Kyushu '07

5th International Symposium on Earth Reinforcement

14-16 November 2007, Fukuoka, Japan

The 5th IS Kyushu will be held in Fukuoka, Japan, on 14 to 16 November 2007 under the auspices of the IGS.

Topics

Reinforcing Materials

- Geosynthetics
- Steel materials
- New materials
- Natural materials
- Composite materials and others

Contents

- Testing methods
- Model tests (1g and centrifuge) and full scale tests

- Numerical analyses
- Design methods (performance based design and others)
- Construction technologies
- Case histories and others

Recent and New Topics

- Disaster prevention technologies (for earthquake, heavy rain and other hazards)
- Geo-environmental technologies (reinforcing landfill structure, recycling geomaterials and others)
- Combined technologies (standard reinforcing methods with other methods)



- New and classical technologies and others

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International Symposium on Geotechnical Engineering, Ground Improvement & Geosynthetics for Human Security & Environmental Preservation

6-7 December 2007, Bangkok, Thailand

The International Symposium on Geotechnical Engineering, Ground Improvement & Geosynthetics for Human Security and Environmental Preservation will be held in Bangkok, Thailand on 6 to 7 December 2007. The Symposium is being held under the auspices of the IGS and is co-sponsored by

TC39 (Geotechnical Engineering for Coastal Disaster Mitigation and Rehabilitation) and TC4 (Earthquake Geotechnical Engineering and Associated Problems).

The Symposium will cover topics in human security as related to the use of geosynthetics for mitigation and rehabilitation of natural hazards.

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www.set.ait.ac.th/acsig/conference

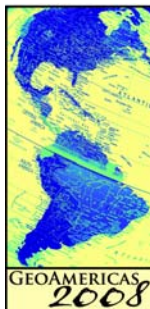
GeoAmericas 2008: On-line Registration Now Open

2-5 March 2008, Cancún, Mexico

GeoAmericas 2008 will be the first regional conference organized by the IGS and the Industrial Fabrics Association.

Technical Program includes

- 40+ Technical Sessions
- Short Courses (both in English and Spanish)



- 12 Spanish and 12 English Training Lectures
- Invited paper sessions including Life's Work sessions and Journal sessions (best papers from GI, G&G, ASCE, CGJ)
- GRI-21: Hot topics in Geosynthetics, including "Geosynthetics in Agriculture" and "Geosynthetics in Aquaculture"

Keynote Lecturers

- Dr. J.P. Giroud (USA)
- Dr. Bob Koerner (USA)
- Mark Smith (Lima Peru) and Leandro de Moura Costa Filho (Peru).

For More Information

Visit the Conference web site:
www.geoamericas.info

Geosynthetics Asia 2008

17-20 June 2008, Shanghai, China

The 4th Asian Regional Conference on Geosynthetics (Geosynthetics Asia 2008) will be held from 17 to 20 June 2008 at the Shanghai Exhibition Center, Shanghai, China. The Conference theme is *Geosynthetics in Civil and Environmental Engineering*.

The Conference is being organized by the Chinese IGS Chapter, the Chinese Technical Association

on Geosynthetics under the auspices of the IGS, the Chinese Hydraulic Engineering Society and is supported by the Shanghai Investigation Design & Research Institute

and Zhejiang University.

For More Information

E-mail: ccigs@4acg-2008sh.com
Web site: www.4acg-2008sh.com

Important Dates to Remember

Full Papers due: 30 September 2007
Final Papers due 31 January 2008



EuroGeo4

7-10 September 2008, Edinburgh, Scotland, United Kingdom

The 4th European Geosynthetics Conference, EuroGeo4, will be held at the Edinburgh Conference Centre, Heriot-Watt University, Scotland, UK, from 7 to 10 September 2008. The Conference is being organized by the UK IGS Chapter under the auspices of the IGS and is supported by the British Geotechnical Association, Scottish Geotechnical Group, Ground Forum and the Engineering Group of the Geological Society.

Keynote Lecturers

- Colin JFP Jones (UK)

- Nathalie Touze-Foltz (France)
- Grace Hsuan (USA)

Conference Format

- *Technical Sessions:* There will be three themed keynote lectures, with three parallel sessions held over 3 days, together with a prestige lecture on geosynthetics. Poster sessions will be held during the conference where authors will be available to answer questions and discuss particular issues related to their papers.
- *Training Course:* A separate training course will be held in parallel with the conference to provide



education on the use of and design with geosynthetics in civil engineering applications.

