

IGS NEWS

NEWSLETTER OF THE INTERNATIONAL GEOTEXTILE SOCIETY

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IGS Announces Recipients of First Bi-annual Award

The IGS Awards Committee met for three days in a secluded atmosphere in Switzerland to adjudicate the IGS Award and the Young IGS Member Achievement Award, the latter being reserved for an IGS member or a group of IGS members less than 36 years of age.

The entry documents were of excellent quality making the Awards Committee's task a difficult one. After pre-evaluating all of the entries and intense discussion during the meeting, the final decisions were made. The Committee unanimously decided to allocate the IGS Award to **Joseph E. Fluet, Jr., E. Ray Steinle, Jr.** and their team, GeoServices Inc., Consulting Engineers, Boynton Beach, Florida, U.S.A. for "Geosynthetic Quality Assurance, A Practical New Technology". The Awards Committee's reasons for allocating this Award were as follows:

The IGS Awards Committee members recognize the crucial importance of construction technique and effective control of construction. The entry submitted by Joseph E. Fluet, Jr. and E. Ray Steinle, Jr. establishes and demonstrates the validity of a definitive quality assurance methodology. The entry shows that the team had an excellent idea for the future, made the necessary effort for, and had the tenacity of succeeding in introducing and validating this quality idea. This is of utmost importance for the protection of the environment, and is likely to have worldwide impact. This in itself will have a further spin-off in the education field, and will promote new testing, better monitoring and new research.

A unanimous decision was also made to allocate the **Young IGS Member Achievement Award** for the submission "Reinforced Soil Wall Analysis and Behaviour" by **Dr. Richard Jewell**, of the University of Oxford, U.K. The Awards Committee's reasons for allocating this Award were as follows:

The entry submitted by Richard Jewell is a good, clear presentation by a young individual who shows a detailed understanding of theory, makes an excellent synthesis of it, and presents and proposes a practical design method for most reinforced soils. This work is a stepping stone from which he will further develop his ideas. Such work is to be encouraged.



The IGS Award Winners

Left to right: William Martin, Tommy C. Bradford, Scott Berdy, Joseph Fluet, Ray Steinle, Daniel Schauer, David Bonnett, Josephine Fetzer.

GeoService CQA Staff not photographed: Gerald Anderson, Steve Barrett, Newton Brooks, Kevin Christensen, Brad Coleman, John Gillyard, Luke Hickey, Steve Hobbs, Jacob Johnson, David Larson, Tracy Larson, Tony Matthews, Earl Rocca, Irene Trisko, Jeff Vaughn, and David Williams.

The presentation of these awards will be made during the opening ceremony of the Fourth International Conference of the International Geotextile Society to be held at The Hague, The Netherlands, May 1990.

Two outstanding entries were given "Special Finalist Recognition" by the IGS Awards Committee: "Development of a Fundamental Understanding of the Behaviour of Geosynthetic Reinforced Embankments" by **Drs. R. Kerry Rowe, Kris L. Soderman, and Brian L.J. Mylleville** of The University of Western Ontario, London, Canada; and "Geonet Drainage Layers for Waste Containment Facility Lining Systems" by **Dr. Rudolph Bonaparte**, of GeoServices Inc., Consulting Engineers, Norcross, Georgia, U.S.A.

Great care was taken by the IGS Council in the selection of the Awards Committee. Its chairman is none other than the Past-President of the IGS and its members were chosen

for their international reputation and their professional and academic expertise in geotechnical engineering, polymer science, and textile technology:

- Professor Ara Arman, U.S.A., Vice-Chairman
- Professor Masami Fukuoka, Japan
- Mr. Victor Milligan, Canada
- Dr. Charles Schaerer, Switzerland, Chairman
- Dr. Michel Sotton, France
- Dr. Guy Massenaux, Belgium (observer), IGS Secretary.

The Committee followed strict and detailed predetermined guidelines. During the adjudication process, the documents reviewed contained no indication of the candidates' identity, thereby preserving anonymity and confidentiality. In this way, the recipients were chosen based only on their work, with no consideration of their nationality or organizational affiliation.

J.E. Fluet and E.R. Steinle to receive the First IGS Award

The IGS Awards Committee has announced that the winners of the first bi-annual IGS Award are Mr. J.E. Fluet, Jr. and Mr. E.R. Steinle Jr. of GeoServices Incorporated, Consulting Engineers (GeoServices) in Boynton Beach, Florida, U.S.A. The Award will be presented at the Fourth International Conference on Geotextiles to be held at The Hague, The Netherlands in May 1990. Mr. Fluet and Mr. Steinle received the Award because of their work in Construction Quality Assurance (CQA) of geosynthetics.

Although the concept of CQA is valid in all geosynthetic applications, CQA has had its greatest impact on environmental applications - particularly liner and cover systems for waste containment facilities. As recently as five years ago, the use of geosynthetics in waste containment facilities was very suspect because there was a public conception that geomembrane liners leaked, were easily damaged, and would not last. Geomembranes, along with other geosynthetics, suffered from a general lack of credibility. In contrast, today's geosynthetic liner systems, which are based on those same geomembrane liners, are accepted as a viable solution to the containment of hazardous and solid waste. That remarkable five-year transformation was a result of a concerted effort on the part of the geosynthetic industry as a whole. The industry developed new technologies to address the problem of geomembrane leakage. These technologies developed on three fronts: design, installation and CQA.

Regarding design, geosynthetic engineers recognized that liners could never be made impermeable and leak-free, so they developed liner systems to intercept, collect and remove the leakage that they know would inevitably occur through individual liners.

On the installation front, installers of geosynthetics devised advanced welding techniques, established training programmes for technicians, and developed detailed quality control procedures.

CQA, the last leg of this three-pronged attack, was developed to ensure that quality control procedures were adequately defined and implemented, and to document that

The prestige of the IGS, which in the past four years has reached the status of a fully-fledged international professional society, will certainly attract well-deserved attention to the work done by the Award recipients and finalists. This is consistent with the purpose of the IGS Awards, which is to encourage producers, users, consultants and scientists to perform special achievements in the field of manufacturing application, and knowledge of geotextiles, geomembranes and related products.

It is encouraging to note that the high quality of all the entries indicates that our industry is flourishing. It also serves to motivate those considering entering this prestigious competition to begin working to perfect their entries for the next IGS Award and Young IGS Member Achievement Award which will be granted in 1991 for the 1989-1990 period.



Tommy C. Bradford (left) and Daniel A. Schauer (right), CQA personnel of GeoServices, preparing a polyethylene geomembrane sample for conformance testing.

the installation proceeded exactly as envisioned in the design plans and specifications. Simply stated, CQA is the process of ensuring that the actual installation complies with the design.

Geosynthetic CQA, as we know it today, was developed by a relatively small team of engineers and geosynthetic specialists at the GeoServices home office in Florida. Although Mr. Fluet, Mr. Steinle and the personnel of the GeoServices CQA Division are the current members of this team, past members of the team have included Mr. Robert Denis, Mr. Al Hooper, Mr. Don Colbourne and Mr. R.B. Wallace, all of whom contributed greatly to the development of this technology. Also, it should be noted that Dr. J-P Giroud was instrumental in the creation of the technology as well as the formation of the team. The GeoServices team wrote the first comprehensive geosynthetic CQA plan (1984), published several papers on geosynthetic CQA, developed and taught more than 20 short courses on geosynthetic CQA, and worked with the U.S. Environmental Protection Agency as well as several individual States to

write rules, regulations and guidelines regarding geosynthetic CQA. In addition, the GeoServices team had developed, trained and managed the largest geosynthetic CQA organization in North America, and, probably in the world.

