

# 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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## President's Corner

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Russell  
Jones

Dear members of the IGS,

Welcome to the final edition of IGS News for 2015. As you will see from this edition, 2016 is an election year for the IGS where you the members have the opportunity to elect 8 Council Members. I encourage any member interested in furthering the IGS Mission to consider standing for one of the positions. The mix of worldwide academic and industry representation is a great asset to the IGS and I hope that this will continue with the upcoming elections.

This edition also includes a summary of the activities of the IGS Chapters. It is always heartening to see the great levels of activity that is being carried out by the national chapters. During last year, a total of 22 technical conferences, 9 workshops, 23 short course, 19 main lectures and 46 other activities were recorded, and this impressive numbers of technical activities were supported by a significant number, over 180, of board/committee meetings including in-person and conference calls, held by the chapter officers and members. It is the dedication of the IGS Chapter officers and members that makes this happen, and I'd like to thank all those involved.

The Technical Committee reports presented in this edition also highlight the success of these relatively new initiatives and I'm sure that these will continue to grow and become a well-recognised contribution to the IGS Mission.

Finally, as we approach the end of the year, I hope that the all IGS members are able to spend some quality time with their family and friends over the holiday period. As we say in Wales, Nadolig Llawen a Blwyddyn Newydd Dda i chi gyd!



D. Russell V. Jones  
IGS President

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## General Information for IGS Members

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### Call for Candidates for IGS Council: Term 2016 to 2020

In accordance with its bylaws the IGS will hold elections in 2016. IGS Members will have the opportunity to elect 8 Council Members. Each elected council member serves a four-year term, effective 29 September 2016.

The IGS encourages current members interested in furthering the IGS Mission to consider standing for one of the Council positions. **All Council Members are required to attend IGS Meetings during their tenure as a Council Member.** In a typical year, the IGS Council meets once for a two-day period preceding a geosynthetics event.

It is the responsibility of the IGS Council member to travel to these meetings and participate in the plenary and committee meetings. The IGS council attempts to host the meetings in equal distribution around the world based on the most suitable location in any given year.

The IGS Council Members whose term of office expires in 2016 are:

- |   |  |
|---|--|
| 1. <i>Dennes Bergado, Thailand (2<sup>nd</sup> term)</i>  | 6. <i>Victor Pimentel, Brazil (1<sup>st</sup> term)</i>  |
| 2. <i>Erol Güler, Turkey (1<sup>st</sup> term)</i>        | 7. <i>Boyd Ramsey, USA (1<sup>st</sup> term)</i>         |
| 3. <i>Warren Hornsey, Australia (1<sup>st</sup> term)</i> | 8. <i>Kent von Maubeuge (1<sup>st</sup> term)</i>        |
| 4. <i>Jiro Kuwano, Japan (2<sup>nd</sup> term)</i>        | 9. <i>Martin Ziegler, Germany – Coopted 2012</i>         |
| 5. <i>Nicola Moraci, Italy (1<sup>st</sup> term)</i>      | 10. <i>Edoarado Zannoni, South Africa – Invited 2012</i> |

The IGS bylaws stipulate that a Council Member may only be elected to two consecutive terms; hence, *Bergado*, and *Kuwano*, are not eligible for re-election. Each of the other incumbents is eligible to stand for re-election.

#### Nomination & Election Schedule

Under the bylaws of the IGS, only IGS Members are eligible for election to the Council. Candidates are required to travel to and attend the IGS Council meetings, which are typically held once per year. Meetings of the IGS Council are generally held in conjunction with international and regional IGS conferences.

**Announcement of Call for Nominees: November 2015**

The IGS will announce the call for candidates in this 3<sup>rd</sup> Issue of the IGS News, November 2015, as well as on the IGS website. All IGS Members are encouraged to consider running for council.

**Announcement of Nominees: March 2016**

The IGS will announce the eligible candidates in the 1st Issue of the **IGS News**, March 2016, as well as on the IGS website. All IGS Members are encouraged to review the candidates' biographies in preparation for the voting period.

**Voting: 16 May to 26 July 2016**

Voting instructions will be sent via email to each eligible Individual IGS Member and each designated representative from the IGS Corporate Membership. Each member may vote once and all voting will be done electronically. Please make sure you have submitted an accurate email contact to the IGS.

**Announcement of Successful Candidates: 26 July 2016**

IGS Members will be made aware of the successful candidates via email and website on 26 July 2016

**First Meeting of the New IGS Council:** at EuroGeo6 held in Istanbul, Turkey 25 - 28 September 2016

If you have any questions or would like any further information on the election process or the responsibilities involved with becoming an IGS Council Member, please contact the IGS Secretary, Elizabeth Peggs ([Elizabeth@geosynthetica.net](mailto:Elizabeth@geosynthetica.net)), SKYPE: elizabeth.peggs, TEL +1.561.768.9487.

*Reported by  
Elizabeth Peggs, IGS Secretary*

## Membership Initiative Task Force

Did you know the International Geosynthetics Society has a committee dedicated to attracting new members and retaining existing members? The Membership Initiatives Task Force evaluates pressing issues related to the characteristics and number of IGS members.

*Here is a brief update from Dr. Erol Güler, committee chair, highlighting some of the recent progress made by the task force.*

### Membership Goal

Q: What is the number one goal for the Membership Initiative Task Force?

A: The main goal of this Task Force (TF) is to understand the motivation of professionals and create a more attractive benefits package to increase our membership numbers.

### Membership Strategy

Q: What has the TF been doing to meet its goal?

A: The first initiative of the task force was to understand why some of our existing members are discontinuing their membership. We've asked all the IGS Chapters to help us understand why members decide not to renew their membership, and find ways to encourage them to renew.

A great way to increase our membership base is by marketing to other engineering groups. We observed a high percentage of members joining IGS already belong to one or more societies, such as International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE). Although the percentages vary greatly from country to country, there is great potential for attracting new members by marketing to other international societies.

### Membership Vision

Q: If you could tell members one thing they should know about the TF, what would it be?

A: The Membership Task Force is willing to hear proposals from any of our members that can be discussed and turned into action by the Council. We already offer FREE membership to students enrolled in an accredited university or engineering school. Coming up with new ideas to market the society to students and recent graduates is just one small way we can increase our membership numbers in the future.

### Get Involved

Q: Do you have any upcoming events or ways for members to get involved in the initiative?

A: This question reminds me that a network for this task is required. Going forward, we would like to ask each chapter to nominate a person interested in being in charge of membership initiative activities for their service area.

### Promoting IGS

IGS members include designers, manufacturers, and users of geotextiles, geomembranes, and related products.

The growth of the IGS will be successful, in part, due to the continued support and enthusiasm of current society members.

We encourage our members to talk about and recommend the society to their friends, students, and colleagues. Our individual members, corporate members, and benefactors are key to the continued growth and success of the IGS.

**More Information**

If you are interested in learning more about the Membership Initiative Task Force, contact the Chair, Dr. Erol Güler at [eguler@boun.edu.tr](mailto:eguler@boun.edu.tr)

## Summary of 2014 IGS Chapter Activities

The IGS distributes a standard reporting form to all IGS chapters. The chapter reports allow the IGS to understand the activities being carried out at the local, regional, and international level. The results have been compiled and are presented here to show the activities carried out by our chapters for the year 2014. Of the chapters asked to submit a report, 78% of the chapters (33 in total) successfully submitted the information by 6 June, 2015.

Figure 1 shows the total number of technical activities conducted in 2014 by chapters either as a lead organization or as a collaborating organization. The numbers for each activity are not that different from those of the year 2013 with 22 technical conferences, 9 workshops, 23 short course, 19 main lectures, and 46 other activities. The impressive numbers of technical activities were supported by a significant number, over 180, of board/committee meetings including in-person and conference calls, held by the chapter officers and members.

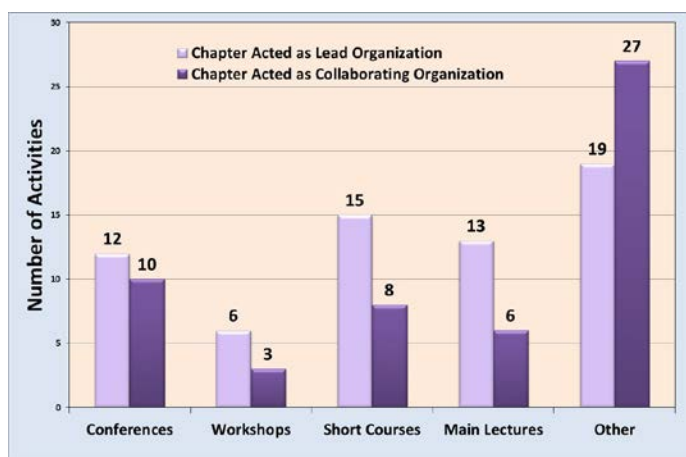


Figure 1: Number of activities conducted in 2014 by IGS Chapters.

In order to make a quantitative assessment for each chapter’s technical activities, IGS has developed an Activity Index, which is defined as a weighted average of the self-reported technical activities. It should be noted that the

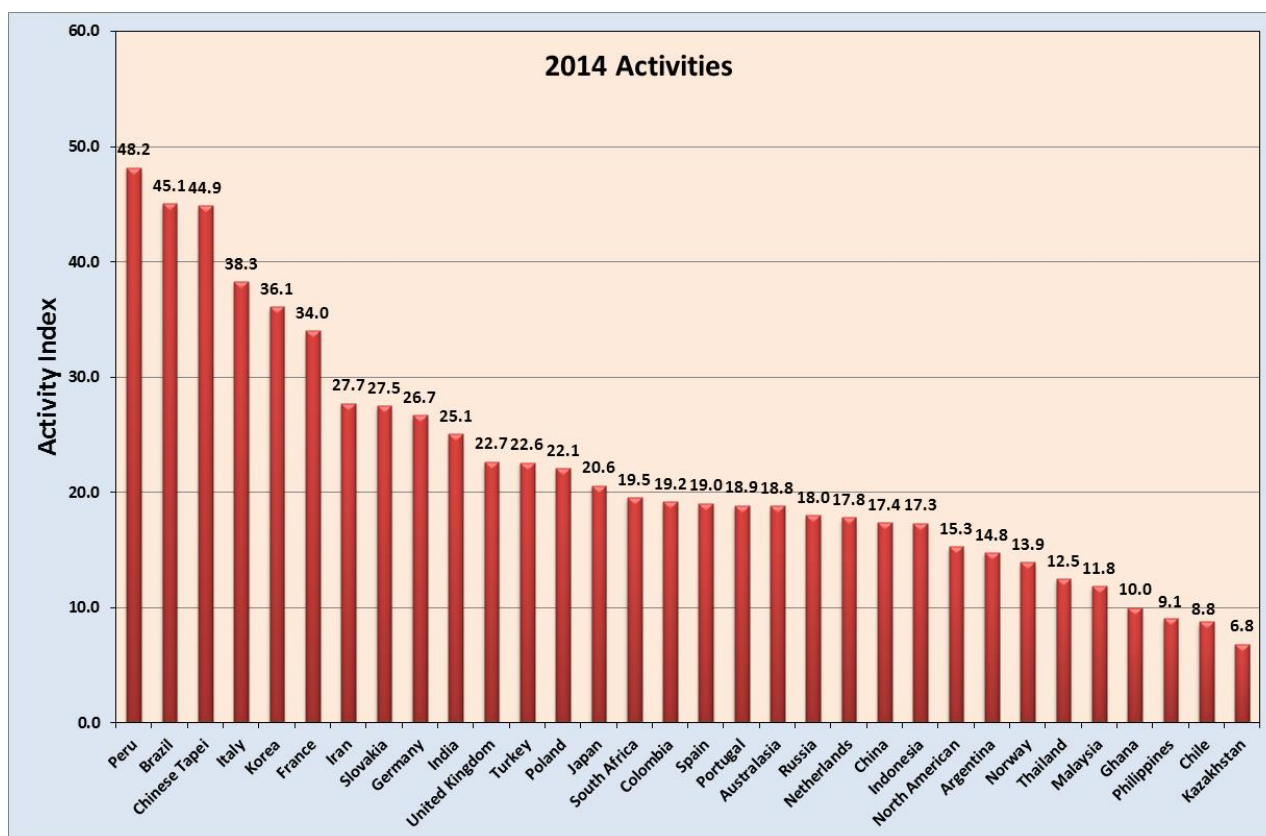


Figure 2: Activity Index for 2014 based on submitted chapter reports.

weighting system considers the impact of each activity by assigning more importance on, for example, conferences and events organized by the chapters. The purpose of the assessment is not only to recognize chapters with a strong activity schedule, but also to identify chapters in need of more support from IGS. Figure 2 shows Activity Index values based on the numbers reported by the chapters. Although these values may include some degree of subjectivity, this data helps us discover chapters in need of support when coordinating future technical activities.

As shown in Figure 3, there are 22 conferences, 20 workshops, 31 short courses, and 29 main lectures scheduled for 2015. These numbers are slightly less than those for 2014, but are still considered significant.

As reported above, the chapters of IGS have shown healthy numbers in terms of technical activities, which is of paramount importance for a learned scientific and engineering society. The slightly smaller number of planned events reported for 2015, compared to 2014, might be attributed to non-reporting chapters. Still the number of events (120) planned for 2015 is quite high but in next year's chapter reports I hope to see more activities taking place, than were originally planned.