- *Exhibition*

For More Information

Web site: www.eurogeo4.org

Important Dates to Remember

Abstracts due: 30 August 2007
Full Papers due: 30 April 2008

Geotextiles and Geomembranes: Best Papers in 2006

Geotextiles and Geomembranes is an Official Journal of the IGS, and IGS members get free access to papers published in the journal since 1995. It is one of the two primary archival outlets for papers published on geosynthetics and enjoys an excellent flow of high-quality papers.

Following the Editorial Board meeting held in Yokohama, September 2006, it was decided that it would be desirable to recognize some of the best papers published in *Geotextiles and Geomembranes*. We started with Volume 23 and the winners for 2005 were announced recently (March 2007, *IGS News*). The Editorial Board then selected what they considered to be the "Best Paper" published in *Geotextiles and Geomembranes* in Volume 24, 2006.

Papers were considered for their contribution to the discipline in terms of providing significant new insights and/or of being of high potential impact on the discipline. All Technical Articles except those

co-authored by the Editor were eligible. The Editor co-ordinated the voting but took no part in the selection of winning papers, which was decided based solely on a vote of the Editorial Board members.

Following a rigorous review of the papers, I am pleased to announce that two papers tied for the Best Paper for 2006. The winners were:

"Full-scale field tests on geosynthetic reinforced unpaved roads on soft subgrade" by Rudolf Hufenus, Rudolf Rueegger, Robert Banjac, Pierre Mayor, Sarah M. Springman and Rolf Brömmann, *Geotextiles and Geomembranes*, Vol. 24, No. 1, 21-37.

"Deformations of a geosynthetic clay liner beneath a geomembrane wrinkle and coarse gravel" by Simon Dickinson and Richard W.I. Brachman, *Geotextiles and Geomembranes*, Vol. 24, No. 5, 285-298.

One paper was selected for

Honourable Mention as a close runner-up and, hence, was judged to be one of the three best papers published in *Geotextiles and Geomembranes* in 2006:

"Shear strength of geomembrane-soil interface under unsaturated conditions" by I.R. Fleming, J.S. Sharma and M.B. Jogi, *Geotextiles and Geomembranes*, Vol. 24, No. 5, 274-284.

Congratulations to all of the authors for their very significant contribution to the geosynthetics discipline.

All these papers as well as the three top papers for 2005 will be presented at a session on "Best Papers published in G&G in 2005 and 2006" at the *GeoAmericas 2008* Conference to be held in Cancún, Mexico, 2-5 March 2008. I encourage you to come and hear the papers presented.

reported by R. Kerry Rowe, Editor,
Geotextiles and Geomembranes

Geosynthetics International: Best Papers in 2006

Geosynthetics International is an official journal of the International Geosynthetics Society and serves the mandate of the Society to disseminate important technical developments to its members.

At the Editorial Board meeting held on 21 September 2006 in Yokohama, it was decided to select the best paper published in *Geosynthetics International* in each year starting with Volume 12 (2005). The decision was also made that this selection would be made by the members of the Editorial Board serving at the time of the award year.

Recently, we reported the winners of the three best papers for 2005 in the March issue of *IGS News*. We are delighted to announce that the "Best *Geosynthetics International* Paper for 2006" is:

"Interface shear strength variability and its use in reliability-based land-fill stability analysis" by N. Dixon, D.R.V. Jones and G.J. Fowmes, *Geosynthetics International*, Vol. 13, No. 1, 1-14.

The voting by the members of the Editorial Board resulted in two other outstanding papers tied for second choice. Hence, we decided that these papers deserve to be recognized as "one of the three best papers published in *Geosynthetics International* in 2006." They are:

"Evaluating the strength and deformation characteristics of a soil bag pile from full-scale laboratory tests" by T.N. Lohani, K. Matsushima, U. Aqil, Y. Mohri and F. Tatsuoka, *Geosynthetics International*, Vol. 13, No. 6, 246-264.

"Performance of geotextile silt fences in large flume tests" by

R.J.C. Farias, E.M. Palmeira and J.C. Carvalho, *Geosynthetics International*, Vol. 13, No. 4, 133-144

We thank the members of the Editorial Board for participating in the best paper selection process and congratulate the authors of these excellent papers. Each paper reflects the high standards of the Journal and is an important contribution to our geosynthetics discipline.