Today, geosynthetic CQA is an accepted technology. In fact, a study of several waste containment facilities has shown that comprehensive CQA can reduce the number of defects in a geomembrane liner by one or two orders of magnitude, resulting in a proportional decrease in leakage through that liner. Furthermore, the detailed report which results from the implementation of a comprehensive CQA programme provides regulators (who represent the public interest) with clear documentation that the liner system was constructed as designed and should therefore perform as designed. In the end, all parties including the owner, the designer, the manufacturer, the installer, the regulator, and the public are well served by a comprehensive geosynthetic CQA programme -- CQA technology has thereby accelerated

the acceptance of geosynthetic liner systems by all parties.

Geosynthetic CQA is now regarded as an integral part of geosynthetic lining system technology in North America, and geosynthetic CQA programmes are increasingly found in applications throughout the world. This technology, conceived and largely developed by a relatively small GeoServices team, has now been adopted and embraced by the industry at large. Many engineering design firms are now justifiably proud of the geosynthetic CQA services they offer, and end-users, regulators and installers everywhere insist on comprehensive CQA programmes.

Since geosynthetic CQA now clearly belongs to everyone in the geosynthetics industry, this Award is in many ways presented to the entire geosynthetics community. In addition to Mr. Fluet, Mr. Steinle and the Geoservices team, the IGS is recognizing the CQA technology which has contributed to the credibility of geosynthetics, increased their markets, and, most importantly, protected the environment.

Dr. Richard Jewell to receive the Young IGS Member Achievement Award

Dr. Richard Jewell, Industrial Fellow at the Department of Engineering Science, The University of Oxford, has been selected as the recipient of the Young IGS Member Achievement Award.

Dr. Jewell has devoted more than a decade to the challenge of unravelling the theory of reinforced soil, with the aim of allowing available reinforcement materials to be used appropriately and efficiently. Theory and practice are inseparable in such an endeavour. After graduating from Cambridge University, Dr. Jewell worked in consulting from 1975-1985 with Binnie & Partners, who supported his Ph.D. research on reinforced soil at Cambridge University (1976-79), before going to Oxford University (1985-), initially on a Royal Society Industrial Fellowship. The thread linking these sparring Universities is Dr. Peter Wroth who has encouraged the work throughout, first as Dr. Jewell's research director at Cambridge and then as Professor of Engineering Science at Oxford.

Dr. Jewell believes he has at last achieved a synthesis which allows the theory of soil mechanics, the behaviour of reinforcing materials, and the interaction between soil and reinforcement to be combined in a logical fashion, using standard calculations, for the design of reinforced soil applications. Safety margins are built in on both the soil and reinforcement properties. The opportunity to present this knowledge has come from the Construction Industry Research and Information Association (CIRIA) in the U.K. which has commissioned him to write a book on "The use of geotextiles in ground engineering: soil reinforcement and separation" to be published in 1990.

The IGS Award is in recognition of studies on geotextile reinforced soil walls, the focus of which is the working equilibrium and prediction of horizontal deformation during and following construction, taking account of imposed surcharge loadings and creep in the reinforcement. The



Dr. Richard Jewell

challenge was to explain the smaller than expected deformations typically observed in geotextile reinforced soil walls. The opportunity to test the theory came in the 1987 series of trial walls which were built at the Royal Military College in Canada (organized by Professors Peter Jarrett and Alan McGown and funded by NATO). Predictions of behaviour were sought before construction.

In developing his prediction, Dr. Jewell brought together several developments for the prediction of wall behaviour: (1) use of secant shearing resistance ϕ' for the soil fill appropriate to the density and effective stresses in the wall, (2) limiting equilibrium stress fields to define the magnitude and distribution of force along the reinforcements, and (3) a compatibility curve to indicate the combination of mobilized soil shearing resistance and mobilized reinforcement force for equilibrium in the wall. The above factors were combined into simple charts suitable for any chosen reinforcement spacing arrangement.

Dr. Jewell's work, and the practical form in which the results are presented for designers, represents an important contribution to the field of geosynthetics and their application in geotechnical engineering.

IGS Recognition for Dr. R.K. Rowe, Dr. K.L. Soderman and Mr. B.L.J. Mylleville

Dr. R. Kerry Rowe, Professor of Geotechnical Engineering, The University of Western Ontario, Dr. Kris L. Soderman, Geotechnical Engineer, Golder Associates, and Mr. Brian L.J. Mylleville, Research Assistant, The University of Western Ontario, have received "Special Finalist Recognition" for the prestigious IGS Award.

Working as a research team in the Geotechnical Research Centre at The University of Western Ontario, London, Canada, Drs. Rowe, Soderman and Mylleville have contributed greatly to the fundamental understanding of the behaviour of geosynthetic reinforced embankments on soft foundations. Their research has involved the development and application of numerical techniques which allows the simulation of embankment construction on the computer. These numerical techniques have been verified by comparison of the computer simulations with observed field behaviour for a number of field cases.

Having validated their numerical techniques, Drs. Rowe, Soderman and Mylleville used these computer techniques to perform computer simulations in which they studied the behaviour of reinforced embankments for a wide range of geosynthetic properties and foundation conditions. By examining the results of these computer simulations, they were able to show how the reinforcement interacts with the soil and to explain why a particular geosynthetic may substantially improve stability in one situation but have a



Left to right: Dr. Kris L. Soderman, Dr. R. Kerry Rowe, Mr. Brian L.J. Mylleville.

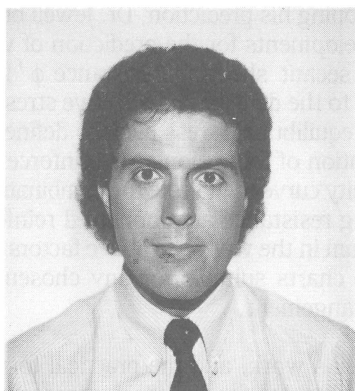
much smaller effect in another, and in many respects, similar situation. These studies have also demonstrated that there is a range of situations where simple design methods can be expected to provide good results, but have also indicated situations where considerable caution is required in using simplified methods.

The contribution of Drs. Rowe, Soderman and Mylleville to the fundamental understanding of how reinforcement can substantially improve embankment performance represents an important step in enhancing the scientific credibility of the use of geosynthetics in Civil Engineering.

IGS Recognition for Dr. R. Bonaparte

Dr. Rudolph Bonaparte, Vice-President and Principal of GeoServices Incorporated, Consulting Engineers of Norcross, Georgia, has received "Special Finalist Recognition" for the prestigious IGS Award. Dr. Bonaparte's candidacy was based on his work with geonet drainage layers for waste containment facility lining systems.

Dr. Bonaparte's wide variety of experience in geotechnical engineering, geosynthetics, and waste



Dr. Rudolph Bonaparte

management allowed him to play a key role in the development of the use of geonets for leachate collection layers and leakage detection layers in lining systems used to contain liquid and solid wastes. Prior to Dr. Bonaparte's involvement, geonets had only been used in general civil engineering drainage applications and in the lining system for a water reservoir. Today, geonets have been used in more than 100 waste containment facilities in the United States, some of which cover more than a hundred hectares.

In addition, Dr. Bonaparte has been active in the design of municipal and hazardous waste landfills and liquid impoundments for private and public sector clients. He has also worked extensively in the evaluation of the performance of lining systems at hazardous waste land disposal facilities and on the development of technical regulatory guidelines for the design and construction of double liners and leak detection systems for the U.S. Environmental Protection Agency.

Dr. Bonaparte's efforts in the enhancement of the performance of lining systems used to contain wastes have contributed significantly to the protection of the environment.

IGS General Assembly

A message from Dr. J-P Giroud, President of the IGS

The third * General Assembly of the IGS will take place on 30 May 1990 in The Hague, The Netherlands, during the 4th International Conference on Geotextiles, Geomembranes and Related Products.

During the General Assembly, important decisions will be made for the future of the IGS: amendments to bylaws, IGS membership fee, date and location of future international conferences, election of the President and Officers of the IGS, and election of eight Council members.

All IGS members, individual and corporate, should attend or be represented. The agenda of the General Assembly, as well as instructions for proxies, will be in the next issue of IGS News, to be published in March 1990.