*Reported by  
Chungsik Yoo, IGS Vice President*

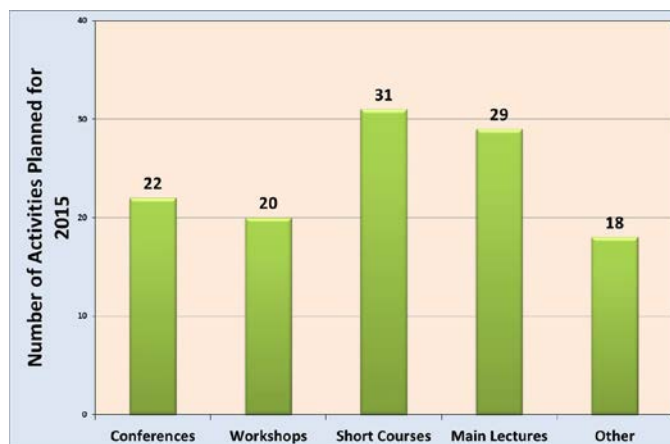


Figure 3: Planned activities for 2015 by IGS Chapters

## IGS Students Awards: 2013 to 2016

The success of the IGS Student Award program continues, now in its seventh award period from 2013 to 2016.

The Awards are presented in the years 2016-2017 and all successful candidates are invited to attend one of the IGS regional conferences in 2016, i.e., GeoAmericas 2016, EuroGeo6, Geosynthetics Asia2016, or GeoAfrica in 2017.

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

The IGS student award consists of USD \$1,000, used to cover the travel expenses of each winner, allowing them to attend their regional conference.

The student award is granted to a single student per IGS Chapter. The selected student should have been an undergraduate, M.Sc. or Ph.D. student during the period 2013-2016. Currently five chapters from the Americas have nominated students for the GeoAmericas conference, seven European chapters made nominations for EuroGeo 6 and seven chapters from the Asia Pacific region nominated students for Geosynthetics Asia2016.

**The call for abstracts has been extended and European chapters, along with chapters from the Asia Pacific region, who have not yet nominated students are welcome to do so by 29 February 2016. This extension was granted to give chapters more time to nominate students for the award. In order to be a success, the Student Awards committee encourages every IGS chapter to get involved with the program and nominate at least one student member from their chapter.**

### IGS Chapters Nominate Student Members

The IGS encourages the involvement of the students during the selection process. To make sure student representatives from each chapter participate in the program to the fullest extent possible, the chapters must carry out the following tasks:

- Chapters must organize a contest or conduct a nomination process to select the student candidate to represent the chapter. The process should include submission by the student candidates of abstracts and preparation of a technical paper for one of the IGS regional conferences.
- While the IGS chapters are free to define the characteristics of the nomination/competition process, this process should be documented and provided to the IGS Secretariat
- Chapters must notify the IGS of the name of the student selected. Communication will be made by the IGS to all chapters regarding the deadlines for those two actions.
- The winning student should provide the IGS Secretariat's office [igssec@geosyntheticssociety.org](mailto:igssec@geosyntheticssociety.org), along with the conference organizers, a copy of the abstract and paper submitted.

The IGS Awards task force is available to help with the preparation of the nomination process. The IGS will transfer USD \$1,000 to the student upon receipt of the draft paper. Draft papers are due by 30 March 2016 for EuroGeo6

and by 31 May 2016 for Geosynthetics Asia2016. IGS Student Award winners will participate in dedicated sessions at their regional conference, where they will present their paper.

IGS Student Awards recipients are required to send a written report to the IGS on the regional conference they attend, which includes information on the IGS-related conference activities. The Student Awards winner should also submit a copy of this report to their own IGS chapter.

In recognition of the IGS Student Award winners, and to maximize benefits to the students, the organizers of the regional conferences are required to hold a dedicated session to present the student papers. They must also provide the students with a copy of the proceedings and admission to the conference sessions and exhibition.

In addition, a comprehensive student program will be organized at each regional conference to maximize the students' exposure to geosynthetics and the IGS. The student award program includes a recognition ceremony during the conference for the student as well as their participation in corporate receptions, social functions, and activities specific to each conference.

Please feel free to contact the IGS Secretary, Elizabeth Peggs ([elizabeth@geoindex.com](mailto:elizabeth@geoindex.com)) or Nathalie Touze-Foltz ([nathalie.touze@irstea.fr](mailto:nathalie.touze@irstea.fr)) with questions about the IGS Student Award Program.

*Reported by*

*Nathalie Touze-Foltz (Chair of the Awards Task Force)*

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## Awarded Work of IGS Award Winners 2014

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It is good tradition and part of the IGS Awards procedure to have summaries of the awarded work of the winners published in IGS News.

### IGS Award

In 2014 the IGS Award was given to Jie Han, the University of Kansas, Lawrence, Kansas, USA. for his research work on

### Development of Design Procedures for Geosynthetic-reinforced Unpaved and Paved Roads Jie Han

#### Introduction

Geosynthetics have been used for roadway stabilization since 1950s. Research on the use of geosynthetics for roads has progressed from geotextile to geogrid to geocell. Back in 1970s to 1980s, several design methods were proposed for the use of geotextiles to reinforce unpaved roads. The Giroud-Noiray method (Giroud and Noiray, 1981) was one of the best-recognized methods by the geosynthetic industry to design geotextile-reinforced unpaved roads. In 1990s, more research has been focused on the use of geosynthetics to reinforce paved roads (e.g. Webster, 1992; Perkins, 1999). Giroud and Han (2004) developed a design method for geogrid-reinforced unpaved roads, which has been widely adopted by the geosynthetic industry since the publication of their two companion papers. Even though the geocell technology was developed back in 1970s, it has not been well researched for roadway applications. In the past few years, new geosynthetic products have been introduced to the market, such as geogrid with triangular apertures, which has greatly affected the geosynthetic industry. In addition, the concept of sustainability has been well recognized by the civil engineering practice. Use of recycled materials has become an important part of sustainability practice. In the past few years, my research group has been involved in several research activities addressing the emerging needs for geosynthetic-reinforced unpaved and paved roads, which are summarized below.



Figure 1. Large-scale geotechnical box for cyclic plate loading tests

## Major Research Activities

### Geogrid

Dong et al. (2011) conducted numerical analyses of geogrids with rectangular and triangular apertures and found that the geogrid with triangular apertures could provide more uniform resistance to loads at different loading directions than the geogrid with rectangular apertures. Qian et al. (2013) and Sun et al. (2015) conducted a series of cyclic plate loading tests on triangular aperture geogrid-reinforced base courses over weak subgrade in a large-scale geotechnical testing box as shown in Figure 1. Qian et al. (2013) found that triangular aperture geogrids significantly reduced the maximum vertical stress on the subgrade and resulted in a more uniform stress distribution as compared with the unreinforced base. Sun et al. (2015) found that the lateral restraint of the triangular aperture geogrid changed the distribution of the radial stress and limited the radial stress into a smaller area close to the center under the loading plate.

### Geocell

#### 1. Experimental studies

Extensive laboratory, theoretical, and field studies have been conducted since 2006 to advance the knowledge and applications of geocells used for unpaved and paved roads. Pokharel et al. (2010) investigated the influence factors for the behavior of single geocell under static loading. Han et al. (2011) proposed the use of geocell with recycled asphalt pavement (RAP) material as a base course to be a sustainable solution for roadway construction.

Accelerated pavement tests demonstrated that RAP could be used to replace well-graded aggregate as a base course material (Han et al., 2011). Thakur et al. (2013) found that geocell could minimize creep deformations of the RAP material as a base course as shown in Figure 2. Acharya et al. (2012) conducted cyclic plate loading tests on asphalt pavements with RAP base courses and found that a 150 mm thick geocell-reinforced RAP base course was equivalent to 300 mm thick unreinforced RAP base course and the traffic benefit ratio for geocell-reinforced RAP base courses was greater than 10.

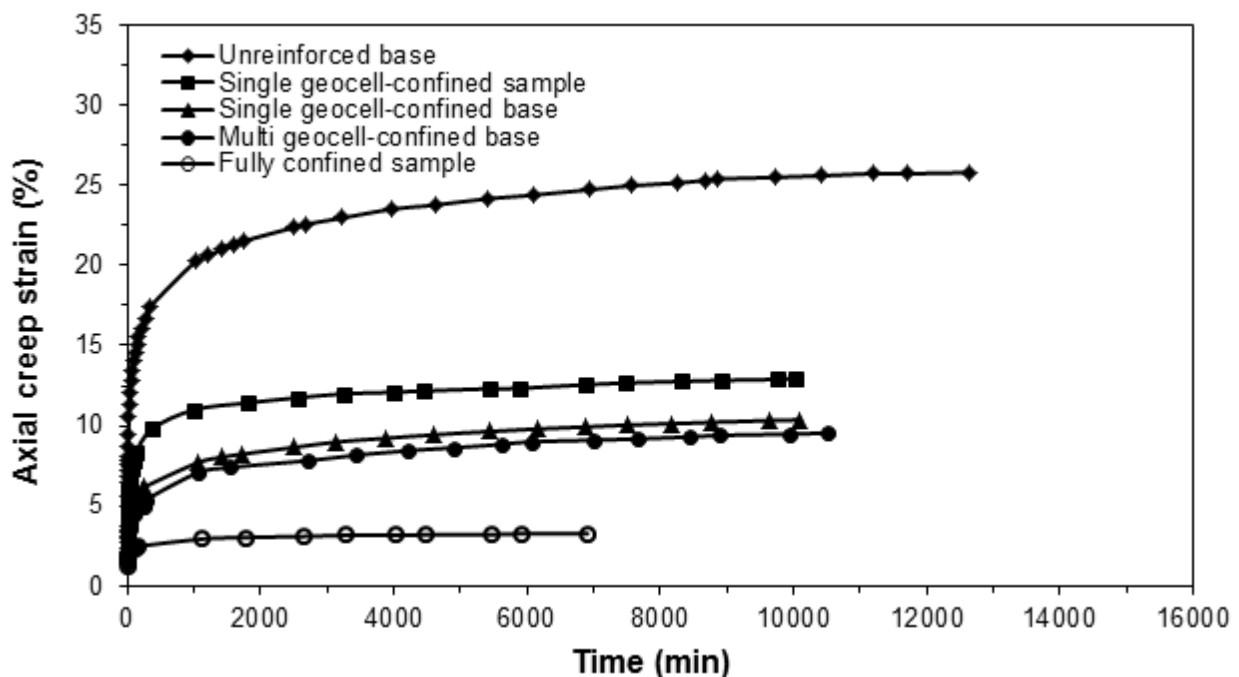


Figure 2. Effect of geocell confinement on creep deformations of recycled asphalt pavement (RAP) bases (Thakur et al., 2013).

#### 2. Analytical studies

Based on the experimental data, the Giroud-Han method was calibrated for geocell-reinforced unpaved roads over weak subgrade (Pokharel, 2010). In this calibration, a modulus improvement factor for granular bases was introduced to consider the benefit of geocell confinement. This design method was developed for a specific geocell product to determine geocell height and base course thickness.

Yang and Han (2013) developed analytical solutions for geogrid and geocell-reinforced unbounded granular materials. These solutions considered the lateral restraint mechanism by horizontal shear resistance for geogrid and

horizontal confining stress for geocell. The analytical solutions showed that lateral restraint by a geosynthetic had limited effect on the resilient modulus of the sample but significantly reduced the permanent deformation of the sample.

Yang et al. (2013) proposed a method to quantify compaction-induced residual stresses in geocell-confined granular bases and used these residual stresses in the mechanistic-empirical (M-E) pavement design method considering the benefit of geocell confinement. Yang et al. (2013) also derived a stress-dependent three-dimensional resilient modulus formula. The M-E pavement design method was adopted with the compaction-induced residual stresses and the stress-dependent three-dimensional resilient modulus formula to predict the performance of a geocell-reinforced road as shown in Figure 3. Clearly,

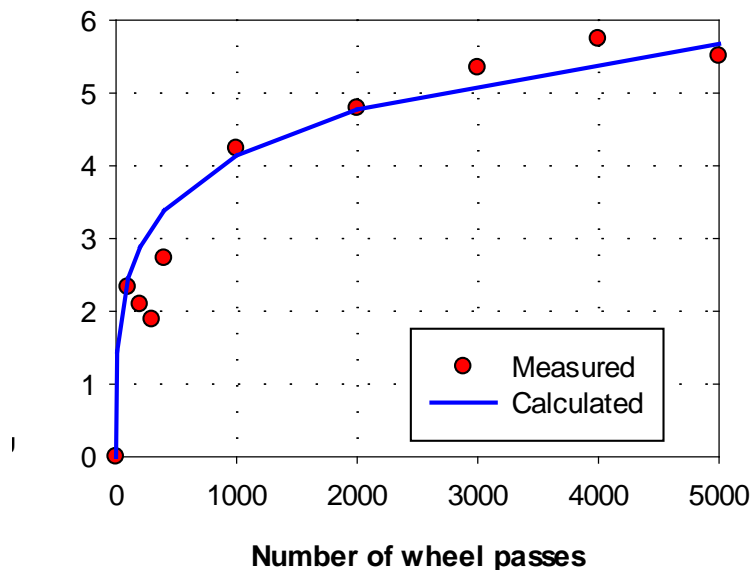


Figure 3. Measured and calculated permanent deformation with number of wheel passes for a geocell-reinforced road

the M-E method well predicted the permanent deformation of the road with the number of wheel passes as compared with the measured data.