All IGS members have free access to these papers and all other papers published in *Geosynthetics International* as a benefit of membership.

reported by R.J. Bathurst, Editor,
T.S. Ingold, Editor (1994-2006), and
J.P. Giroud, Chairman of the
Editorial Board, *Geosynthetics International*

Geosynthetics International

An Official Journal of the IGS: Electronic Journal Free to IGS Members

Geosynthetics International is an official journal of the IGS and has established itself as a premier peer-reviewed journal on geosynthetics. The Journal publishes technical papers, technical notes, discussions, and book reviews on all topics relating to geosynthetic materials (including natural fiber products), research, behaviour, performance analysis, testing, design, construction methods, case histories, and field experience.



Geosynthetics International is only published electronically starting Volume 10 (2003) by Thomas Telford and is free to IGS Members. All others, e.g., corporations, companies, and university libraries, can subscribe at a rate of £421/US\$870. An individual rate for

those non-members whose organization subscribes, but would like an additional personal subscription (including the update CD) will be available for £60/US\$108.

The update CD is issued annually as part of the subscription for non-IGS Members and includes all papers published in that year. IGS Members can opt to buy the CD for US\$100.

Visit the Journal's web site given below for subscription information and instructions for accessing the latest issues.

Papers should be work not published in full elsewhere and should be sent to one of the following individuals:

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Geotextiles & Geomembranes

An Official Journal of the IGS: Electronic Journal Free to IGS Members

Geotextiles and Geomembranes is dedicated to the mission of the IGS, which is to promote the scientific and engineering development of geotextiles, geomembranes, related products, and associated technologies.

The Journal publishes technical papers, technical notes, discussions, and book reviews on all topics relating to geosynthetics, research, behaviour, performance analysis, testing, design, construction methods, case histories, and field experience.

Papers should be submitted electronically as a Microsoft Word or pdf file to: kerry@civil.queensu.ca. Please ensure the text is double spaced, there is an abstract with keywords included, and tables and fig-

ures are at the end following the text. Please check the Journal's instructions for authors for additional information regarding submissions. The Journal strives to provide the authors with quick, constructive reviews, and we appreciate the author's hard work in addressing these comments and quick return of revised papers.

Geotextiles and Geomembranes is now available free in electronic format to IGS Members. To activate free access and to create your personal account, you will need your IGS Membership Number, which can be found on your IGS mailing label. If you do not know your Membership Number, please contact the IGS Secretariat at IGSsec@aol.com.

For instructions on how to activate access and create your personal account, go the web site provided below.

A hardcopy of Geo-

textiles and Geomembranes is available at a reduced subscription rate to individual and Corporate Members of the IGS. Individual IGS Members may subscribe at an 84% discount: US\$162 for six issues. IGS Corporate Members may subscribe at a 63% discount: US\$377 for six issues. Please indicate that you are an IGS Member when requesting the special price.

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For more information on obtaining electronic and hard copy subscriptions to *Geotextiles and Geomembranes* please go to the following IGS web site:

www.geosyntheticssociety.org/Journals_GG.htm

CORPORATE PROFILE

IGS Corporate Members are encouraged to publish a Corporate Profile in IGS News. A maximum of three profiles can be published in each issue of IGS News. The criteria for the preparation and submission of Corporate Profiles are available from the Editor. There is no charge for having a Corporate Profile published; it is a benefit of corporate membership.

I-CORP INTERNATIONAL, Inc.

I-CORP was established in 1991 by Dr. Ian D. Peggs, a materials scientist/engineer, who has been involved with assuring geosynthetic materials performance and resolving geosynthetic materials performance problems since 1982.

There are two components to **I-CORP**: the first is geosynthetic materials performance consulting; the second is **geosynthetica.net**, which was first proposed in 1994. That site, now led by Elizabeth Peggs, Lara Costa, and Chris Kelsey, is developing into a major geosynthetics educational and promotional force. Used by approximately 300,000 visitors per year from 100 countries, geosynthetica.net is linked to by approximately 1400 other web sites. geosynthetica.net is also an **IGS corporate member**.

On the consulting side, we deal with everything from material selection, specification, and non-destructive testing/development through to liner failure/forensic analyses and expert witness work in public hearings and litigation.

Half our work is outside the USA. For example: in Costa Rica, we provided guidance on selection, installation, and testing of a liner for a hydroelectric project water reservoir; in Australia, we were called for litigation concerning failed concrete embedment liners in SX/EW mining facilities and for liner selection/specification for a large bauxite evaporation pond capping project;



Failure of circumferential weld in sewer tunnel liner (PVC).