* The first General Assembly was held in Paris, France, on 10 November 1983 for the formation of the IGS, the second in Vienna, Austria, on 8 April 1986.

Call for Candidates for IGS President, Vice-President, Secretary, Treasurer, and Council Members

The IGS President, Vice-President, Secretary, Treasurer, and eight Council Members will be elected from a list of candidates presented at the General Assembly of the IGS to be held in The Hague, The Netherlands, on 30 May 1990.

IGS members who wish to run for these elections are invited to write to the IGS Secretary. Their names will be listed as candidates in the next issue of IGS News if their letter of candidacy is received by 31 January 1990. The next issue of IGS News will be published in March 1990 and will be the last one before the IGS General Assembly.

In their letter to the IGS Secretary, the candidates are requested to provide a short statement as follows:

- First line: Name and Country
- Second line: Candidate to ... (indicate: President, Vice-President, Secretary, Treasurer, and/or Council Member)
- Then, a 10-line maximum single-spaced text where the candidate gives a summary of his/her professional career and, particularly in the case of candidate officers, indicates why he/she is a candidate.

If an IGS member is a candidate to several positions (e.g. Council Member, Secretary, and Treasurer), he/she will have to send to the IGS Secretary one statement for each position.

Statements by all candidates will be made available to attendees at the General Assembly.

For information, the present Council includes:

- seven members who were elected in 1988 and will therefore stay until 1992: Messrs. Fukuoka (Japan), Giroud (U.S.A.), Leflaive (France), Myles (U.K.), Rankilor (U.K.), Rowe (Canada), and van Harten (The Netherlands);
- the Past-President, Charles Schaerer (Switzerland); and
- eleven members who were either elected in 1986 or co-opted: Messrs. Arman (U.S.A.), Barker (U.K.), Floss (Germany), Massenaux (Belgium), Perfetti (France), Rigo (Belgium), Schneider (Austria), Sembenelli (Italy), Stevenson (U.S.A), Tonus (Switzerland), and Warner (U.S.A).

After two terms of office, Dr. G. Massenaux has decided not to seek re-election as IGS Secretary. In accordance with the proposed amendments* to the IGS bylaws, Dr. J-P Giroud (current President) and Prof. K. van Harten (current Vice-President) will not seek re-election.

* The proposed amendments will be published in the March 1990 issue of IGS News.

(Submitted by J-P Giroud and G. Massenaux)

North American Geosynthetics Society

The North American Geosynthetics Society (NAGS) is busy setting up the 1990 series of one-day seminars on "Geosynthetics in Waste Containment". These seminars will be held in six cities in North America in April and May of 1990. Information is available in the Calendar of Events in this Newsletter.

NAGS is also active in forming the 1991 Geosynthetics Conference which will be held in February of 1991. The Chairman of the Organizing Committee is Dr. Jay Beech of GeoServices Inc. and the Technical Program Chairman is Mr. Barry Christopher of Polyfelt Inc. Ms. Laurie Honnigford of IFAI is the General Secretary.

"Awards of Excellence" in Geosynthetics is a programme headed by Mr. Robert Carroll of the Tensar Corporation whose committee is forming a series of guidelines. The Awards will be presented at Geosynthetics '91.

Student Chapters of NAGS have been established at The University of Western Ontario and Drexel University, with other universities in North America expressing interest. Hopefully many more will become involved in the near future. Dr. Kerry Rowe is the Vice-President of NAGS heading this activity.

(Reported by Dr. R.M. Koerner)

4th International Conference

Geosynthetics: Reliable, Durable, Effective

The Hague — 28 May - 1 June 1990

Bulletin No. 2, containing the Provisional Programme and Registration Form, is being distributed at the same time as this issue of IGS News, so only a brief description of the conference is given below.

The conference will be preceded by a number of social events on Monday morning, May 28 (including sightseeing tours of The Hague and a soccer match), and will begin in earnest at 4 p.m. with an opening address "Geotextiles in Geotechnics" to be given by Prof. A. Verruyt of Delft University. This will be followed by an address by the President of the IGS, Dr. J-P Giroud.

For the first time in history, the IGS Awards will be presented (see lead article), followed by a get-together party in the area of the Technical Exhibition (which will be open from Monday morning to Thursday afternoon).

Each of the three "scientific days" will start with a plenary keynote session. The keynote speakers are: Dr. R.A. Jewell (U.K.) "Strength and deformation in reinforced soil design"; Dr. J.P. Gourc (France) "The soil particle, the water and the fiber, a fruitful interaction now controlled"; Dr. R.M. Koerner (U.S.A) "Geosynthetics in waste containment".

The Paper Selection Committee has selected over 130 papers from 31 countries (out of the 400 abstracts which were submitted from 38 countries) for presentation in the simultaneous and poster sessions. The papers will be published in Vol. 1 of the Proceedings, together with approximately 170 selected 1-page communications. The papers are grouped by twelve newly defined themes: Steep Slopes and Walls; Embankments on Soft Soil; Unpaved Roads & Railroads; Drainage Filtration; Canals, Reservoirs & Dams; Waste Disposal; Properties Testing; Durability & Creep; Mechanical Damage; Miscellaneous Tests; and Special Applications.

The farewell party on Thursday night will offer an excellent opportunity for meeting old friends and making new ones.



Friday is devoted to excursions, one for general sightseeing and three technical excursions highlighting the Dutch Deltawork, the construction of the second "Brienoord" bridge and the "Willemspoort tunnel" in Rotterdam, and waste disposal sites in the Europort area.

For partners, the "Accompanying Persons Programme" is at least as attractive as the scientific programme with highlights including visits to a Dutch Flower auction and nursery, the old cities of Delft and Gouda, and a special exposition commemorating van Gogh.

The deadline for **early registration** is February 15, 1990 (fee: participants NLG 1,100; partners NLG 400; students NLG 400).

If you do not receive your copy of Bulletin No. 2 shortly after receiving this issue of IGS News please contact:

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16 Lange Voorhout
2514 EE The Hague, The Netherlands
Phone: +31.70.365 7850 FAX: +31.70.361 4846

Japanese Chapter

The Japanese Chapter held Council meetings on 14 April and 23 June 1989. A seminar on "Geotextiles Used for Preventing Reflection Cracks in Pavements" was held in Tokyo on 13 June 1989. It is also planned to hold a seminar on "Geotextiles for Pavements" in Osaka on 27-29

November 1989. The Japanese Chapter has been regularly publishing its own newsletter and has technical committees collecting international information on the selection of materials and construction methods related to geotextiles.

(Reported by Prof. M. Fukuoka)

Southeast Asia Chapter

The Southeast Asia Chapter (SEAC) is planning to hold its inaugural general meeting within the next three months. In the meantime, the chapter has supported the symposium on the Application of Geosynthetics and Geofibers in Southeast Asia, held in West Malaysia 1-2 August 1989. This symposium was jointly organized by the Institution of

Engineers, Malaysia and the Southeast Asian Geotechnical Society. The SEAC has also been busy preparing a bid for the 5th International Conference on Geotextiles, Geomembranes and Related Products to be held in 1994.

(Reported by Dr. S.D. Ramaswamy)

Society Activity

IGS Council Meeting by Dr. G. Massenaux, Secretary of the IGS

The IGS Council met in Brussels, Belgium on 6-7 March 1989 with practically a full attendance of Council members.