### 3. Numerical studies

Han et al. (2008) conducted a numerical analysis of a single geocell-reinforced base under static loading. The numerical analysis showed that the maximum displacement and the maximum tension within the geocell existed close to the bottom of the cell when the height of the geocell was small. Yang et al. (2013) modeled a granular base course reinforced by multiple cells over weak subgrade under a load as shown in Figure 4. In this analysis, the distributions of stresses, deformations, and tensions in geocell walls were obtained.

### Summary

Geogrid and geocell have been increasingly used to reinforce unpaved and paved roads. Triangular aperture geogrid has been researched and demonstrated its advantages in roadway applications since its introduction to the market. More research on geocell used for roadway applications has been conducted in the past few years. Experimental, analytical, and numerical studies have helped researchers understand the behavior and benefits of geosynthetics in improving performance of unpaved and paved roads and develop design methods for their applications. The use of geocell with recycled materials provides a sustainable solution for roadway construction.

The major research activities described above were sponsored by governmental agencies, research centers, and the geosynthetic industry. A large body of work which has been analytical, numerical, and experimental in-

### Acknowledgements

The major research activities described above were sponsored by governmental agencies, research centers, and the geosynthetic industry. A large body of work which has been analytical, numerical, and experimental in-

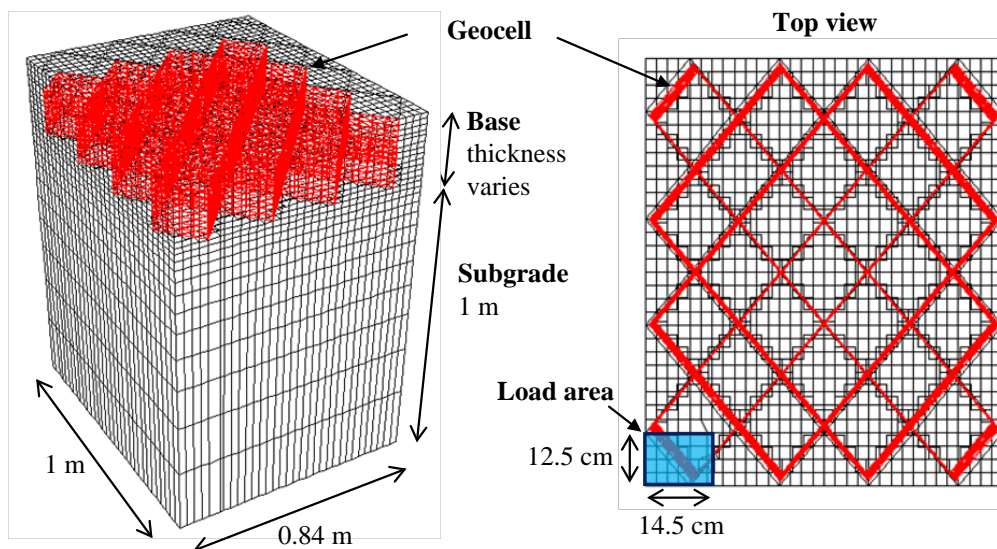


Figure 4. Numerical model for the geocell-reinforced unpaved road



cluding field verifications was accomplished with collaborators and former students of mine working collaboratively. The IGS award recognizing this work is greatly appreciated.

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## Technical Committees IGS-TC

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### IGS TC Reinforcement Workshop: Research on Geosynthetic-Soil-Interaction and Progress of Design Models for Geosynthetic Reinforced Soil Edinburgh International Conference Centre, 13 September 2015

The International Geosynthetics Society has established technical committees (IGS TC) for the main technical topics related to the use of geosynthetics. These committees provide a platform for the exchange and improvement of knowledge and for increasing and passing along the experience of the field's experts. A first workshop of the Technical Committee on Soil Reinforcement (TC-R) was held just before the XVI European Conference on Soil Mechanics and Geotechnical Engineering (XVI ECSMGE) in September 2015 in Edinburgh, UK and was attended by about 80 interested persons.

The TC-R workshop focused on the interface of geosynthetics and soil mechanics and the state of regulations for geosynthetic-reinforced slopes and retaining structures. Excellent presentations and lively discussions made the event a great success.

As it was a workshop the lectures are not published as full papers but the presentations are available for the participants by download. They will be available on the new webpage of IGS in the members only section in due time. Further workshops are planned on a regular basis.

Reported by  
Gerhard Bräu, Chair of IGS TC-R

## IGS TC-B Activities Report

The International Geosynthetics Society Technical Committee on Barrier Systems (IGS TC B) has been working to promote and distribute information on the newest developments in geosynthetics as a barrier.

Following the Berlin ICG (International Conference on Geosynthetics) in 2014 it was determined that the regulatory and governmental agencies were likely underrepresented at Berlin and the information and developments presented there were perhaps not reaching those regulators and other individual who could benefit by access to that information. In an effort to address this, copies of the proceedings of Berlin are being made available to regulators and governmental officials on a no charge basis. Chapters were welcomed to contact IGS to receive free copies for regulators in their countries; however the response was unfortunately low, so that the TC-B decided to distribute remaining USB sticks. For those interested please now contact the TC-B chair, vice-chairs or secretary for a complimentary copy.

The TC-B has also been active in promoting sessions in conferences and soliciting and collecting papers on barrier topics of interest. This includes sessions (2015) as listed below:

- Geosynthetics 2015 Portland, Oregon, Geosynthetics 2015 event held on 15 - 18 February 2015
- CRAMSG 16<sup>th</sup> 2015 event held in Tunisia, 27 - 30 April 2015 <http://www.cramsg2015.org/?lang=en>
- 14 September 2015 in Edinburgh, Scotland during the ISSMGE European Conference. PDF versions of the presentations will be added to the members-only section of the TC-B IGS website shortly). The topics of the sessions were:

- Introduction and framework of IGS TCB
- Barriers in Coal Ash Applications in North America
- Durability of geomembranes in hydraulic applications
- Fukushima recovery (Storage of nuclide contaminated soil and MSW disposal)
- Barrier Systems for Noise Barriers with contaminated soils
- Introduction of ISO Geosynthetic Guide on Barriers – Panel Discussion. (ISO/TC 221 has formed a working group WG 6 on “Design for geosynthetics”. The project group 9 is dealing with barrier systems and is under the lead of Kent von Maubeuge and Pete Atchison). Participants were asked to send comments. The comments received were introduced into the latest version of the draft and will be presented at the upcoming ISO TC221 meeting in November.

- At the 15<sup>th</sup> Asian Regional Conference of Soil Mechanics and Geotechnical Engineering two TC B sessions will be held (ISSMGE-15 ARC) on 10 November 2015 in Fukuoka, Japan  
A members' meeting will be held on 10 November 2015 from 12:15 to 13:15, Room 404, 4F, Fukuoka International Congress Center (15ARC Venue), Fukuoka, Japan

Items to be discussed: editing Wikipedia, activities of coal ash group, activities of mining group, contribution to upcoming conferences, etc.

- At the ASCE GeoCongress to be held in Chicago, Illinois, 14 - 18 August, 2016 and at the three regional IGS upcoming conferences in 2016, namely GeoAmericas 2016 (Miami, 10 - 13 April 2016), EuroGeo 6 (Istanbul,

Leaflet on Barrier Systems prepared by IGS TCB

25 - 28 September 2016), GeoAsia 2016 (New Delhi, 8 - 11 November 2016) the TCB will be present and also chairing sessions.

The TC-B finalized the text for a leaflet on Barrier systems. The final version accomplished by IGS is now online available or on request, and has been translated into French, Mandarin and Spanish. Please contact IGS for copies to be distributed within chapters or at conferences.

The TC-B has recently decided to create two new sub-groups. One sub-group on barrier systems in mining applications will be created and the other will be on barrier systems for coal ash disposal. Please contact the board of the TC-B if you are interested to participate actively in these groups.

**For further information please contact:**

Kent von Maubeuge – TC-B chairman ([kvmaubeuge@naue.com](mailto:kvmaubeuge@naue.com))

Nathalie Touze-Foltz – TC-B vice-chair ([nathalie.touze@irstea.fr](mailto:nathalie.touze@irstea.fr))

Boyd Ramsey – TC-B vice-chair ([bramsey@gseworld.com](mailto:bramsey@gseworld.com))

Takeshi Katsumi – TC-B secretary ([katsumi.takeshi.6v@kyoto-u.ac.jp](mailto:katsumi.takeshi.6v@kyoto-u.ac.jp))

*Reported by*

*Kent von Maubeuge – Chair of TC-B*

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## Announcements of Regional Conferences of IGS

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### GeoAmericas 2016

### 3<sup>rd</sup> Pan-American Congress on Geosynthetics

### Miami Beach, USA, 10 – 13 April 2016



The 3<sup>rd</sup> Pan-American conference will continue the GeoAmericas tradition of excellence, providing a forum for engineers, practitioners and academe from the Americas to explore current and future potential applications for geosynthetics. It also offers an active marketplace for the promotion of geosynthetic products and technologies to users throughout the Americas.

GeoAmericas 2016, the 3<sup>rd</sup> Pan-American Conference on Geosynthetics, will be held at the Lowes Hotel on South Beach in Miami, Florida. The 3<sup>rd</sup> Pan-American conference will continue the GeoAmericas tradition of excellence, providing a forum for engineers, practitioners and academe from the Americas to explore current and future potential applications for geosynthetics. It also offers an active marketplace for the promotion of geosynthetic products and technologies to users throughout the Americas.

GeoAmericas 2016 is developing a program to advance the knowledge and understanding of geosynthetics at every level, from novice to expert. All will be provided with an opportunity to gain and share knowledge. Considering the diverse range of interests and applications, the conference has chosen not to isolate a theme; rather, the event will facilitate learning and dialogue on the key issues faced by geosynthetic communities throughout the Pan-American region.

Geoamericas 2016 will be hosted by NAGS managed by Minerva-Technology and held under the auspices of IGS.

**Conference Registration is now open!**

The direct link to registration is: <https://www.eiseverywhere.com/ereg/index.php?eventid=122547&>

#### Technical Program

56 Hours of Short Course Programming

- Offerings in English and Spanish
- Landfills, Low Volume Roads, Standards & Specifications, Heap Leach Design, Designing GRS Bridge Abutments, More

Fifty 90-Minute Technical Sessions

- Panel Discussions
- Training Lectures (English & Spanish)
- Technical Sessions from throughout the Americas and ranging from introductory to theoretical & research

Four 90-Minute Keynote Lectures

95 Exhibition Spaces

Additional meetings:

- FedIGS
- ECTC
- IAGI
- FGI
- IECA IBERO-American Chapter
- GMA
- GSI
- IGS Council

The main topics planned are:

- Mining
- Water and Wastewater
- Roads, Ports, and Railways
- Slope Stability & Reinforced Structures
- Sustainability
- Tunnels
- Durability of Geosynthetics
- Waste Management
- Testing
- Quality Control & Quality Assurance(Construction and Manufacturing)

### Special Session Topics

GeoAmericas 2016 will host some special sessions. Abstracts are welcomed for special sessions consideration. They include:

- Geosynthetic Stabilized Earth Walls with Clay as Reinforced Soil: Opportunities, Challenges and Experience
- Finite Element Seepage Analysis Involving Geosynthetics
- Limited Life Basal Reinforcement for an Embankment Built on Saturated Soft Clay
- Installation Aspects of Soil Reinforcement Applications
- Mechanically Stabilized Earth Walls and Embankments Adjacent to Existing Structures - Design and Construction
- Atypical Obstacles in Reinforced Earth Design
- Lessons Learned From Failures
- Geomembrane Stress Cracking Resistance Using Various Polymers
- Geosynthetics in Energy Applications
- Geomembrane Welding: What Have We Learned Over the Years
- Geosynthetic Assets: Maximizing Your Return-on Investment
- To Use or Not: Geosynthetics in Permanent Mining Structures, as Waste Dumps and Tailings Dams

### Important Dates

- **15 Dec 2015:** Final papers due
- **15 Jan 2016:** Authors must be registered, papers to proceedings

### For more information please contact

GeoAmericas 2016, Phone: +1.561.768.9487

Email: [BSlaybaugh@MinervaTRI.com](mailto:BSlaybaugh@MinervaTRI.com)

For full conference information and registration please visit the conference website: [GeoAmericas2016.org](http://GeoAmericas2016.org)

## GeoAmericas 2016 Geosynthetics Prediction Competition

### Overview:

The younger members group would like to invite all younger members to form teams to compete in a Geosynthetics Prediction competition focused on predicting the face displacement of a MSE wall constructed with poorly draining backfill material. The objective of the Geosynthetics Prediction competition is to develop an accurate prediction of the behavior of a geotechnical system involving geosynthetics given detailed information regarding subsurface, boundary, and initial conditions, as well as the geotechnical/structural/hydraulic loading. The Geosynthetics Prediction competition may involve using available geotechnical software, empirical correlations, or developing a simple but accurate computer code for making this prediction.

### Competition Rules:

**1. Eligibility:** A Geosynthetics Prediction team will consist of one or two younger members. There is no limit on the number of teams from a given institution or company.

**2. Submittal:** Each Geosynthetics Prediction team will submit a Geosynthetics Prediction Report that will, at a minimum, contain the following information.

- The Report shall be no more than three (3) pages long (not including any references and cover page). One inch margins, single spacing, and 12 point Times New Roman font are required.
- The Report shall contain the methods (assumptions, correlations, analytical procedures, numerical proce-

dures, computer software, etc.) that the team employed to develop their Geosynthetics Prediction. All methods must be properly referenced.