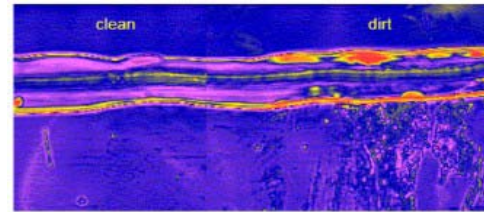
suspect seams in landfill caps in Finland were investigated; electrical leak location in a lined potable water tank was performed in Anguilla, BWI, and; failure analysis of a 150 km long steel pipe PE liner took us to Chile.

At home, we are performing a US Environmental Protection Agency funded **research project** to develop infrared thermography (IRT) for the non-destructive testing (NDT) measurement of geomembrane seam bond strength. This will avoid the need to cut out seam samples for destructive testing. Every millimeter of seam width and length is monitored and recorded. Ultimately, the equipment will be attached to a welding machine to interrogate a newly made weld and to provide feedback control to the welding machine.

We are investigating the use of geosynthetics in Engineered Materials Arresting Systems at the ends of airport runways to safely stop over-running aircraft, and to prevent jet blast erosion from large aircraft, such as the Airbus A-380, along the edges of runways and taxiways.

We are providing failure analysis and expert witness support on HDPE and PVC liners in sewer tunnels, spray-on asphaltic liners in winery waste ponds, an apparent geocomposite delamination sliding failure on a landfill cap, several wastewater treatment plant ponds with multiple large whales - a **common problem** at the moment, and on problems in floating covers on reservoirs and anaerobic digesters. We are assisting with the development of a geocomposite for the temporary surfacing of large (~20 ha) parking lots, including the ability to recycle the material for subsequent projects. One such project won the **IFAI International Achievement Award** (Geosynthetics) in 2004. In the same project,

I-CORP has been a Corporate Member of the IGS since 2006.



Plan view IR thermogram of extruded seam (HDPE).

we investigated the use of hook tapes for the rapid continuous joining of geotextiles and geocomposites that could also be disconnected and re-joined.

With TRI/Environmental, I-CORP has formed the **TRI I-CORP Liner Integrity Center (T-CLIC)** to teach and accredit individuals to perform electrical liner integrity/leak location surveys. At the same time, we are implementing new NDT leak location technologies that we ultimately will pass on to others. These include:

- measurement of natural potentials generated by flowing water through soils, applicable to geomembranes with unacceptable boundary conditions for electrical surveys, and to GCL-only liners,
- acoustic monitoring of turbulent water flowing through leaks, applicable, for instance, at battery strips, and
- portable Fourier-transformed infrared-red (FTIR) monitoring for characteristic (tracer) gas leaks, a rapid method of locating leaks in landfill caps.

I-CORP will continue to identify new technologies applicable to assuring geosynthetic materials performance, to provide those technologies as a service, then to teach others how to apply them. **www.geosynthetica.net** will spearhead the presentation of application and technical information to widen the acceptance of geosynthetics and the construction of successful and durable projects.

CONFERENCES
SYMPOSIA
WORKSHOPS

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SHORT COURSES
EXPOSITIONS
TRADE SHOWS

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Austin, Texas, USA
9-13 September 2007
Email: info@damsafety.org
www.damsafety.org

Landfill 2007
Misty Hills, South Africa
12-13 September 2007
Email: iwmsa@telkomsa.net
www.iwmsa.co.za

Application of Geosynthetics - Present and Future
Gandhinagar, (Gujarat), India
20-21 September 2007
E-mail: uday@cbip.org

14th European Conference on Soil Mechanics and Geotechnical Engineering
Madrid, Spain
24-27 September 2007
E-mail: secretary@ecsmge2007.org
www.ecsmge2007.org

Sardinia 2007
11th International Waste Management & Landfill Symposium
S. Margherita di Pula, Cagliari, Italy
1-5 October 2007
Email: info@sardiniasymposium.it
www.sardiniasymposium.it

WASTECON 2007
Reno, Nevada, USA
16-18 October 2007
E-mail: info@swana.org
www.swana.org

10th Australia-New Zealand Conference on Geomechanics
Brisbane, Queensland, Australia
21-24 October 2007
E-mail: anzgeo2007@ccm.com.au
www.anzgeo2007.com

60th Canadian/8th CGS_IAH Conference
Ottawa, Ontario, Canada
21-24 October 2007
E-mail: vanapall@eng.uottawa.ca
www.genie.uottawa.ca/~vanapall/conference/index.html