The following topics were discussed and/or decided upon:

- 1) Guidelines for IGS chapters were finalized.
- 2) The Council was informed that regulations for the IGS Awards had been finalized and also that an IGS Awards Committee had been set up in accordance with the Council's earlier decisions.
- 3) The Council approved the selection of the IGS Awards medals.
- 4) The Council agreed that a large promotion of the IGS Award was necessary. This would be partly funded using special funds being allocated by the organizers of the 4th International Conference.
- 5) It was agreed that some directives ought to be issued in order to avoid competition between Chapter awards and the IGS Award.
- 6) Amendments to bylaws: A series of amendments to the bylaws, proposed by Mr. E. Leflaive, were discussed and approved for submission to the coming General Assembly (to be held in 1990). A number of additional changes to the bylaws were proposed, including
 - the creation of a "student membership" category
 - the election of Officers before the other Council members
 - the abolition of limits on the term of office of the Secretary and the Treasurer of the IGS but maintaining limits on the term of office of the President and Vice-President
 - clarification of the chairman's vote in the case of a tied vote.
- 7) The system of partially replacing the Council membership between General Assemblies was discussed; finally, the Council decided to keep this system as it exists in the present IGS bylaws.
- 8) Mr. Perfetti submitted proposals aimed at preventing the misuse of the IGS logo and enhancing the status of IGS in the world scientific community. After discussion in the Council, Mr. Perfetti was asked to draft recommendations on this matter.
- 9) The idea of creating a Corporate Members Committee had received mixed support, however, a large core of corporate members had stated their interest in having such a committee and their willingness to participate. The Council voted to form the committee under the chairmanship of Mr. H. Schneider. It was agreed that the Secretary of IGS would be required to attend the meetings of the committee.
- 10) Various chapters had asked for a refund of part of the individual membership fee paid to IGS, in order to finance their own activities. Although some members raised objections to this request (on the grounds that the money was badly needed for IGS itself), Council decided that, from 1990 on, chapters would be refunded a portion of the IGS subscription fees of the individual members belonging to that chapter. The amount of this refund would be set on an annual basis. The Council fixed the refund at \$15 (out of \$40 US) for 1990. No objection was raised to chapters collecting other extra income.
- 11) The Treasurer, Mr. P. Stevenson, presented his computerized bookkeeping system which will be fully implemented later in 1989. It is the Treasurer's hope that chapters and all IGS related groups would adopt and/or link with this system.
- 12) The 1988 year closed with a deficit of \$13,727 to be taken from reserves. The 1989 budget was expected to balance, due to an increase in membership of IGS.
- 13) The Council agreed that \$40 US should be paid to IGS for each conference registrant as well as \$10 US per square metre of exhibition space sold.
- 14) A French language brochure has been printed and widely distributed in Europe. An Italian version will be prepared. The English version has been re-issued. (Editor's note: The Italian version was distributed in October 1989).
- 15) Proposals for a new letterhead for the IGS were submitted by Mr. Rankilor. The Council discussed the matter and considered options to be incorporated in a revised draft for the next meeting. Mr. Rankilor will also make proposals for the letterhead of chapters so that they would harmonize with that of the IGS.
- 16) Dr. Rigo presented his plans for the standards directory.
- 17) Support will be requested from companies for a Geotextiles and Geomembranes Information Source updating.
- 18) The idea of *Post-Hague Conference* cycles will be explored at a coming Council meeting.
- 19) A discussion paper about local chapter activities will be prepared by Messrs. Rankilor and Schneider.
- 20) Procedures for improving quality control were proposed in a paper presented by Prof. Floss. The Council decided to ask corporate members to discuss these matters in the "Corporate Members Committee".
- 21) Various means of research promotion were discussed.

Corporate Profiles

As indicated in IGS News, Vol. 4, No. 2, the IGS Council has decided that in each issue of the IGS News three Corporate Members will be allocated space to allow them to introduce their company or association and present their

achievements. The criteria for selection of corporate profiles were described in IGS News, Vol. 4, No. 2, p. 7. There is no charge for having a corporate profile published; it is a benefit of membership.

Industrial Fabrics Association International

345 Cedar Street, Suite 800
St. Paul, MN 55101 U.S.A.

The Industrial Fabrics Association International (IFAI) is a non-profit international trade organization for those who manufacture textiles or make finished products out of textiles. More than 1800 textile-related firms are members of IFAI.

IFAI has been active in collecting, researching and disseminating information on geotextiles, geomembranes and geogrids for many years. In 1967, for example, the Association sponsored a conference on the use of fabrics on the Alaskan pipeline project. One of the papers dealt with an innovative approach of using fabrics in the construction of roads in the tundra.

The Association has also been an aggressive leader in the advancement of information through the sponsoring of major international conferences. In 1982, IFAI sponsored the Second International Conference on Geotextiles and, in 1984, organized the International Conference on Geomembranes. This latter conference, held in Denver, Colorado, successfully brought together members of the flexible liner industry for the first time. Other conferences have since followed including the Geosynthetics '87 Conference held in New Orleans (725 attendees) which was the first regional conference organized under the auspices of the IGS, and the Geosynthetics '89 Conference in San Diego (more than 925 attendees).

In 1979, IFAI formed a specific Geotextile Division within the organization for companies that manufacture or distribute geotextiles. Manufacturers and distributors of geogrids and other geocomposites are also involved in the Geotextile Division. In 1984, the Geomembrane Division was formed for manufacturers, distributors and installers of geomembranes. Each of these divisions is very active in the development of programmes which help advance the use of geosynthetics in civil engineering projects.

In publishing, IFAI has become a leader in the dissemination of information on the use of geosynthetics. The *Geotechnical Fabrics Report* has become a respected source for updated information on the use of geotechnical fabrics. This bi-monthly magazine has a circulation distribution of more than 12,000 readers. More than 20 books, pamphlets, slide shows and brochures have also been developed by IFAI.

IFAI is committed to the development of regional and international professional societies serving the field of geosynthetics. Many of IFAI's conferences have been sponsored in cooperation with professional organizations such as IGS and the North American Geosynthetics Society. The secretariat of NAGS, a regional chapter of the IGS, is housed within IFAI headquarters, and the Executive Vice-President of IFAI was elected to the IGS Council in 1986.

IFAI's scope extends beyond the Geosynthetics industry. For 75 years, IFAI of St. Paul, MN, has provided information to companies involved in the industrial fabrics industry. To offer the best possible service to its more than 1800 member companies, IFAI's objectives include being an information resource in the industrial fabrics industry, developing data, materials and programmes to assist industrial fabric firms, and maintaining a positive image of the industrial fabrics industry.

IFAI provides information and resources to its member companies through two other trade magazines: the *Industrial Fabric Products Review* and *Fabrics and Architecture*. IFAI provides publications on virtually every facet of the industrial textile industry. The Association sponsors an annual international convention that looks at a wide range of industrial fabric markets.

New Corporate Members

The IGS is pleased to welcome **Tiszai Vegyi Kombinal (TVK)** as a new Corporate Member. Founded in 1961, TVK is one of the major European petrochemical companies. Using its own polypropylene, TVK produces various staple fibers under the tradename TIPPFIL. In addition, TVK manufactures polypropylene geotextiles named TIPPTX which is a UV stabilized needlepunched and/or heat bonded nonwoven geotextile. TVK is a major supplier of geotextiles to the Soviet Union for projects, such as the protection of gas lines, and large hydraulic engineering activities, such as the "Yamburg" project.

The IGS is also pleased to welcome **Belton Industries Inc.** (U.S.A.), **Kuraray Co. Ltd.** (Japan), **Netlon Ltd.** (U.K.), **The Reinforced Earth Co.** (U.S.A.) and **The Tensar Corporation** (U.S.A.) as new Corporate Members and hope to have a brief description of each of these Corporate Members in the next issue of IGS News.

Readers may also be interested to note that **Acme STW Inc.** (U.S.A.) has replaced the James River Corporation (see item under "News of Members") and that **Exxon Chemical Geopolymer Ltd.** (U.K.) has replaced ICI Fibres Ltd. as Corporate Members.

Fritz Landolt SA (Switzerland) - FLN - Geotextiles

by
Eugen Schwitter

Bahnhofstrasse, CH-8752 Nafels-Switzerland

For over 50 years Fritz Landolt SA has produced needlepunched non-woven products, initially out of natural fibers such as coir, jute and subsequently using a variety of synthetic fibers. Nearly 20 years ago Fritz Landolt began the development and production of geotextiles to resolve the problems of separation and filtration in the building and civil engineering industry.