- The Report must include a plot of the face displacement as a function of height.
- The cover page (in addition to the 3 pages for the report) must include the name of the institution or company; names of the team members, email addresses, as well as the name and contact information of any supervisor or faculty advisor that assisted the team in developing their code and prediction.
- A reference list must follow the report.
- Submit the Report by 6pm Central Standard Time on March 4, 2016 to the following email address: [GeoAmericas2016youngmembers@gmail.com](mailto:GeoAmericas2016youngmembers@gmail.com). Sender will receive confirmation of receipt by email. Late submissions may not be accepted.

**3. Judging:** The submitted Geosynthetics Prediction reports will be judged and ranked by a panel of geotechnical engineers. The judging will be based on the criteria listed below.

- Format, length, grammar, English usage 15%
- Clarity of technical presentation 15%
- Logical and concise use of appropriate geotechnical methods and principles in developing Geosynthetics Prediction 25%
- Accuracy of the Geosynthetics Prediction 45%

**4. Announcement:** The top three Reports will be ranked by the panel and will be presented with awards during the IGS awards ceremony at GeoAmericas 2016.

**5. Questions:** Send any questions to [GeoAmericas2016youngmembers@gmail.com](mailto:GeoAmericas2016youngmembers@gmail.com).

### Problem Description and Available Data:

A geotextile-reinforced prototype mechanically-stabilized earth (MSE) wall was constructed using wrap-around

facing with a width of 4m, a height of 4m and a length of 4m. The wall was built with 10 geotextile layers evenly spaced at 0.40m vertically. The reinforcement length was equal to 3.0m. The MSE wall was constructed atop a firm foundation that can be assumed to be rigid with first geotextile layer placed at the ground level. In the design, the reduction factors against creep, durability and installation damage were taken as 1.0. The wrap-around system was assembled using metallic supports and wood boards, for a final angle of  $78^\circ$  from horizontal, resulting in a face slope of 5V:1H. The geotextile material used in the wall was a short-fiber needle-punched polyester non-woven geotextile with the following characteristics:

- Mass per unit area: 204.40 g/m<sup>2</sup>
- Thickness: 1.26 mm
- Ultimate tensile load: 8.5 kN/m
- Ultimate tensile elongation: 90 %
- Elasticity modulus: 13 kN/m

Backfill soil consisted of a fine to medium well-graded sand which was compacted using a vibratory plate hammer. The grain size distribution of backfill soil is presented in Figure 1. The maximum and minimum void ratios,  $e_{max}$  and  $e_{min}$  were

0.70 and 0.46. The backfill soil was compacted to a target relative density of 80% which corresponds to a void ratio of 0.51 and dry unit weight of 17.7 kN/m<sup>3</sup>. The backfill was placed in the field at a gravimetric water content of 5.0%. The soil has a drained friction angle of  $33^\circ$ .

### Goal:

Estimate the deflections of the wall face as a function of wall height due to the wall's self-weight immediately after construction.

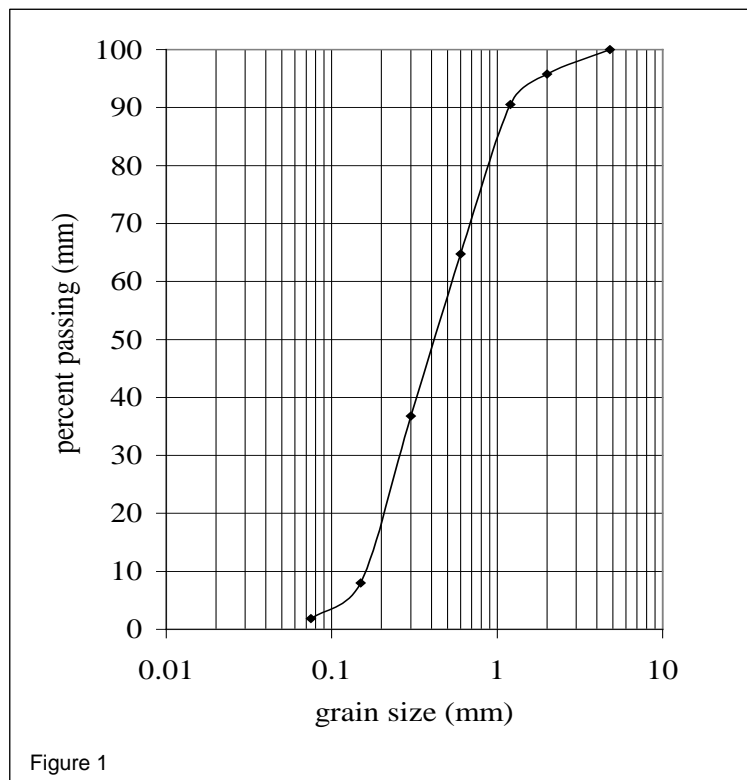


Figure 1

# EuroGeo6

## 6<sup>th</sup> European Regional Conference on Geosynthetics

### Istanbul, Turkey, 25 – 28 September 2016



The Turkish Chapter of IGS joyfully announces that the 6<sup>th</sup> EuroGeo Conference will be held on 25 - 28 September 2016, under the auspices of the IGS, in the unique city of Istanbul. After Maastricht (1996), Bologna (2000), Munich (2004), Edinburgh (2008) and Valencia (2012), the profession will convene in Istanbul.

Congress Venue will be the Istanbul Convention Center, located in a central region, which is called by the name of Congress Valley in Harbiye. Istanbul is situated in a location that international airlines may easily reach - Atatürk Airport (recommended) on the European Side and Sabiha Gökçen Airport on the Anatolian Side. Local transport to ICC is easy with mass transportation vehicles such as metro, tram, bus and metrobus.

Naturally, the main excitement of the Conference will be in its technical contributions. Undoubtedly, the time period between now and 2016 will bring new materials and reforms to the geosynthetics industry; all of these developments will be well reflected in the scientific program of the EuroGeo6 Conference.

We are looking forward to seeing academicians, manufacturers, practitioners and designers in the geosynthetics field at EuroGeo6. We want to extend a special invitation to engineers in general contracting firms, who will widely benefit from the Conference by learning more about the extraordinary financial and technical advantages geosynthetics provide. In an environment where the number of "Design-Build" and "Build-Operate-Transfer" types of contracts all around the world is multiplying, passing on such information to general contractors becomes of great importance.

As the months leading up to the Conference unfold, you will be provided with more information. We can guarantee that the EuroGeo6 Conference in 2016 will be an opportunity for all who attend to experience a valuable technical program, a magnificent city, and warm Turkish hospitality.

#### Important dates

The online EuroGeo6 Abstract Submission System is available with the following link: [www.eurogeo6.org](http://www.eurogeo6.org)

**Extended to 20 Dec. 2015:** Deadline for submission of abstracts

**01 Nov. 2015:** Early Bird registration opens

**31 March 2016:** Deadline for paper submission

**15 June 2016:** Notification of paper acceptance, review comments provided

**15 July 2016:** Early registration closes

Deadline for revised paper submission

Deadline for registration of at least one of the authors for paper to be published

**25 Sep. 2016:** Congress opens

#### Proposed Sessions for EuroGeo6

- Agricultural Applications
- Coastal Protection
- Direct and Life-Cycle Cost Savings
- Drainage and Filtration
- Durability
- Embankments on Soft Soils
- Environmental Benefits
- Geosynthetics as Formwork
- Hydraulic Applications
- Innovations and New Developments
- Landfills
- Lightweight Construction
- Mining
- Monitoring
- Pavements
- Physical and Numerical Models
- Polymeric and Clay Geosynthetic Barriers
- Properties and Testing
- Quality Control and Quality Assurance
- Reinforced Walls and Slopes
- Roads, Railroads and Other Transportation Applications
- Seismic Applications
- Sustainability
- Unpaved Roads
- Wastewater and Fresh Water Storage

#### For more information

Please consult the conference website, <http://www.eurogeo6.org/en/> for the latest announcements.

Contact [info@eurogeo6.org](mailto:info@eurogeo6.org) with questions.

# GeoAsia6

## 6<sup>th</sup> Asian Regional Conference on Geosynthetics

New Delhi, India, 8 – 11 November 2016



India is a fast developing economy requiring large scale infrastructures. Liberalization of the economy has further facilitated planning and execution of many large scale infrastructures, including roads, railways, power and water resources, which will further promote applications of Geosynthetics for infrastructural works. Spending in XII Plan (2012 - 17) in infrastructure is estimated to be USD 01 Trillion, which is expected to grow for infrastructure activities for the XIII Plan (2017 - 2022).

6<sup>th</sup> Asian Regional Conference would be a step towards providing opportunity for exchange of experiences, practices and collaborations to facilitate flow of appropriate technology to enable successful implementation of infrastructure projects. It will be organized by the Indian IGS Chapter under the auspices of the IGS.

### Main Theme of the Conference

Geosynthetics for Infrastructure Development

### Sub-Themes

- Roads and Railways
- Hydraulic Applications
- Ground Improvement
- Reinforced Application
- Coastal and River Bank Erosion
- Environmental Applications
- Underground Structures (Tunnels, Excavations, etc.)
- Natural Fibre Geotextiles
- Geosynthetic Testing

### Call for papers

All concerned wishing to present paper(s) on sub-themes/allied sub-themes of the Conference are requested to send the synopsis(es) of their proposed paper(s) in English to the Conference Secretariat.

Only original contributions that have not been published, or presented at other events, need to be submitted.

### Important Dates

Acceptance of abstracts	<b>31 January 2016</b>
Submission of revised papers after review	<b>15 July 2016</b>

### Workshops/Short Courses

IGS Training Courses and Workshops on the relevant issues of interest are planned for the days of the meetings of IGS Council and IGS Committees Meetings, preceding the conference.

### Keynote and Theme Lectures

Internationally renowned experts will be invited to deliver keynote and theme lectures.

### Exhibition

It is proposed to organize an Exhibition, concurrent to the Technical Sessions. Corporate Members of IGS will be given preference and allowed discount of 25% on the normal tariff.

### Technical Visits

They will be planned to major Geosynthetics/Geotechnical Projects

**For full conference information and to submit your abstract please visit the conference website :**

[www.geosyntheticsasia.in](http://www.geosyntheticsasia.in)

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# Announcements of Conferences under the Auspices of IGS

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## XXIV Torino Geotechnical Conferences

Torino, 25 - 26 February 2016

The conference will be devoted to DESIGN, CONSTRUCTION & CONTROLS OF SOIL IMPROVEMENT SYSTEMS and it will be held under the auspices of ISSMGE and IGS.

Geotechnical and Geosynthetics engineering today plays very important roles in the fields of both civil and environmental engineering. Within these scenarios, the core business, in the broadest sense of the term, consists of the modern soil improvement methods and technologies.

Under the pressure of recent requirements for civil constructions and of environmental protection and safeguard issues, researchers have developed new soil improvement techniques and pursued the advancements of existing ones. These techniques, which nowadays are made available to the geotechnical community, will be described and analyzed within the XXIV edition of the Torino Geotechnical Conferences (XXIV CGT 2016).

In spite of the advancements in terms of instrument and equipment for direct and indirect control and for the verification of final performances of the soil improvement methods, some of these operations still remain problematic, referring in particular to both the methods that modify the state parameters of soil (e.g. density and confining stress) and those targeted to modify the structure and the composition of the soil phases (e.g. grouting and freezing).

Also seismic requirement, in terms of liquefaction potential reduction, and the regulatory framework, established by the Eurocodes application to the design procedure for soil improvement methods, will be analyzed and discussed within this conference that has, among its main aims, that of considering in particular the European reality to be compared with those of the rest of the world. The lectures and discussion topics are the following:

### **Introductory Lectures**

Modelling the Soil Mechanical Behavior Applied to Soil Improvement Techniques (E. Alonso)

Mechanical Behavior of "Non Textbook Materials" and Related Implication In Terms of Improvement Techniques and Controls (P. Van Impe)

### **Improvement of State Parameters**

Vibro-flotation and Vibro-substitution (W. Sondermann)

Vibratory Surface Compaction by Roller (D. Adam)

Heavy Tamping (P. Liausu)

Compaction and Compensation Grouting (C. Menkiti)

### **Soil Structure and Phases Modification**

Injection of Expanding Polyurethane Resins (M. Manassero)

Ground Freezing (A. Bertero, G. Viggiani)

General overview and advances in Deep Soil Mixing (M. Topolnicki)

Chemical methods for the improvement of fine grained soils (Puzrin)

### **Seismic and Environmental Aspects**

Soil Treatments for Preventing Liquefaction Phenomena (K. Stokoe)

Polymer Alternatives to Bentonite Excavation Support Fluids: Technical and Environmental Benefits (S. Jefferis)

Stone Columns installed adjacent to bored piles to minimize liquefaction potential - do they affect the existing piles? (L. De Mello, V. Pastore)

### **Regulations and Codes**

European Standards Applied to Design and Execution of Soil Improvement Systems (T. Orr)

Round table on standardization rules and related trends in Europe (Panelists: S. Aversa, D. Cazzuffi, A. Flora, M. Korff, J.L. Machado do Vale, E. Olinic)

The official language of the Conference is English. Simultaneous translation from English to Italian and from Italian to English will be provided.