IS Kyushu '07 : 5th International Symposium on Earth Reinforcement
Fukuoka, Japan
14-17 November 2007
Contact: Jun Otani
E-mail: junotani@gpo.kumamoto-u.ac.jp
www.nda.ac.jp/cc/users/miyamiya/is-kyushu07

1st Middle European Conference on Landfill Technology
Budapest, Hungary
19-20 November 2007
E-mail: submission@ymmfk.szie.hu
www.geotec.bme.hu/issmge/indexen.html

14th African Regional Conference on Soil Mechanics and Geotechnical Engineering
Yaoundé, Cameroon
26-30 November 2007
www.CRA-YDE-2007.org.cm

Waterproof Membranes 2007
Cologne, Germany
26-28 November 2007
E-mail: sh@amiplastics.com
www.amiplastics.com

XXI Geotechnical Engineering Conference of Torino
Torino, Italy
27-28 November 2008
E-mail: info@cgttorino.org
www.cgttorino.org

3rd Int. Technical Textile Congress
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1-2 December 2007
E-mail: tekniktekstil2007@deu.edu.tr
web.deu.edu.tr/ttk

Int. Symposium on Geotechnical Engineering, Ground Improvement & Geosynthetics for Human Security & Environmental Preservation
Bangkok, Thailand
6-7 December 2007
E-mail: bergado@ait.ac.th

13th Asian Regional Conference on Soil Mechanics & Geotechnical Eng.
Kolkata, India
10-14 December 2007
E-mail: nitin_som@vsnl.com
www.13arc2007.com/

Water Management 2008
Mumbai, India
14-16 January 2008
E-mail: skirtania@servintonline.com
www.servintonline.com

EC08, Your Environmental Connection
Orlando, Florida, USA
18-21 February 2008
Email: kate@ieca.org
www.ieca.org

GeoAmericas 2008
First Pan American Geosynthetics Conference and Exhibition
Cancun, Mexico
2-5 March 2008
E-mail: jmrutledge@ifai.com
www.geoamericas.info

23rd International Conference on Solid Waste Technology and Management
Philadelphia, USA
30 March - 2 April 2008
E-mail: solid.waste@widener.edu
www.widener.edu

2nd International Conference on Geotechnical Engineering for Disaster Mitigation and Rehabilitation

Nanjing, China
16-19 May 2008
Contact person: Dr. An Deng
E-mail: gedmar08@hhu.edu.cn

Geosynthetics Asia 2008
4th Asian Regional Conference on Geosynthetics
Shanghai, China
17-20 June 2008
E-mail: ccigs@4acg-2008sh.com
www.4acg-2008sh.com

10th International Symposium on Landslides and Engineered Slopes
Xi'an, China
30 June - 4 July 2008
E-mail: wangyj@iwhr.com
www.landslide.iwhr.com

6th International Conference on Case Histories in Geotechnical Engineering
Washington, D.C., USA
11-16 August 2008
E-mail: prakash@umr.edu
www.6icchge2008.org

Global Waste Management Symposium
Copper, Colorado, USA
7-10 September 2008
E-mail: rita.ugianskis@penton.com
www.wastesymposium.com

EuroGeo4
The Fourth European Geosynthetics Conference
Edinburgh, Scotland, UK
7-10 September 2008
E-mail: eurogeo4@eurogeo4.org
www.eurogeo4.org/

12th International Conference of the IACMAG
Goa, India
1-6 October 2008
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NUCGE'08
Skikda, Algeria
27-29 October 2008
E-mail: larmacs@univ-skikda.dz
www.univ-skikda.dz

IV International Conference on Scour and Erosion 2008, ICSE-4
Tokyo, Japan
5-7 November 2008
E-mail: sekiguch@ujigawa.mbox.media.kyoto-u.ac.jp
icse-4.kz.tsukuba.ac.jp

XVII Int. Conference for Soil Mechanics and Geotechnical Eng.
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www.2009icsmge-egypt.org/

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The International Geosynthetics Society



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The International Geosynthetics Society was formed with the following objectives:

- to collect, evaluate, and disseminate knowledge on all matters relevant to geotextiles, geomembranes, related products, and associated technologies;
- to improve communication and understanding regarding geotextiles, geomembranes, related products, and associated technologies, as well as their applications;
- to promote advancement of the state of the art of geotextiles, geomembranes, related products, and associated technologies; and
- to encourage, through its Members, the harmonization of test methods, and equipment and criteria for geotextiles, geomembranes, related products, and associated technologies.

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