Fritz Landolt's interest in encouraging the correct use and development of geotextiles is demonstrated by the fact that they were a supporting manufacturer in the formation of the Swiss Geotextile Society, and, when the International Geotextile Society was formed, they were one of the first to pledge their support as a corporate member. Fritz Landolt has been active in both societies and has attended conferences and participated in technical committees, one of which was responsible for the internationally recognized Swiss *SVG Geotextile Manual*. This manual has become widely used by many engineers and is the basis for much of the geotextile selection in Europe.

Fritz Landolt produces a wide range of nonwoven needlepunched geotextiles manufactured from both staple and polyester continuous filaments. These are marketed under the trademark "FLN Geotextiles". Other products from Fritz Landolt include "composite geotextiles", which have exceptionally high transmissivity and are suitable for tunnel drainage, landfill drainage and protective layers in conjunction with geomembranes.

A variation of Fritz Landolt's production is a heat bonded roofing felt that has been successfully used for the prevention of reflective cracking in asphalt overlays.

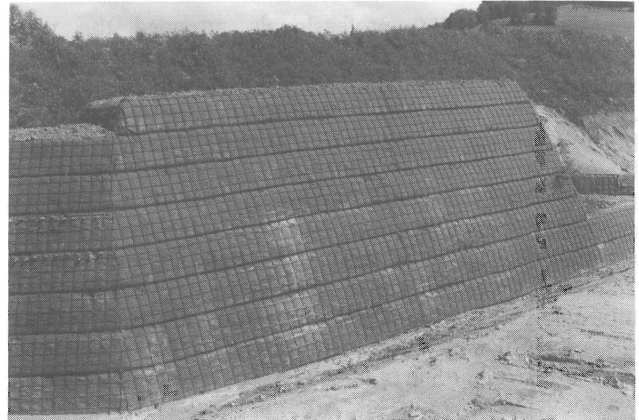


Photo showing Textomur - System before vegetation is established.

With the experience acquired over 20 years in the production and marketing of geotextiles, Fritz Landolt SA claim to be able to offer specifiers and contractors not only a product but in many instances full solutions.

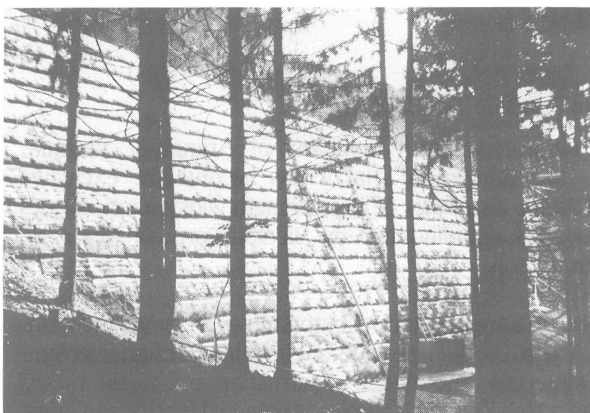
The "Textomur-System" is an example of such a total approach. This patented soil reinforcing system for steep slopes combines a retaining mesh, a nonwoven vegetation "establishment" fabric and a unique reinforcing and drainage geotextile. The "Textomur-System" is simple to construct and produces a pleasing fully-vegetated slope.

Whilst geotextiles are an important part of Fritz Landolt's production, they represent only a section of the company's expertise. Fire retardant fabrics, adhesive surfacing and many other nonwoven technologies are available within the company and can be used to complement and enhance the existing geotextile range.

Kajima Corporation

Chofu-shi
Tokyo, Japan

Kajima, which has gained a leading position as a general contracting organization, is now capable of performing a wide range of construction activities.



View of completed polymer grid reinforced embankment.

Kajima offers its clients comprehensive engineering and construction services such as planning, design, engineering, construction and construction management. Services are offered on a partial or full-turnkey basis depending on specific project conditions.

Kajima has constructed soil structures using geotextiles for drainage, filtration, separation and reinforcement. Recently, a number of polymer grid reinforced embankments have been constructed in order to meet the increasing demand of high, steep embankments.

The photograph shows an application of a polymer grid to a high, steep embankment for a road. The maximum height of the embankment is 10 m, and it was the highest embankment of its type in Japan at the time of construction. Along the slope, sodding sandbags which contain plant seeds are piled up to a height of 0.5 or 1 m to retain compacted earth fill.

3rd Italian Conference on Geosynthetics in Earth Structures

by
Dr. R. Kerry Rowe, Editor - IGS News

More than 150 professionals attended the very successful 3rd Italian Conference on Geosynthetics held in Bologna on 27 October 1989. Organized by the Associazione Ingegneri e Architetti della Provincia di Bologna and the Bolognafiore, the conference was opened by Ing. G. Tasselli, President of the Italian Society of Engineers and Architects who also read a letter of congratulations from IGS President J-P Giroud. Some preliminary comments were then made by Prof. A. Di Tommaso, Chairman of the Italian Group of RILEM (Réunion Internationale des Laboratoires d'Essais sur les Matériaux et les Constructions). The morning session, chaired by Prof. P. Colombo (Chairman of the Italian Society of Geotechnics), was devoted to Standards. The introductory lecture dealt with the work of the ISO (International Organization for Standardization) subcommittee on Geotextiles and Related Products (ISO-TC38-SC21) and the RILEM Committee 103 on Geomembranes, and was presented by Dr. A.L. Rollin (Canada) who chairs both groups. Other presentations on Standards were made by Dr. J.M. Rigo (Belgium), Mr. R. Frobel (U.S.A.), Mr. P. Delmas (France), Mr. B. Forment (Belgium), Mr. M. Sanvito (Italy), Prof. G. Moraldi (Italy), Mr. D. Cazzuffi (Italy), and Mr. P. Gugelmetto (Italy). The session ended with a lively discussion of durability issues chaired by Daniele Cazzuffi.

The 'lunch break' included a guided tour of the section of the International Exhibition of Building Industrialization dealing with geotextiles, geomembranes and related products.

The afternoon session, chaired by Prof. P. Pozzati, dealt with applications. Following a special lecture on the use of geosynthetics in the reinforcement of embankments on soft soils by Dr. R. Kerry Rowe (Canada), Prof. R. Jappelli coordinated a series of 18 short presentations which dealt with analysis experiments, construction and performance as related to applications for geosynthetics.

Although listed as the 3rd Italian Conference, the conference had a very international flavour (including



Third Italian Conference on Geosynthetics:
Left to right: M. Sanvito, P. Gugelmetto, G. Moraldi, P. Colombo, G. Tasselli and D. Cazzuffi.

simultaneous translation Italian/English). At the instigation of Daniele Cazzuffi, meetings of ISO working groups on Mechanical Testing and Durability had been held in Italy just prior to the conference and a large contingent of members from these groups attended the conference.

The IGS was very visible with five members of the IGS Council attending the conference, presentations by two members of Council (Drs. Rigo and Rowe), a presentation by Mr. G. den Hoedt on the 4th International Conference on Geotextiles, Geomembranes and Related Products (see separate article), a presentation by Dr. J.M. Rigo on the new edition of the IGS Inventory on Geotextile Standards which is to be published soon, and the distribution of the new IGS brochure printed in Italian.

This conference provided an outstanding opportunity to review current work on standardization, to preview some of the excellent work being done with geosynthetics in Italy and also to make many practising engineers in Italy, who may not be familiar with geosynthetics, aware of their wide range of potential applications. The organizing committee, and, in particular, Messrs. A. Di Tommaso, D. Cazzuffi, R. Jappelli, and A. Tolomelli, together with Elena Pasoli and her staff, are to be congratulated on an excellent conference.

News of Members

Du Pont Announce New Fabric

Du Pont has announced a new type of "Typar" spunbonded polypropylene fabric specially designed for suppression of cracks on bituminous or concrete pavements. Designated "Typar" BM 41, the material is laid on a tack coat or bitumen emulsion prior to installation of the new overlay. Like standard Du Pont "Typar", BM 41 is a spunbonded sheet structure formed of polypropylene filaments bonded at the fiber crossover points. However, an additional bonding gives unique properties designed for repaving applications.