The conference website is: [www.cgttorino.org](http://www.cgttorino.org)

*Reported by*

*Daniele Cazzuffi (AGI-IGS President and IGS Past President) and by Mario Manassero (IGS member)*



# 3<sup>rd</sup> International Conference on Transportation Geotechnics (3<sup>rd</sup> ICTG 2016)

Guimarães, Portugal, 04 - 07 September 2016

The Transportation Geotechnics International Conference series began under the auspices of ISSMGE-TC3 and was initiated in 2008 at the University of Nottingham, UK, as an International event designed to address the growing requirements of infrastructure for societies.

The 2<sup>nd</sup> International Conference on Transportation Geotechnics took place in 2012, at Sapporo, Japan, under the [ISSMGE-TC202](#) that follows the TC3 activities for the period 2009-2013. To continue the success of these conferences and the output of [ISSMGE-TC202](#), the 3<sup>rd</sup> was scheduled for 2016, at Guimarães, Portugal. Following the previous one, the challenges addressed by this conference will include a better understanding of the interactions of geotechnics on roads, rails, airports, harbours and other ground transportation infrastructure with the goal of providing safe, economic, environmental, reliable and sustainable infrastructures.

The 3<sup>rd</sup> ICTG will be composed of workshops and several types of sessions (including one dedicated to Young Transportations Geotechnics Engineers), as well as a technical exhibition, for a better dissemination of findings and best practices. A special attention will be paid to the publication of all the peer review papers that will be submitted to be indexed by Scopus and ISI Thomson Reuters Conference Proceedings Citation Index. On behalf of the organizing committee I am honoured to invite you to the 3<sup>rd</sup> ICTG in the City of Guimarães, UNESCO World Heritage (September 4-7, 2016).

Main lectures will be the **Proctor Lecture (ISSMGE – TC202)** given by Prof. Buddhima Indraratna (Australia) and the **Mercer Lecture (Tensar, IGS)** given by Prof. Jorge Zornberg (USA)

The conference themes are:

- Optimized geomaterial (including hydraulically bound materials and asphalt mixtures) use, reuse and recycling - T. Edil, N. Consoli, A. Dawson
- Unsaturated soil mechanics in transportation geotechnics – D. Toll, E. Alonso
- Foundations and earth structures – A. Gomes Correia, H. Brandl
- Slope stability, stabilisation, and asset management – S. Glendinning
- Mechanistic-empirical design (road, railways and airfields) – C. Schwartz, D. Brill, S. Costa d'Aguiar
- Rail track substructures, including transition zones. – W. Powrie, M. Shahim
- Subsurface sensing for transportation infrastructure – S. Nazarian, A. Loizos
- Macro and Nanotechnology applied to transportation geotechnics – M. Alves, J.M. Fleureau
- Sustainability in transportation geotechnics – I. AllQadi, M. Winter
- Case histories – J. Koseki, J. Oliveira, J. Liu

## Further information

is available at the following webpage: <http://www.civil.uminho.pt/3rd-ICTG2016/index.php>

Reported by

António Gomes Correia (University of Minho, ISSMGE-TC202), Chairman of the conference (taken from webpage)

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## News from the IGS Chapters and the Membership

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### GSI-Asia 2015 - The 2<sup>nd</sup> International GSI-Asia Geosynthetics Conference Seoul, Korea 24 - 25 June 2015

GSI-Asia 2015, organized by GSI-Korea with the support of the IGS Korea Chapter, was held on June 24-25 2015 in Seoul, Korea. The conference was successful despite the unfortunate MERS outbreak. GSI-Asia 2015, the 2<sup>nd</sup> event after the first GSI-Asia conference held in Taichung, Taiwan in 2010, provided excellent opportunities to share new knowledge and developments in geosynthetics technologies among manufacturers, academics, and engineers who participated in the event.

This event also provided the backdrop for the 17<sup>th</sup> IGS Council Meeting wherein council members took the opportunity to discuss and present on topics that matter most to their members. The IGS Council meetings took place before the conference and were very productive with much progress being made. More importantly, one new Technical Committee formed during the meeting.

Although the conference was originally planned to discuss manufacturing and testing industries for geosynthetics and related products, broader topics were covered during the conference including civil engineering applications of



Council dinner organized by IGS Korea

geosynthetics. The number of participants, which was around 50, was much lower than expected because of the MERS outbreak. Due to the smaller size of the event, participants were able to interact directly and more frequently with one another.

The conference was opened with welcome and congratulatory remarks by Prof. H.Y. Jeon (Chair of Organizing Committee), Dr. R. Jones (IGS President), and Prof. C. Yoo (IGS Korea President). Technical programs were then followed by a plenary lecture by Dr. G. R. Koerner on “Geosynthetics in Roadways” and by a keynote lecture by Prof. J.G. Zornberg on “Performance of a Geosynthetic-Reinforced Bridge Abutment in the US”. Presentations were also made by invited lecturers Dr. D. Cazzuffi, Prof. C. Yoo, and Dr. Aigen Zhao.

During the next day, seven more lectures were delivered by Dr. R. Jones, Prof. C. Hsieh, Prof. Bergado, Dr. N. Touze-Foltz, Dr. D. Alexiew, Prof. K. Rajagopal, and Dr. G.V. Rao. The lecture presented by Dr. R. Jones on “Using Geosynthetics for Sustainable Development” brought special attention to the issue of carbon footprint, with good examples given on the use of geosynthetics for carbon footprint reduction. In addition to the lectures, tech-



Conference delegate photo taken inside conference room

anical sessions for oral presentations and poster sessions were held during the event, covering a broad range of geosynthetics topics.

An exhibition also took place during the two-day conference, although a limited number of exhibitors participated. In fact, more than 70% of the exhibitors canceled their participation at the last minute due to the MERS outbreak. Despite the smaller number of exhibitors, participants were able to experience the latest technologies in the geosynthetic industries.

The conference closed with a gala dinner held in the seafood buffet restaurant, *Bono Bono*, where participants got to enjoy a variety of cuisine including authentic Korean food. During the dinner participants were able to get to know one another better in a family like environment while enjoying the food.

Coping with the MERS outbreak during preparation for the conference presented some unique challenges for GSI-Korea 2015. Despite the difficulties encountered, the conference provided a variety of excellent technical and social programs, thanks to the local organizing committee. Participants and exhibitors from overseas, who came to Korea despite the MERS outbreak, are indeed the ones who made this event meaningful. A special thank goes to the IGS Officers and Council Members, the success of GSI-Asia 2015 would not have been possible without their support.

*Reported by  
Chungsik Yoo, IGS Vice President*

## **Seminar on Mitigation of Compound Geo-Disasters Davao City, Mindanao, Philippines, 20 - 21 August 2015 as well as Quezon City, Metro-Manila, Philippines, 27 - 28 August 2015**

### **Seminar in Davao City on 20 to 21 August 2015**

The seminar in Davao City, third largest city in the Philippines, was organized by the Philippine Institute of Civil Engineers (PICE), Davao Chapter at the University of Mindanao (UM). There were more than 200 participants of practicing engineers from public and private sectors as well as senior civil engineering students. The seminar was headlined as an International Seminar on Dams and Geosynthetics. The former colleague of Prof. Bergado at the Asian Institute of Technology (AIT), Dr. Wieland from Switzerland, lectured of earthquake effects of dams. Prof. Bergado lectured on soil erosion in river banks and coastal areas and landslides due to climate change caused by global warming and their mitigations using geosynthetics.

### **Seminar in Quezon City on 27 to 28 August 2015**

The seminar in Quezon City, Metro-Manila, Philippines was held at the National Engineering Center (NEC) in the University of the Philippines in Dilliman, Quezon City, Philippines. There were more than 150 participants. This International Seminar on Natural Disaster Mitigation using Geosynthetics was well attended by practicing engineers from both public and private sectors, as well as graduate students. Prof. Jiro Kuwano, Chair of Asian Activities Committee of the IGS joined the seminar in addition to Prof. Bergado and Dr. Wieland. Prof. Kuwano lectured on the effects of earthquake and tsunami on reinforced earth structures while Prof. Bergado and Dr. Wieland lectured on the same topics covered in the previous events in Davao.

Both seminars conducted in the Philippines were well appreciated by the participants who participated in the Open Forum enthusiastically. The organizers provided comfortable hotel accommodations as well as authentic and delicious Filipino food to the speakers through the excellent hospitality of AIT Alumni and professional sponsors. Indeed, the events were win-win situation for IGS, the local organizers, and the participants.



From left to right: Speakers Prof. D.T. Bergado and Dr. M. Wieland



Participants of the Seminar in Davao City



Prof. D. T. Bergado



Prof. J. Kuwano



Participants of the Seminar in Quezon City

Reported by:  
 Prof Dennes T. Bergado, Member of IGS Council

## Seminar on Sustainable Use of Geosynthetics in the Construction Sector

Bologna, Italy, 14 October 2015

The Seminar was held on 14<sup>th</sup> October 2015 in Bologna and the theme was "**Sustainable use of geosynthetics in the construction sector**" concerning the use of geosynthetics for civil, geotechnical and environmental engineering applications.

The Seminar was organized by the Italian Chapter of the IGS (AGI-IGS) together with the Italian Geotechnical Society (AGI) and BolognaFiere-SAIE 2015.

The Seminar, held in the frame of the huge SAIE Exhibition, the main event in Italy of the construction and civil engineering sector, was divided in two sessions.

The morning session was chaired by Nicola Moraci (AGI President) and four contributions were presented to introducing the geosynthetics topics. In particular, Daniele Cazzuffi (CESI SpA, Milano) introduced an overview of the types and functions of geosynthetics. Domenico Gioffré (University Mediterranea of Reggio Calabria) presented an overview of selection of the main properties of geosynthetics in view of a proper design. Francesco Fontana (Manifattura Fontana SpA) highlighted the harmonized standards and the durability of items related to the main Geosynthetics applications. Pierpaolo Fantini (Huesker srl) illustrated some case histories of geosynthetics in foundations and retaining structures.

The afternoon session was chaired by Daniele Cazzuffi (AGI-IGS President and IGS Past President) and, after the

presentation of AGI-IGS activities, four contributions were illustrated.

The contributions focused on some concepts for the design of structures in which geosynthetics are used with reinforcement, drainage, filtration and barrier functions.

In particular, Pietro Rimoldi (Officine Maccaferri SpA) introduced some applications of geosynthetics in paved and unpaved roads and Piergiorgio Recalcati (Tenax SpA) some case histories of draining systems with geonets and drainage geocomposites, while Simone Baravalle (Laviosa Chimica Mineraria SpA) illustrated some applications of barrier systems with geocomposite clay liners and Massimo Cunegatti (Flag SpA) some applications of barrier systems with synthetic geomembranes.

At the end of each session, a fruitful and interesting discussion on the different topics took place.

The next XXVIII Italian National Conference on Geosynthetics will take place in October 2016 and it will include also the AGI-IGS Award, devoted to the best thesis on Geosynthetics engineering discussed in Italy in the last couple of years.



Speakers and organizers of the Bologna 2015 Geosynthetics Seminar, from left to right: Piergiorgio Recalcati, Sabatino Cuomo, Domenico Giofrè, Pietro Rimoldi, Nicola Moraci, Simone Baravalle, Daniele Cazzuffi, Francesco Fontana, Pierpaolo Fantini, Massimo Cunegatti



AGI President Nicola Moraci receiving the congratulations for his election from the AGI-IGS President Daniele Cazzuffi

*Reported by*

*Daniele Cazzuffi (AGI-IGS President and IGS Past President) and Domenico Giofrè (IGS Member)*

## Report of the biennial FS-KGeo 2015 Munich, 26 March 2015

On 26 March 2015, like every two years, the national Geosynthetics Conference FS-KGeo 2015 took place in Munich, organized by the DGGT (German Geosynthetics Society), the German IGS Chapter and the Zentrum Geotechnik of the Technical University Munich. It was the 14<sup>th</sup> FS-KGEO being a one day information and lecture presentation about geosynthetics in geotechnics with an associated exhibition.

The technical presentations dealt with the following topics:

- State of the art in geosynthetics-technique (10ICG Berlin)
- Sealing and hydraulic engineering
- Facing-systems at retaining structures
- Reinforcement in dams and traffic areas

In each of the sessions there were delivered several interesting speeches of practical applications of geotextiles as well as their theoretical examinations concerning the different fields.

The active participation and lively discussions of the more than 150 attendees have contributed essential to the success of this event.

The proceedings are rather late this time and will be available in the beginning of 2016 through the webpage of the FS-KGEO: [www.gb.bv.tum.de/FSKgeo/](http://www.gb.bv.tum.de/FSKgeo/) or the DGGT: [www.dggt.de](http://www.dggt.de)

The next conference of the FS-KGEO will be in combination with the other special sections of the DGGT. Type and venue will be announced in 2016.

*Reported by*

*Gerhard Bräu, co-chair of German IGS chapter*

# SARDINIA 2015 – 15<sup>th</sup> International Waste Management and Landfill Symposium

**Santa Margherita di Pula (Cagliari), Italy, 5 - 9 October 2015**

The fifteenth edition of the Sardinia Symposium, organized by the IWWG (International Waste Working Group, [www.iwwg.eu](http://www.iwwg.eu)), under the auspices of different international societies, including the IGS; was held in Forte Village, Santa Margherita di Pula (Cagliari), Italy, from October 5<sup>th</sup> to October 9<sup>th</sup>.