Nicolon Joins in Distributorship

The Reinforced Earth Company of Arlington, Virginia, U.S.A. has announced that it has become the exclusive United States distributor of high strength geosynthetic fabrics and geogrids manufactured by Nicolon Corp. of Norcross, Georgia, U.S.A.

Under the announced distributorship agreement, the Reinforced Earth Co. will provide engineering, design, geosynthetic materials, and on-site construction assistance for soil structures stabilized with Nicolon's patented fabrics and grids.

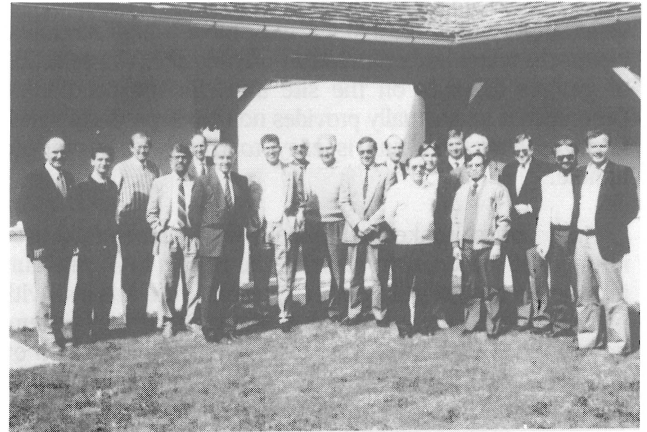
Austrian Innovation Research Workshop

by
Gerhard Werner

Under the auspices of the Austrian National Committee of ISSMFE, the first Austrian Innovation Research Workshop on "The Use of Plastic Materials in Soil Mechanics and Ground Engineering" was held at Krems, Austria, 8-11 May 1989. The workshop was held primarily to discuss the state-of-the-art of geosynthetic design and construction technologies relative to new geotechnical problem areas and to establish the research needs for future developments.

The workshop, which was attended by 20 invited experts from 15 countries, was officially opened by chairman Prof. Heinz Brandl (Austria) who emphasized the importance of geosynthetics to waste containment and to ground engineering as a whole. The initial focus on the topic was created by a comprehensive introductory paper by Mr. Gerhard Werner (Austria) who presented examples of worldwide soil related problem areas, ranging from Arctic Road Construction to Reclamation of Desert Land. Prof. R.M. Koerner (U.S.A.) gave a brief description of the historical perspective and presented a very general matrix of known problems showing the geosynthetics which are affected.

After this initial phase of the workshop there were seven separate sessions to consider individual aspects of the problems. The sessions had leaders who presented state-of-the-art papers and generated discussions which were chaired by Prof. Gdalyah Wiseman. Over the remaining one and a half days, the workshop was divided into five working groups to develop specific R & D needs statements relating



Left to right: M. Hausmann (Australia), A. Kollios (Greece), K. Legg (South Africa), I. Peggs (USA), R.M. Koerner (USA), R. Floss (Germany), G. Werner (Austria), F. Jaecklin (Switzerland), G. Wiseman (Israel), J.M. Rigo (Belgium), A. Bauer (Germany), A. Rollin (Canada), J.P. Gourc (France), J. Pinheiro (Portugal), H. Schneider (Austria), R. Oei (Singapore), T. Ingold (Great Britain), R.K. Frobel (USA), D. Cazzuffi (Italy).

to Performance Testing, Product Development, Design Methods, Construction Methods and Field Monitoring.

The workshop was sponsored by Polyfelt GesmbH, an Austrian-based manufacturer of geotextiles. The organizing committee was chaired by Mr. Gerhard Werner, Polyfelt Manager for Geosynthetics Consulting.

2nd International Landfill Symposium

by
Dr. André Rollin

The 2nd International Landfill Symposium was held in Ponto Conte (Alghero), Sardinia, 9-13 October 1989. The conference was organized by The University of Cagliari, The Technical Universities of Denmark, and of Hamburg-Harburg, The University of Sassari, and the Sanitary Environmental Engineering Centre in Sardinia, under the aegis of the Italian Ministry of Environment. More than 500 participants from around the world attended the conference.



Second International Landfill Symposium
Left to right: R. Serra, J.M. Rigo, A. Piepoli, G.J. Farquhar, G.J. Barrocu, H. Hax, A.L. Rollin.

Following a series of presentations concerning the European Perspective in 1992 for Waste Management and Landfilling, there were technical sessions dealing with: a) Landfill Concept and Environmental Aspects; b) Lining Technology: Natural Barriers; c) Lining Technology: Synthetic Systems; d) Leachate Production and Quality; e) Environmental Impact of Leachate; f) Leachate Treatment; g) Industrial Waste and Codisposal; h) Combustion Residues Landfilling; and i) Combustion Residues Management. There were also poster sessions on the topics of: a) Landfill Concepts and Environmental Aspects; b) Lining Technology; c) Leachate Management; and d) Industrial Waste and Codisposal.

Many members of IGS, RILEM and the ISO Committee on Geosynthetics participated as speakers on the use of geomembranes as liners in landfill applications. The 3rd International Landfill Symposium is scheduled for Cagliari in October 1991. The call for papers will be determined in early 1990.

Geojute

by
Dr. J.N. Mandal

Jute is a vegetable product. Being biodegradable, it has the ability to mix with the soil and acts as nutrients for vegetation. Jute is flexible but may have a high modulus. It absorbs water and reduces run-off velocity. The selection of geojute depends on the site and climatic conditions. Decomposed jute actually provides non-toxic products which fertilizes plant life. Jute is easy to transport, store and handle.

Jute fabrics, soaked in bitumen, were successfully used in unpaved road construction by the British in Burma during the Second World War. At present, jute fabrics, with protective coatings, are used in the construction of temporary roads for military and emergency use. Research on durability and long-term stability of jute fabrics would open up areas for use in permanent construction.

Research into the use of prestressed weak geosynthetics and jute reinforcement in pre-rutted, unpaved roads is presently under way at the Bangladesh University of Engineering and Technology.

As Bangladesh is a major jute-producing country, new unconventional uses for jute are being sought. The fabrics in their natural state are being used in temporary applications as filters, and jute wick drains.

The cost differential for certain applications such as erosion control and mulching in agriculture makes the use of geojute very attractive in India. A global forecast indicates that by 2000 AD the demand will exceed 1500 million square metres; current demand is around 400 million square metres.

The principal producers of jute are Bangladesh, India, China, Thailand, Nepal, Indonesia, Burma, Brazil, Vietnam, Taiwan, Cambodia and some countries in Africa.

At the First Indian Geotextile Conference on Reinforced Soil and Geotextiles held in Bombay in 1988, Dr. Jean-Pierre Giroud, President of the International Geotextile Society, in his opening address at the special session on geojute said

that developments in jute applications will benefit many people, especially in India. He added that, rightfully, the Government of India is supporting the development of jute applications, and suggested that a good way to help the jute industry is to use jute geotextiles in government projects.

Use nature to control nature: This was the message that emerged from the Bombay conference. The following are the important highlights of the special session on jute geotextiles.

1. Jute, being a natural fiber, has a special appeal in the field of geotextiles.
2. The cost of jute products is expected to be price competitive.
3. The application of geojute is likely to provide outlets for low grade jute fiber, the utilization of which is posing a problem in many jute-producing countries.
4. The utilization will need some change in the existing jute mill machinery but the conversion process is not expected to be very elaborate.
5. There seems to be enough room for jute as well as synthetics in the field of geotextiles. While synthetics are more suited for permanent applications, jute has an edge over synthetics in temporary stabilization applications as well as in the area of mulching in agricultural applications.
6. The advantages of jute are its strength, excellent absorbency, competitive cost, environmental compatibility and biodegradability. It was noted that, in order to enable jute to find its place, there should be a shift from the present production-based approach to a market-based approach.

Jute can be used to make geotextiles with excellent mechanical and hydraulic properties, but, as pointed out by Dr. Giroud, these properties must be characterized by test results, and again an effort must be made by the jute industry to carry out tests to evaluate properties of the various types of jute products.

Geotextile Manual

The Swiss Society of Geotextile Professionals has published a French/German manual which is a practical tool for engineers. It explains the particular structure of geotextiles and their different characteristics, how to evaluate the different types of materials on the market, how to design structures, roads and waterways economically and safely, how to place these materials correctly and prepare practical bid documents. The manual is clearly organized with chapters devoted to characteristics of textiles and raw materials, the uses and main properties of geotextiles. Additional chapters cover applications, with examples, for designing roads, railroads, embankment/retaining walls, drainage, waterways, and tunnels. The appendix contains a list of symbols and definitions prepared by the IGS in German, French and English, and a catalogue of international products with comparable results of 20

standard tests which is useful in selecting geotextiles. Two new chapters concerning geotextile use in bituminous road pavement and durability of geotextiles are currently being prepared.

This "Geotextile Manual" is the result of a concerted three-year effort by a group composed of an equal number of producers and public authorities or engineering specialists. The original edition sold out quickly and a second edition is selling well at Sfr 245.

To help judge the market before publishing an English version, the Swiss Society would like to hear from all those who would be interested in such a translation. Write to:

SVG/ASPG, c/o EMPA
P.O. Box 977, CH-001 St. Gallen
Switzerland

Geotextiles & Geomembranes an official journal of the IGS

Starting in 1990, the Journal will increase to 6 issues per year so as to provide a more frequent service to subscribers and more timely publication for the authors. To cover the cost of the increased quantity of material being published, the subscription price for 1990 has been set at Pounds 115 (U.K.)/Pounds 126 - \$214 (rest of the world). The reduced subscription offer to individual IGS members represents a 40% discount off the full price, i.e. Pounds 69 (U.K.)/Pounds 75.60 - \$128.40 (rest of the world).

Reduced subscriptions are available directly from the publisher:
Subscription Department
Elsevier Applied Science Publishers
Crown House
Linton Road
Barking
Essex IG11 8JU
United Kingdom

The editor, T.S. Ingold, the Editorial Board Chairman, J-P Giroud and the IGS Editorial Board Representative, K. van Harten, hope that IGS members will use *Geotextiles & Geomembranes* as an outlet for their technical papers and thus contribute toward the continuing success of this high quality publication which now has subscribers in over 40 countries worldwide. Papers should contain work not published in full elsewhere and should be sent to:

Dr. T.S. Ingold
Mulberry Lodge
St. Peters Close
St. Albans
Hertfordshire AL1 3ES
United Kingdom

(Instructions to authors are also available from Dr. T.S. Ingold)

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News of Members

Awards

Dr. R. Kerry Rowe has been awarded the most prestigious award of the Natural Sciences and Engineering Research Council of Canada for his research into the use of geosynthetics and waste disposal.

Tensar Geogrids to be made in Japan

Tensar geogrids, developed in the U.K. by Netlon Limited, are to be produced in Japan by Nippon Tensar Limited which will be jointly owned by Mitsui Petrochemical Industries Limited and Mitsubishi Petrochemical Company Limited. The newly formed company will operate under licence from the U.K. developer. The manufacturing plant is scheduled for completion by January 1990.

Standards

The first meeting of CEN/TC 189 will take place in Brussels, 30 November - 1 December 1989. Working groups to be created following presentation of national views concerning identification, design and test methods.

Philips Fibres Corp.

Philips Fibres Corp. has announced the introduction of a new erosion control product consisting of a nonwoven polypropylene fiber mat reinforced by a polypropylene netting. The product is said to promote rapid growth of freshly landscaped areas and to be fire resistant. Anticipated applications include highways, railroads, landfills and beach and dune erosion projects.

Acme STW Inc. formed to market Geotextiles in North America

Acme STW Incorporated has announced the organization of a company to manufacture and market nonwoven geotextile products for the construction industry. Acme will also produce and distribute other needlepunched fabrics for industrial end uses.

Acme STW has licensed the trademark Fibretex (R) from James River. Certain technological and proprietary business information in addition to the Fibretex (R) licence has been sold to Acme by James River.

Acme's new product Fibretex (R) PET will be manufactured from post-consumer recycled polyester bottle resin. Acme hopes the environment-conscious engineer will be interested in this product that solves problems in waste stream containment while removing wastes from the environment.

Acme's President, Mr. Peter Stevenson, is currently Treasurer of the IGS and is a past chairman of the INDA Geotextile Group as well as a long term member of the IFAI Geotextile Division. Mr. Bernard Myles is Vice-President of Technology for Acme STW Inc.

Christopher Joins Polyfelt

Mr. Barry Christopher has left STS Consultants in Northbrook, Illinois, to join Polyfelt Inc. as Technical Manager at the Company's headquarters in Atlanta, Georgia.

Research Survey

IGS needs your help in identifying ongoing research in geosynthetics. The IGS Committee on Research will compile and correlate this information and will publish it in a special issue of the IGS newsletter in an effort to keep the IGS community informed. The committee will also use this compilation to stimulate discussions concerning future needs for research.

Please take a few minutes now to provide the information requested below and mail to Professor Ara Arman, Chairman of the IGS Committee on Research. If you know of others who may not be receiving IGS News but are performing research in geosynthetics, please either send their name and

address to Ara Arman or send a copy of this article to them so that they can forward information to:

Professor Ara Arman,
c/o Louisiana Transportation Research Center
4101 Gourrier Avenue
Baton Rouge, Louisiana 70808 U.S.A.

Please provide the following: title of research; principal and co-principal investigators; affiliation; address of contact person; expected date of completion of the research; and a brief abstract (not to exceed 30 words). For examples, see Vol 4, No. 3, p. 11, 1988.

Publications Recommended by IGS

Conferences Proceedings:

First International Conference

"Proceedings of the International Conference on the Use of Fabrics in Geotechnics" (Three Volumes)
to be ordered from:
ENPC, Service Formation Continue, 28 rue des Saints Pères, 75006 Paris, France

Second International Conference

"Proceedings of the Second International Conference on Geotextiles." (Four Volumes)
Price: \$72 plus postage to be ordered from:
IFAI, 345 Cedar St., Suite 800, Saint Paul, MN 55101, U.S.A.

Third International Conference

"Proceedings of the Third International Conference on Geotextiles" (Four Volumes)
Price: US \$128 for America, 300 hfl for the rest of the world to be ordered from:
IFAI (see address above), for America, or, for the rest of the world, from:
BALKEMA, Postbus 1675, NL-3000 BR Rotterdam, The Netherlands

Proceedings of Geosynthetics '87

New Orleans, U.S.A. 1987
Price: US \$50 plus postage, from:
IFAI, 345 Cedar St., Suite 800, St. Paul, MN 55101, U.S.A.

Proceedings of 1 Kongress Kunststoffe in der Geotechnik K-GEO 88

Hamburg, Germany, 1988
Price: DM105 for individuals; DM80 for members of DGEK
Deutsche Gesellschaft für Erd-und Grundbau, e.V. Hohenzollernstrasse 52 D, 4300 Essen. 1, Germany

Proceedings of the Post Vienna Conference on Geotextiles

Singapore, 1988
Price: US \$50 plus postage, from:
Conference Logistics & Services, Orchard Point Post Office Box 576, Singapore 9123

Proceedings of the International Geotechnical Symposium: Theory and Practice of Earth Reinforcement

Fukuoka, Japan, 1988
Price: US \$59, 120 hfl, from:
BALKEMA, Postbus 1675, NL-3000 BR Rotterdam, The Netherlands.

Proceedings of Geosynthetics '89

San Diego, U.S.A. 1989
Price: US \$55 plus postage, from:
IFAI, 345 Cedar St., Suite 800, St. Paul, MN 55101, U.S.A.