The event was attended by 732 participants (researchers, technicians, administrators and operators) from 63 different nations with the presentation of 537 scientific papers, selected according to quality by the Scientific Secretariat from 827 offers of papers from 63 different countries worldwide.

The conference included 89 oral sessions and 39 specialized workshops for a total of eight parallel tracks, two parallel events, discussion forums and roundtables, a continuously accessible poster area and a wide exhibition space for companies working in the field of waste management: at least 9 sessions were devoted to barrier and drainage systems or included presentations on geosynthetic engineering.

Several workshops were devoted to the presentation of innovative international projects. As usual, the conference provided for extensive discussion on the optimization of existing technologies and development of new ideas, placing particular emphasis on controversial issues such as waste of electrical and electronic equipment (defined as WEEE), anaerobic digestion management and landfill leachate management, material recovery, thermal treatment (incineration, pyrolysis, gasification), including monitoring environmental impact and health effects of emissions.

The symposium was introduced by the IWWG training courses: "Assessment of biological reactivity of wastes" organized by Erwin Binner (BOKU, AT); "WEEE management in Europe and beyond" jointly organized by Stefan Salhofer (BOKU, AT) together with Julia Hobohm (Hamburg University of Technology, DE); "Landfill aftercare" organized by Marco Ritzkowski (Hamburg University of Technology, DE); "Landfill leachate treatment" organized by Howard Robinson (Phoenix Engineering, UK).

The opening lecture of Sardinia 2015 Symposium was given by Prof. Liz Bachhuber (Bauhaus University - Germany), who addressed the connections between art and garbage; Prof. Werner Bidlingmaier (Bauhaus University - Germany, Winner of A life for Waste 2015) who discussed of the waste management hierarchy; Prof. Bilitewski (Dresden University of Technology - Germany, Winner of A life for Waste 2015), who highlighted the importance of environmental safety and sustainability and Prof. Pinjing He (Tonji University - China) who focused on Chinese

waste management challenges and opportunities.

Sessions dedicated to Anaerobic Digestions, Waste Management in Developing Countries and to WEEE were highly participated. Workshops on Waste and Art and on Education in Waste Management field got a huge success, indicating that new frontiers are gaining increasing interest among the stakeholders.

WEEE management was one of the issues addressed by the highest number of papers. Topics were related to: Collection & Management Strategies, Recent Developments in Recycling Technologies, Environmental Impact, Waste to Resource: Recovery and Re-use, Critical Metals in WEEE, Life Cycle Assessment, International Reports, Critics and Best Practice



Opening Session at Sardinia 2015

## Guidelines.

Due to the great interest on electrical and electronic waste, Waste Management Journal (WM Journal), the official journal of the International Waste Working Group (IWWG), published by Elsevier, will publish a Special Issue on "*WEEE: Booming for Sustainable Recycling*" based on a set of selected papers from Sardinia 2015.

Following the high number of proposals received for presentation during the workshop on "EU proposals and projects", a full-day parallel event was set up: roundtable meetings to deepen the discussion on received ideas were organized and received great success. Roundtables were primarily conceived as a networking opportunity to develop ideas and find potential collaboration on specific issues. Facilitators were present to give information about

suitable calls, answered questions linked to call areas and provided details on legal and procedural conditions.

As an integration to the thick program of the symposium, the conference was enriched with a 2-day parallel event on "Waste Architecture / Rehabilitation of Landfills" coordinated by *ARCOPLAN*, with the scientific support of the Department of Industrial Engineering, University of Padova. The Workshop represented the first of a series of thematic seminars on environmental design and interventions related to the collection, disposal and management of waste. This first appointment focused mainly on the architectural, functional and landscape rehabilitation of old landfills.

The conference has been closed by a roundtable discussion on Waste Management in Mediterranean countries. Prof. Rainer Stegmann (Hamburg University of Technology - Germany) addressed the issues related to management in specific cities, in refugees camps and on islands of Mediterranean; Prof. Rosaria Chifari (Autonomous University of Barcelona - Spain) focused on the situation in Naples; Prof. Evangelos Gidakos (Technical University of Crete - Greece) discussed on waste management in Greece, a country with 6,000 islands and islets; Prof. Muhammed Alamgir (Khulna University of Engineering & Technology - Bangladesh) reported the situation in Bangladesh.

### Social events

The great success of this edition was due to the high scientific relevance of presented works, as well as the rich "menu" of social activities, most of which centered on Chinese culture. China, in fact, was the Guest Country of Sardinia 2015.

On Sunday 4<sup>th</sup> October, delegates were welcomed by an aesthetic Chinese cocktail, which offered the possibility meet old and new friends and colleagues in a relaxing atmosphere, surrounded by the lively Chinese colors and atmosphere.

The Ping Pong tournament scheduled on the first evening of symposium received a great success both from Chinese delegates and not.

Participants played together, without considering the level of expertise. There was a unique, real winner: amusement!

Probably the most unique experience for all participants was the possibility to listen the fascinating music played by the Landfill Harmonic Orchestra. Landfill Harmonic is a group of young musicians that live next to one of South America's largest landfills. This orchestra plays music from instruments made entirely out of garbage. Favio Chávez, the director of the Orchestra, together with 15 musicians, entertained the public with their amazing melody.

Another demonstration that waste is not only an issue!

The traditional football was extremely participated in this edition, with several teams composed by participants coming from different countries taking part in a mini-tournament. Players had a lot of fun, as well as supporters!

Following the huge success of the show in the 2009, 2011 and 2013 editions, another "Sardinia's Got Talent" was organized, during which delegates attending the Symposium as well as staff members came up on a real stage and showed their talents and felt like true artists - at



Landfill Harmonic Orchestra Concert at Sardinia 2015

least for one night!

As per tradition, to celebrate the closure of the conference week, all delegates were invited to a formal gala dinner in the elegant Sala Bianca at Forte Village. Participants had the possibility to taste typical Sardinian products as well as excellent Sardinian wines. During the Gala Dinner the "Life for Waste" Award was officially presented to Prof. Werner Bidlingmaier and Prof. Bernd Bilitewski, and best paper awards delivered to the winners of the different categories:

- Best Chinese Paper Award: "Estimation of volatile compounds emissions from the working face of large anaerobic landfills in China", by Y. Liu, H. Wang and D. Li (China).
- John Pacey Award - Award for the best paper on landfill gas management: "Regulating landfills using measured methane emissions: a UK perspective", by M. Bourn, R. Robinson and F. Innocenti (UK).
- Luigi Mendia Award - Award for the best paper on waste management policy: "Policy mix in deposit-refund systems", by D. Numata (Japan).
- Kriton Curi Award - Award for the best paper on developing country waste management issues "Environmental information system about the situation of urban solid waste within the Mexican municipalities", by G. Garcia, D. Castro-Frontana (Mexico).
- Giovanni Bozzini Award - Italian best paper Award: "Production of a new fertilizer from compost, organic farm residues and biochar", by A. Dall' Ara, S. Serranti, G. Bonifazi, L. Billi, A. Trella, C. G. Izquierdo (Italy).
- Alberto Rozzi Award - Award for the best paper on biological treatment: "Temporal variation in bacterial communities of full-scale thermophilic anaerobic digester treating food waste-recycling wastewater", by J. Lee, T. Koo, S.G. Shin, B. Hwang, S. Hwang (South Korea).
- Best Poster Award: "Comparison of unwillingness we feel to act recycle-friendly actions in PET bottle disposal and real action ratios", by Q. H. Jiang, S. Suzuki, F. Takahashi (Japan).

A special word of thanks at the end of this five-days conference should be addressed to Prof. Raffaello Cossu (University of Padova) and to his competent and enthusiastic team for their endless effort towards a real scientific and social success of the event.

*Reported by*

*Daniele Cazzuffi (AGI-IGS President and IGS Past President) and by Roberto Raga (University of Padova and Scientific Secretary of Sardinia 2015)*

## Geosintec 2 2<sup>nd</sup> Spanish Conference on Geosynthetics 7- 8 October 2015, Madrid, Spain

The second Spanish Conference on Geosynthetics, Geosintec 2, was held 7-8 October 2015, at the Centro de Estudios y Experimentación de Obras Públicas (CEDEX), a body of the Spanish Ministry of Public Works, in Madrid, Spain.

Geosintec 2 was organized by the IGS Spanish Chapter, with the collaboration of public and private businesses and scientific associations. More than 180 participants mainly from Spain, but also from Mexico, India, Turkey, Russia and Romania, attended the conference.

The conference was opened by Mrs. Liana Sandra Ardiles, Managing Director of Water at the Spanish Ministry of Agriculture, Food and Environment, Mr. Mariano Navas, Director of the CEDEX, Dr. Jorge Zornberg, Immediate Past President of the IGS, and Mr. Ángel Leiro, President of the IGS Spanish Chapter.

The conference provided two keynote lectures. The first keynote, given by Dr. Manuel Blanco, Head of Materials Department of LCEYM (CEDEX) and Vice President of the IGS Spanish Chapter, was about synthetic polymeric geomembranes used in the waterproofing of hydraulic works. The second keynote, given by Dr. Jorge Zornberg, presented advances in the use of geosynthetics in the reinforcement of pavements.



Opening ceremony



Opening ceremony





Keynote lecture by Dr. Manuel Blanco



Prof. Dr. Jorge Zornberg



Conference room



Round table



Technical session chairs



Exhibition area

There were six technical sessions, chaired by prominent professionals, consisting of twenty-one papers presenting information on hydraulic structures, geotechnical applications, soil improvement and reinforcement, environmental applications, mining, erosion control, and coastal works. Also, a review of the present and the future situation of geosynthetics was presented. All aspects of the use of geosynthetics were dealt with, drawing on experience gained in case histories as well as research and development into new products and uses.

The conference also included four round tables, where experts from different institutions discussed the topics presented in the technical sessions.

Geosintec 2 was a great success. The support of the sponsors contributed directly to the success of the conference. The 12 sponsoring companies, who fully occupied the conference exhibition area, included Huesker, Cetco, Tencate, Renolit, Geotexan, Atarfil, Interma, Laborcontrol, Sotrafa, Naue, Sika, and Sunjut.

The conference provided a platform to discuss the most important issues about the applications of geosynthetics,

as well as subjects related to the research, durability and development of new products and uses.

*Reported by*

*Beatriz Mateo, Assistant Secretary of IGS Spanish Chapter*

*Pedro Abad, General Secretary and Treasurer of IGS Spanish Chapter*

## 1<sup>st</sup> International Seminar of IGS Colombia - Beginning a New Future for Geosynthetics in Colombia

**Bogota, Columbia, 22 - 23 October 2015**

On October 22<sup>nd</sup> and 23<sup>rd</sup>, the IGS Colombian Chapter successfully initiated its formal activities with its first international geosynthetics congress. International and local experts were invited to share their knowledge and experience with the use of geosynthetics, as well as brief attendees on new advances made in their fields. Local speakers also helped provide a snapshot of the current state of infrastructural and constructional projects in Colombia and materials being used, as well as addressing the path forward in taking advantage of opportunities for the use of geosynthetics and advancing related research.

International speakers included Ing. Ennio Marques Palmeira, Ing. Jean-Pierre Gourc, and Ing. Richard Bathurst. Their talks were complemented by renowned, national researchers and industry players such as Dr. Bernardo Caicedo, Ing. Fernando Estrada, Dr. Alvaro Millán and, representing government agencies in charge of national infrastructure, Ing. Alejandro García, who works for the National Infrastructure Agency (ANI). Last but certainly not least, IGS Secretary Elizabeth Peggs attended the event where she worked to help with the chapter's national outreach as well as strengthen ties with fellow chapters.

With great optimism and a strong desire to contribute to this evolving industry, our goal is to help create and promote ties of cooperation between all industry players including public and private contractors, designers, producers, distributors, and state agencies that have shown interest in moving forward the use of geosynthetic materials.

With the support of IGS International and our local chapter members, we hope to share with all our progress towards meeting these goals, and communicate local case studies, knowledge gained, and our successes in furthering the geosynthetics industry at the local level.

*Reported by*

*Natalia Erasso, member of IGS Colombia*

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## List of IGS Chapters

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United Kingdom	U.K. Chapter 1987	Dr, Gary J. Fowmes <a href="mailto:g.j.fowmes@lboro.ac.uk">g.j.fowmes@lboro.ac.uk</a>	<a href="http://www.igs-uk.org">www.igs-uk.org</a>
Vietnam	Vietnamese Chapter – International Geosynthetics Society – Vietnam Chapter (VCIGS) 2013	Dr. Nguyen Hoang Giang <a href="mailto:giangnh@nuce.edu.vn">giangnh@nuce.edu.vn</a>	<a href="mailto:trantrunghieu@utt.edu.vn">trantrunghieu@utt.edu.vn</a>

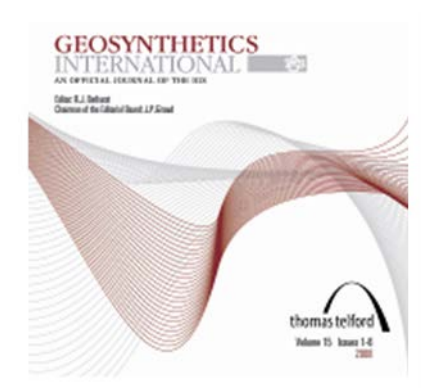
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## Official Journals of the IGS

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### Geosynthetics International



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 ICE Publishing (Thomas Telford) and is free to IGS Members. All others, e.g., corporations, companies, and university libraries, can subscribe at a rate of £590 / US\$ 960.

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Papers should be not published in full elsewhere and should be sent to:

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## Best Geosynthetics International Paper for 2014

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

We are delighted to announce the best paper in Volume 21 (2014) based on votes cast by the Editorial Board Members. In this annual competition, the Editor and Editorial Board Chairman are not eligible for this award and do not vote.

The "Best *Geosynthetics International* Paper for 2014" award goes to:

Kuwano, J., Miyata, Y. & Koseki, J. (2014). Performance of reinforced soil walls during the 2011 Tohoku earthquake. *Geosynthetics International*, 21, No. 3, 179–196.

The following two papers were selected for runner-up and thus both receive honourable mention as "one of the best papers published in *Geosynthetics International* in 2014":

- Blanc, M., Thorel, L., Girout R. and Almeida, M. (2014). Geosynthetic reinforcement of a granular load transfer platform above rigid inclusions: comparison between centrifuge testing and analytical modelling. *Geosynthetics International*, 21, No. 1, 37–52.
- Abdelaal, F. B., Rowe, R. K. and Brachman, R. W. I. (2014). Brittle rupture of an aged HPDE geomembrane at local gravel indentations under simulated field conditions. *Geosynthetics International*, 21, No. 1, 1–23.

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, as they have free access to all papers published in the Journal.

Reported by

R.J. Bathurst, Editor, J.P. Giroud, Chairman of the Editorial Board

## Content of Volume: 22, Issue: 4 (August 2015)

[Geosynthetics anchorage with wrap around: experimental and numerical studies](#), S. H. Lajevardi, C. Silvani, D. Dias, L. Briançon, P. Villard

[Field evaluation of a geotextile filter for stormwater runoff control](#), C. Franks, J. Koebler, R. Myers, M. Hatipoglu, A. P. Davis, A. H. Aydilek

[Effects of state of test sample, specimen geometry and sample preparation on dynamic properties of rubber-sand mixtures](#), K. Senetakis, and A. Anastasiadis

[Performance of three geogrid-reinforced soil walls before and after foundation failure](#). Y. Miyata, R. J. Bathurst, H. Miyatake

[Field implementation of FeCl<sub>3</sub>-conditioning and vacuum preloading for sewage sludge disposed in a sludge lagoon: a case study](#), X.-J. Zhan, W.-A. Lin, L.-T. Zhan, Y.-M. Chen

Please find the download of the articles at:

<http://www.icevirtuallibrary.com/content/issue/gein/22/4>

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## Content of Volume: 22, Issue: 5 (October 2015)

[Pullout response of geogrids after installation](#), M. Pinho-Lopes A. M. Paula M. L. Lopes

[Frictional behaviour of three critical geosynthetic interfaces](#), B. M. Bacas J. Cañizal H. Konietzky

[Consolidation analysis of soft soil improved with short deep mixed columns and long prefabricated vertical drains \(PVDs\)](#). Z. Zhang G. Ye H. Xing

[Model tests on methods to improve dewatering efficiency for sludge-inflated geotextile tubes](#), W. Guo J. Chu B. Zhou

[Obtaining reliable embodied carbon values for geosynthetics](#), J. Raja N. Dixon G. Fowmes M. Frost P. Assinder

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# Geotextiles & Geomembranes



*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](mailto:kerry@civil.queensu.ca)

Please ensure the text is double spaced, there is an abstract with keywords included, and tables and figures 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. If you do not know your Membership Number, please contact the IGS Secretariat at [IGSSec@geosyntheticssociety.org](mailto:IGSSec@geosyntheticssociety.org)

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

A hardcopy of *Geotextiles 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\$170 for six issues. IGS Corporate Members may subscribe at a 64% discount: US\$396 for six issues. Please indicate that you are an IGS Member when requesting the special price.

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For direct connection to the home page of the journal with the possibility to download PDF-files of the full papers (IGS members and abonents only) please follow the link at the end of the following content listing.

## Geotextiles and Geomembranes: Best papers in 2014

Following the Editorial Board meeting held in Yokohama in September 2006 it was decided that it would be desirable to recognise some of the best papers published in *Geotextiles and Geomembranes*. We started with Volume 23 and have selected the Best paper in each subsequent year. This year the Editorial Board was charged with selecting what they considered to be the "Best Paper" published in *Geotextiles and Geomembranes* in 2014. 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 selection of winning papers was decided based on a vote of the Editorial Board members (excluding the Editor).

Following a rigorous review of the papers I am pleased announce that the winner for the Best Paper for 2014 was:

- A new approach to evaluate soil-geosynthetic interaction using a novel pullout test apparatus and transparent granular soil by Fawzy M. Ezzein and Richard J. Bathurst, *Geotextiles and Geomembranes*, 42(3):246-255.

Two papers were selected for Honourable Mention:

- Landfill side slope lining system performance: A comparison of field measurements and numerical modelling analyses by K.A. Zamara, N. Dixon, G. Fowmes, D.R.V. Jones and B. Zhang, *Geotextiles and Geomembranes*, 42(3):224-235.

and

- Consolidation analysis of clayey deposits under vacuum pressure with horizontal drains by J. Chai, S.

Horpibulsuk, S. Shen, and J.P. Carter, *Geotextiles and Geomembranes*, 42(5):437-444

As runners-up and hence being judged to be amongst the three best papers published in *Geotextiles and Geomembranes* in 2014. Congratulations to all of the authors for their very significant contribution to the geosynthetics discipline.

Reported by

R. Kerry Rowe Editor

## Content of Volume 43, issue 5 (October 2015)

### Special issue on Geosynthetics for Transportation Applications

[Forward](#), Jie Huang, Jie Han

[Experimental and numerical studies on protection of buried pipelines and underground utilities using geocells](#), A.M. Hegde, T.G. Sitharam

[Experimental and numerical study of geosynthetic reinforced soil over a channel](#), Jie Huang, Vinh Le, Sazzad Bin-Shafique, A.T. Papagiannakis

[Characterization of geogrid reinforced ballast behavior at different levels of degradation through triaxial shear strength test and discrete element modeling](#), Yu Qian, Debakanta Mishra, Erol Tutumluer, Hasan A. Kazmee

[Field evaluation of vegetation growth in geocell-reinforced unpaved shoulders](#), Jun Guo, Jie Han, Steven D. Schrock, Robert L. Parsons

[Evaluation of geofibers and nontraditional liquid additives on erodible slopes in Interior Alaska](#), Rodney Collins, Mingchu Zhang, Xiong Zhang, Leroy Hulse, Thomas Ravens, Robert Van Veldhuizen

[Failure mechanism of geosynthetic-encased stone columns in soft soils under embankment](#), Jian-Feng Chen, Liang-Yong Li, Jian-Feng Xue, Shou-Zhong Feng

[Simplified analytical solution for geosynthetic tube resting on deformable foundation soil](#), Wei Guo, Jian Chu, Shu-wang Yan

[Radial stresses and resilient deformations of geogrid-stabilized unpaved roads under cyclic plate loading tests](#), Xiaohui Sun, Jie Han, Jayhyun Kwon, Robert L. Parsons, Mark H. Wayne

[Methods of protecting buried pipelines and culverts in transportation infrastructure using EPS geof foam](#), Steven F. Bartlett, Bret N. Lingwall, Jan Vaslestad

[Evaluation of geogrid reinforcement effects on unbound granular pavement base courses using loaded wheel tester](#), Hao Wu, Baoshan Huang, Xiang Shu, Sheng Zhao

## Content of Volume 43, issue 6 (November 2015)

### Special issue on Soft Ground Improvement using Geosynthetics Applications

[Geotextiles and geomembranes: Best papers in 2014](#), R. Kerry Rowe

[Soft ground improvement with geosynthetics](#), D.T. Bergado, K. Rajagopal

[Performance of PVD improved soft ground using vacuum consolidation methods with and without airtight membrane](#), P.V. Long, L.V. Nguyen, D.T. Bergado, A.S. Balasubramaniam

[Settlement behavior of embankment on geosynthetic-encased stone column installed soft ground – A numerical investigation](#), Chungsik Yoo

[Numerical modelling of prefabricated vertical drains and surcharge on reinforced floating column-supported embankment behaviour](#), K.-W. Liu, R. Kerry Rowe

[Evaluation of effect of basal geotextile reinforcement under embankment loading on soft marine deposits](#), Ning Zhang, Shui-Long Shen, Huai-Na Wu, Jun-Chun Chai, Ye-Shuang Xu, Zhen-Yu Yin

[Laboratory evaluation on the effectiveness of polypropylene fibers on the strength of fiber-reinforced and cement-stabilized Shanghai soft clay](#), Mu Chen, Shui-Long Shen, Arul Arulrajah, Huai-Na Wu, Dong-Wei Hou, Ye-Shuang Xu

[Numerical study of basal reinforced embankments supported on floating/end bearing piles considering pile-soil interaction](#), Anjana Bhasi, K. Rajagopal

[Design chart for prefabricated vertical drains improved ground \(reference no 2869\)](#), Hossam M. Abuel-Naga, Dennis T. Bergado, Joel Gniel

[PVD improvement of soft Bangkok clay with and without vacuum preloading using analytical and numerical analyses](#), Le Gia Lam, Dennes T. Bergado, Takenori Hino

[Surcharge loading rate for minimizing lateral displacement of PVD improved deposit with vacuum pressure](#), Jin-chun Chai, Steeva Gaily Rondonuwu

[Numerical study of the effects of geosynthetic reinforcement viscosity on behaviour of embankments supported by](#)

Please find the download of the articles at:

<http://www.sciencedirect.com/science/journal/02661144>

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## Corporate Membership

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### Case studies – use the chance!

All corporate members are invited to announce a case study at any time. For each issue 3 to 4 case studies are planned to be placed in (up to 1 page with pictures). If there are more announcements we will place them on a list and will use them on a “first come, first serve” basis. A corporate member may have a second case study published if the list is finished with corporate members not been considered yet. As we know that some of our corporate members are very hard-working on such a type of publication, please be aware that the only possibility to prevent a publication series by one company is to send in your own case study!

With a distribution of more than 3000 samples/downloads of IGS News this is a good promotion of the geosynthetics technique and your company. We would be happy if this chance is used frequently.

*Reported by*

*Gerhard Bräu, IGS News Editor*

#### High temperature resistant geomembrane in New Zealand



The Lake Taupo with a length of 40km and a depth of 400m is located in the middle of the northern island of New Zealand. Near the lake there are wells which bring boiling water to the surface. This water is pumped to a nearby power station and is used to generate electricity. Afterwards the water has a temperature of 80°C. Due to the high temperature it cannot be released into a river or a lake because all animals would die. Therefore it is pumped into an artificial lagoon and kept there until it reaches a temperature in the range of 25°C. The lagoon has a surface area of about 7000m<sup>2</sup>.

Normal HD-PE is not suitable for this application due to the high temperature of the water. Consequently a high temperature resistant PE material was selected to produce geomembranes for this special application.

#### Multi layer sealing system

- Earth work
- Geotextile (protection)
- Regular geomembrane made from HD-PE (1.5 mm)
- Swell-able geotextile
- Geomembrane made from high temperature resistant material (1.5mm)

#### PE material for elevated Temperature

Special PE materials have been used for hot water pipes for many years. This technology has now also been applied for geomembranes. Compared to standard HD-PE geomembrane this new type of material has an increased life-time at elevated temperatures. Consequently this material was selected for lagoons with a water temperature of up to 80°C.

See more at: <http://www.agru.at>





Verlegung PE-RT



Lagoon during construction

## Defending England's Coast



From the arrival of the Romans to the Saxons and Normans clashing upon the shore, and from the Spanish Armada to Napoleon and two World Wars, England has a long and well-known history of coastal defense. Today, coastal protection remains a high priority—though it now focuses on erosion and flood control and civil infrastructure. The West Sands Beach Project at Medmerry near Selsey and Sussex on the southeastern coast is the largest privately funded coastal protection scheme of its kind in the UK's history.

The Medmerry project is an extraordinary managed realignment scheme that is part of a wider program of integrated inland and coastal sea defenses. More than 93,000 tonnes of rock have been shipped from Norway to create two breakwaters on a two-acre footprint, 600m apart, with 3000m<sup>3</sup> (nearly half a million tonnes) of sand and shingle deposited to form a beach.

Roughly 300 properties including numerous farms are located along the 650ha of low-lying land along this stretch of coast. A wastewater treatment plant and an electrical substation are also located inland and have been threatened by the area's poor flood defenses. For many years, a raised shingle beach (more than 15,000 tonnes of shingle) has been used as defense, but flooding has caused significant damage, with the last flood season (2008-2009) causing more than £5m of damage between Selsey and Bracklesham.

This new, far more extensive approach is a major effort by the Environment Agency to establish real long-term protection for the coastline.

The project engineer (Atkins) specified NAUE Terrafix® B 813 to be used as the filter/separator geotextile between the Norwegian rock (which includes up to 10T boulders) and the sea bed. The geotextile had to be robust enough to cope with such loading. It also had to be installed underwater during construction of the breakwaters.