Publications of the IGS

The publications listed below can be ordered from:
IGS Secretariat, 51 Avenue des Cerisiers, 1040 Brussels, Belgium

Directory of Members 1988

Name, address, telephone, telex and telecopy number of all IGS members as of 30 June 1988. All IGS members should have received a free copy \$10 per additional copy for members - Price for nonmembers: \$15

Geotextile Testing Inventory 1986

A 217-page compilation of geotextile test methods used in 13 countries.
Price for IGS members \$60, Price for nonmembers \$90

Symbols for Geotechnical Engineering, Geotextiles and Geomembranes

A list of symbols adopted by the IGS for the Third International Conference on Geotextiles
Free for IGS members, Not available to nonmembers

Editorial Request

Please send photos!

The value of a newsletter lies not only in the basic articles but in the presentation of useful and up-to-date information. We ask all members to provide information that they feel will be of interest to other members.

The editorial deadline for the next edition of the newsletter is 14 February 1990 - but you do not have to wait until then, avoid the rush, act now and send your information to:

Prof. R. Kerry Rowe
Editor, IGS News
Geotechnical Research Centre
The University of Western Ontario
London, Ontario N6A 5B9
Canada, Telex 064-7134, Fax (519) 661-3808
or
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Associate Editor, IGS News
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CH-1218 Le Grand-Saconnex
Geneva, Switzerland
Fax (22) 7175109

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2600 GA Delft
The Netherlands

Mr. Peter E. Stevenson (Treasurer)
Route 4, Box 607
Easley, SC 29640
U.S.A.

Calendar of Events

Designing with Geosynthetics Course

Philadelphia, U.S.A. - 9-10 November 1989
San Francisco, U.S.A. - 16-17 November 1989
Chicago, U.S.A. - 30 Nov-1 December 1989
Contact: Marilyn Ashley
Geosynthetic Research Institute
Drexel University
West Wing - Rush Building No.
10
Philadelphia, PA 19104 U.S.A.

International Workshop on Geotextiles

Bangalore, India
22-29 November 1989
Contact: C.V.J. Varma
Central Board of Irrigation and
Power
Malcha Marg, Chanakyapuri
New Delhi-110021, India

Seaming of Geosynthetics Seminar

14-15 December 1989
Philadelphia, PA, U.S.A.
Contact: Marilyn Ashley
Geosynthetic Research Institute
Drexel University
West Wing - Rush Building No.
10
Philadelphia, PA 19104,
U.S.A.

Symposium on Geosynthetic Testing for Waste Containment Applications

Las Vegas, Nevada, U.S.A.
24 January 1990
Contact: Dr. R.M. Koerner
Geosynthetic Research Institute
Drexel University
West Wing - Rush Building No.
10
Philadelphia, PA 19014,
U.S.A.

European Construction for the Future

Wembley, U.K.
4-7 April 1990
Contact: The Organizing Committee CII
'92
Construction Industry
International
4 Brandon Road, London, U.K.

Geosynthetics in Waste Containment Systems: A Series of one-day Seminars organized by NAGS

Boston, U.S.A. - 6 April 1990
Milwaukee, U.S.A. - 13 April 1990
Seattle, U.S.A. - 20 April 1990
Edmonton, Canada - 27 April 1990
Toronto, Canada - 4 May 1990
Montreal, Canada - 11 May 1990
Contact: Secretary General NAGS
c/o IFAI
Suite 800
345 Cedar St.
St. Paul, MN 55101 U.S.A.

ISO Subcommittee on Geotextiles and Related Products Meetings

The Hague, The Netherlands
23-25 May 1990
Contact: Dr. A. Rollin
École Polytechnique de
Montréal
C.P. 6079, Succursale A
Montréal, H3C 3A7, Canada

Fourth International Conference on Geotextiles, Geomembranes, and Related Products

The Hague, The Netherlands
27 May-1 June 1990
Contact: G. den Hoedt
c/o Holland Organizing Centre
16 Lange Voorhout
2514 EE The Hague
The Netherlands

International Reinforced Soil Conference

Glasgow, United Kingdom
10-12 September 1990
Contact: Prof. Alan McGown
Dept. of Civil Engineering
University of Strathclyde
Rottenrow
Glasgow G4 0NG, U.K.

Geosynthetics 91

Atlanta, U.S.A.
25 February - 1 March 1991
Contact: Secretary General NAGS
c/o IFAI
345 Cedar St., Suite 800
St. Paul, MN 55101 U.S.A.

*Note: Highlighted items are organized under the
auspices of or with the support of the IGS.*

List of Corporate Members of the IGS

ACME STW INC. - U.S.A.
AKZO INDUSTRIAL SYSTEMS B.V. - THE NETHERLANDS
AMOCO FABRICS AND FIBRES CO. - U.S.A.
ASAHI CHEMICAL INDUSTRY CO. LTD. - JAPAN
ASSOCIATE SUISSE DES PROFESSIONNELS DE GEOTEXTILES - SUISSE
(ASPG/SVG) - SWITZERLAND
BELTON INDUSTRIES INC. - U.S.A.
DON & LOW LTD. - U.K.
DU PONT DE NEMOURS INT. S.A. - SWITZERLAND
EXXON CHEMICAL GEOPOLYMER LTD. - U.K.
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TISZAI VEGYI KOMBINAT - HUNGARY
TOKYU CONSTRUCTION CO. - JAPAN
UCO N.V. - BELGIUM

OBJECTIVES OF IGS (*)



The International Geotextile Society was formed with the following objectives:

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

WHY BECOME A MEMBER OF THE IGS?

First, to contribute to the development of our profession
Becoming a member of the International Geotextile Society:

- helps support the aims of the IGS, especially the development of geotextiles, geomembranes, and related products
- contributes to the advancement of the art and science of geotextiles, geomembranes, and related products, as well as their applications
- provides a forum for designers, manufacturers, and users, where new ideas can be exchanged and contacts improved.

Second, to enjoy benefits

- The following benefits are available now to all IGS members:
- A directory of members, the IGS DIRECTORY, published every year, with addresses, telephone, telex, and telecopy numbers
 - Newsletter, IGS NEWS, published three times a year
 - Reduced purchase price on all documents published by the IGS
 - Reduced registration fee and preferential treatment at all conferences organized under the auspices of the IGS
 - Reduced subscription fee for the journal "Geotextiles and Geomembranes"
 - A central system for ordering selected publications
 - Possibility of being granted an IGS award.

MEMBERSHIP APPLICATION

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) \$40 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 their membership dues, will be mentioned in the IGS Directory in a separate list as benefactors.

Send this completed form to:

Mr. P.E. Stevenson, Treasurer
Route 4, Box 607
Easley, SC 29640
U.S.A.

Telephone (1.803) 855-0504
Telefax: (1.803) 859-1698

In this area, write your address as you wish it to appear in the next IGS Directory (your professional address is recommended, but your personal address is acceptable provided the telephone, telex, and telefax numbers are also your personal numbers).

If the address below is your personal address please check this box

Title (circle one): Mr. Ms. Dr. Prof. Other _____

First Name: _____ LAST NAME _____

Company, Division, Function (if applicable): _____

Address (Street or Postal Box) _____

City _____ Province/State _____

Postal Code _____ Country _____

Telephone _____ Telex _____ Fax _____

In this area, write a short description of your activities as you wish it to appear under your address in the next IGS Directory (e.g. "Consulting Engineer", or "Salesperson for XYZ Geotextile Company"). If the name of your company already appears in the above address, you need not repeat it in this area.

Eligibility (i.e. connection with geotextiles, geomembranes, or related products):

- Membership fee – Individual (US) \$ 40.00
- Corporate (US) \$1000.00

• Benefactor's contribution (at least (US) \$200): _____

Mode of payment – A check is enclosed The applicant hereby agrees to pay the above total amount upon receipt of an invoice

SIGNATURE DATE

* A copy of the byelaws is available upon request.

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