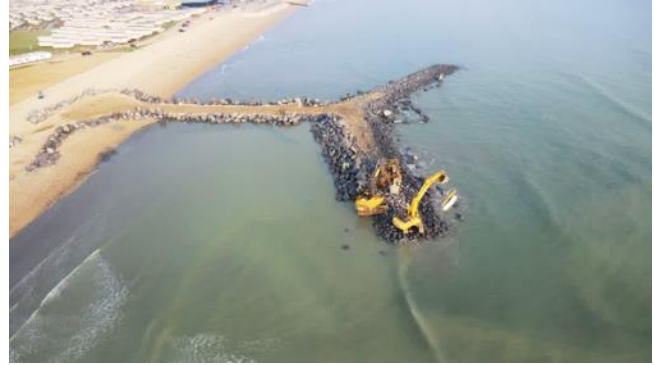
Terrafix® B 813 is a unique geosynthetic. Two geotextiles encapsulates a sand layer. The increased density allows it to sink in water for easier installation and material control during such hydraulic engineering applications.

In "sinking" underwater, Terrafix® B 813 provided an efficiency that has made the installation process significantly quicker than if a conventional geotextile had been specified. That has also resulted in welcomed project savings on cost.

Full construction of the beach at Medmerry took place from April to September with an eight-week window for the geotextile installation. More than 24,300 m<sup>2</sup> of Terrafix® B 813 were installed.

See more at: <http://www.naue.com>





## Subgrade Stabilization at location St. Louis County



### THE CHALLENGE

A new bridge was being constructed over the Missouri River where saturated soil conditions required the need to remove water from under the pavement section at the bridge approaches. This was a design build project where the Missouri DOT encouraged the design/build teams to explore new and innovative technologies to solve the challenging site conditions. The geotechnical engineer contacted TenCate Geosynthetics to explore the utilization of the TenCate Mirafi® H<sub>2</sub>Ri\* high strength wicking geosynthetic.

### THE DESIGN

The objective of using the product was to remove water from underneath the pavement section. The design build team had originally designed a pavement section that included a concrete section over 4" of road base aggregate, 4" layer of drainable aggregate and a prepared subgrade. The inclusion of Mirafi® H<sub>2</sub>Ri geosynthetic by the design engineer was intended to replace the 4" of drainable base, thus providing equivalent capabilities within the section while reducing overall costs. The high modulus geosynthetic, which provided excellent confinement and separation, allowed for an overall 2" reduction in aggregate base material along with the ability to wick water from under the pavement. The water was able to exit the Mirafi® H<sub>2</sub>Ri through a combination of daylighting the material onto roadway shoulders or into french drains.



Installation



Close-up of Mirafi® H<sub>2</sub>Ri geosynthetic wicking.

## THE CONSTRUCTION

Initial installation of the geosynthetic took place in October 2013 on the north ramp to the west bound approach. TenCate personnel along with their local distributor, ASP Enterprises, arranged for a pre-construction meeting with the general contractor, MODOT field personnel and the sub contractor installing the material. During the meeting and review of the installation procedures the items that were discussed were proper overlaps, cutting and layering of the material and best installation practices.

## THE PERFORMANCE

The initial installation of 7,200 square yards of Mirafi® H2Ri began on a Thursday and was completed along with the placement of 6" of compacted aggregate by the following Monday. The day after the geosynthetic was placed, the project site received ¼" rainfall and wicking was evident where the Mirafi® H2Ri was installed. An additional 82,000 sy of material is expected to be installed in the spring of 2014.

See more at: <http://www.mirafi.com>

## Palatka-to-St. Augustine State Trail



The Palatka-to-St. Augustine State Trail currently runs through North-eastern Florida and stretches throughout the communities of Armstrong, Elkton, and Vermont Heights. The majority of the trail follows State Route 207, hence its former name as the State Road 207 Rail-Trail. Along the trail the scenery transitions between a mix of woodlands and rural landscapes.

Parts of the Palatka-to-St. Augustine Trail that pass through the woodlands are being compromised due to soil erosion. The slopes on which the trail was built upon started to fail. In certain areas, erosion caused parts of the asphalted path to crumble and rendered the trail unsafe for community members to use.

The Florida Department of Transportation searched for a solution to their erosion problem and ultimately decided on installing EastCoast Erosion Control's T-RECS along the slope of the trail. To secure the slopes and ensure intimate contact between the soil and the T-RECS, an Earth Anchor System was utilized. The Gripple Anchor was used, which allowed a quick and easy installation of the T-RECS and provided security to the T-RECS and the slope. By installing the T-RECS using the Gripple Anchor System and Gripple Installation tools, vegetation will be allowed to grow and stabilize the slopes. This will allow the Palatka-to-St. Augustine Trail to be enjoyed by the community members once again.





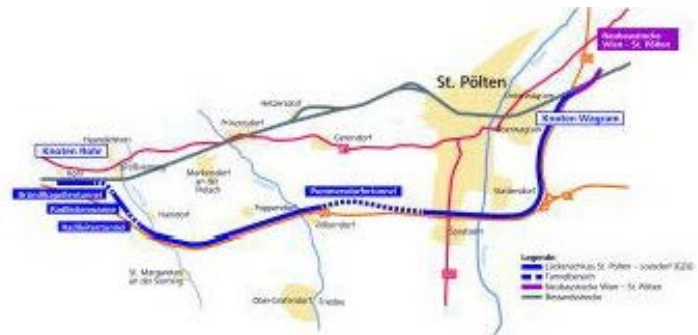
See more at: <http://www.eastcoasterosion.com>

## Train path completion in Loosdorf Geomembranes for new double-track train line



The train bypass (GZU) between St. Pölten and Loosdorf is a new double-track train line with a design speed of 120 km/h. The new line of the train bypass goes around the city centre of St. Pölten in the south and relieves the train station St. Pölten of freight and transit traffic. The project is part of the four-track expansion of the Westbahn and of the trans-European network. It is co-financed by the European Union.

Construction work started in December 1999. In 2000 the project was briefly stopped as increased capacity requirements were not expected until the new line between Vienna and St. Pölten was finished. With additional funding made available by the government's economic recovery plan, the construction work for track completion between St. Pölten and Loosburg could be continued again.



Project overview (Quelle: OEBB)

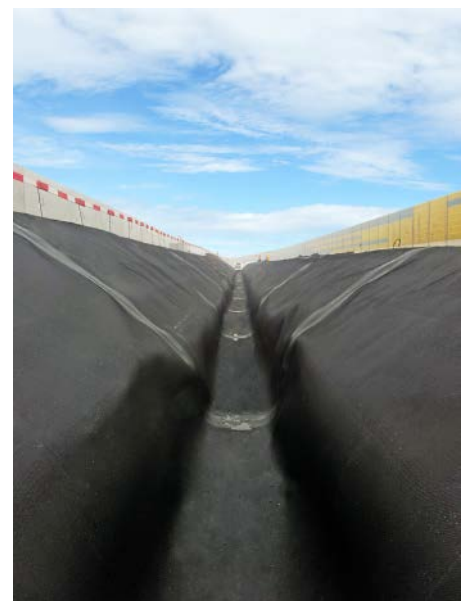
### Project data

- 26'600 m<sup>2</sup> HDPE Liner
- Structured (MST+/MSB)
- Thickness: 2.0 mm

The new line proceeds parallel to the motorway A1 in many parts. Therefore, the rain and surface water accumulated on the motorway and the railway line has to be contained and eventually drained with the help of a rainwater canal. Because of the restricted space conditions between motorway and railway line, a comparatively deep rainwater canal with a precipitous slope was planned. As a consequence, a flexible membrane with a high frictional coefficient against adjoining soil was needed.

The structured MST+/MSB AGRU HDPE geomembranes fulfilled the requirements and enable a quick execution of the project. The high flexibility of AGRU HDPE geomembranes enabled easy, time-saving integration of the precast concrete shafts in the sealing layer.

See more at: <http://www.agru.at>



Rainwater canal with HDPE lining



Integration of precast concrete shafts



Construction site

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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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- become increasingly informed, involved, and influential in the field of geotextiles, geomembranes, related products, and associated technologies.

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Membership of the Society is open to Individuals or Corporations "...engaged in, or associated with, the research, development, teaching, design, manufacture or use of geotextiles, geomembranes and related products or systems and their applications, or otherwise interested in such matters." The annual fee for membership is (US) \$45 for Individual Members and (US) \$1000 for Corporate Members. Individuals or Corporations who voluntarily contribute a minimum of (US) \$200 annually to the Society, in excess of

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GIFT - Geotechnics for Infrastructure and Foundation Techniques	Pune, Maharashtra, India	17 - 19 Dec 2015	<a href="mailto:igc2015pune@gmail.com">igc2015pune@gmail.com</a> <a href="http://www.igc2015pune.in/GUI/index.aspx">www.igc2015pune.in/GUI/index.aspx</a>
<b>Torino Geotechnical Conference XXIV</b>	<b>Torino, Italy</b>	<b>25 - 26 Febr 2016</b>	<b><a href="mailto:info@cgttorino.org">info@cgttorino.org</a></b> <b><a href="http://www.cgttorino.org">www.cgttorino.org</a></b>
<b>3<sup>rd</sup> PanAmerican Regional Conference on Geosynthetics – GeoAmericas 2016</b>	<b>Miami South Beach, USA</b>	<b>10 - 13 Apr 2016</b>	<b><a href="mailto:NAGSDirector05@gmail.com">NAGSDirector05@gmail.com</a></b> <b><a href="mailto:epeggs@minervatri.com">epeggs@minervatri.com</a></b>
Underground Construction Prague 2016	Prague, Czech Republic	23 - 25 May 2016	<a href="mailto:ps2016@satra.cz">ps2016@satra.cz</a> <a href="http://www.ucprague.com">http://www.ucprague.com</a>
NGM 2016, The Nordic Geotechnical Meeting	Reykjavik, Iceland	25 - 28 May 2016	<a href="mailto:has@vegagerdin.is">has@vegagerdin.is</a> <a href="http://www.ngm2016.com">www.ngm2016.com</a>
International Mini Symposium Chubu (IMS-Chubu)	Nagoya, Aichi, Japan	26 - 28 May 2016	<a href="mailto:kokusai@jiban.or.jp">kokusai@jiban.or.jp</a> <a href="http://www.jiban.or.jp/index.php?option=com_content&amp;view=article&amp;id=1737:2016052628&amp;catid=16:2008-09-10-05-02-09&amp;Itemid">www.jiban.or.jp/index.php?option=com_content&amp;view=article&amp;id=1737:2016052628&amp;catid=16:2008-09-10-05-02-09&amp;Itemid</a>
SEAGC2016	Subang Jaya, Selangor, Malaysia	31 May - 03 Jun 2016	<a href="mailto:seagc2016@gmail.com">seagc2016@gmail.com</a> / <a href="mailto:choy.iemtc@gmail.com">choy.iemtc@gmail.com</a> <a href="http://www.mygeosociety.org/SEAGC2016">www.mygeosociety.org/SEAGC2016</a>
12 <sup>th</sup> International Symposium on Landslides	Naples, Italy	12 - 19 Jun 2016	<a href="mailto:agi@associazionegeotecnica.it">agi@associazionegeotecnica.it</a> <a href="http://www.isl2016.it">www.isl2016.it</a>
GeoChina 2016	Shandong, China	25 - 27 Jul 2016	<a href="mailto:geochina.sec@gmail.com">geochina.sec@gmail.com</a> <a href="http://geochina2016.geoconf.org/">http://geochina2016.geoconf.org/</a>
3 <sup>rd</sup> ICTG International Conference on Transportation Geotechnics	Guimaraes, Portugal	04 - 07 Sep 2016	<a href="mailto:agc@civil.uminho.pt">agc@civil.uminho.pt</a> <a href="http://www.webforum.com/tc3">www.webforum.com/tc3</a>
Fifth International Conference on Geotechnical and Geophysical Site Characterisation (ISC'5)	Gold Coast, QLD, Australia	05 - 09 Sep 2016	<a href="mailto:hannah@laevents.com.au">hannah@laevents.com.au</a> <a href="http://www.isc5.com.au">www.isc5.com.au</a>
13 Baltic States Geotechnical Conference	Vilnius, Lithuania	15 - 17 Sep 2016	<a href="mailto:danute.slizyte@vgtu.lt">danute.slizyte@vgtu.lt</a> <a href="http://www.13bsqc.lt">www.13bsqc.lt</a>
<b>EuroGeo 6 – European Regional Conference on Geosynthetics</b>	<b>Istanbul, Turkey</b>	<b>25 – 29 Sep 2016</b>	<b><a href="mailto:info@eurogeo6.org">info@eurogeo6.org</a></b> <b><a href="http://www.eurogeo6.org">www.eurogeo6.org</a></b>
<b>6<sup>th</sup> Asian Regional Conference on Geosynthetics</b>	<b>New Delhi, India</b>	<b>08 - 11 Nov 2016</b>	<b><a href="mailto:uday@cbip.org">uday@cbip.org</a></b> <b><a href="http://www.geosyntheticsasia.in">www.geosyntheticsasia.in</a></b>
Geotechnical Frontiers	Orlando, Florida, USA	12 – 15 Mar 2017	<a href="mailto:bjconnett@ifai.com">bjconnett@ifai.com</a>
ICSMGE 2017 - 19 <sup>th</sup> International Conference on Soil Mechanics and Geotechnical Engineering	Seoul, Korea	17 - 21 Sep 2017	<a href="mailto:secretariat@icsmge2017.org">secretariat@icsmge2017.org</a> <a href="http://www.icsmge2017.org">http://www.icsmge2017.org</a>
11th International Conference on Geosynthetics (11ICG)	Seoul South Korea	16 - 20 Sep 2018	<a href="mailto:csyoo@skku.edu">csyoo@skku.edu</a>

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