

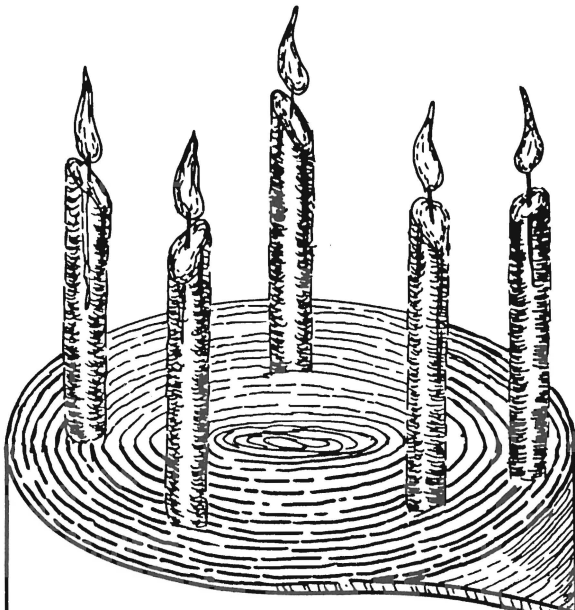
IGS NEWS

NEWSLETTER OF THE INTERNATIONAL GEOTEXTILE SOCIETY

VOLUME 4 NO 3

NOVEMBER 1988

5th ANNIVERSARY OF THE IGS



5 IGS CHAPTERS

- Japanese Chapter (1985)
- North-American Geosynthetics Society (1986)
- U.K. Section of IGS (1987)
- South-East Asian Chapter (1988)
- Indian Chapter (1988)

COUNTRIES WITH IGS MEMBERS

- | | | | |
|------------|----------------|-----------|-----------------|
| Australia | China | India | |
| Austria | Columbia | Indonesia | |
| Bangladesh | Denmark | Israel | |
| Belgium | Finland | Italy | |
| Brazil | France | Japan | |
| Canada | Germany (F.R.) | Luxemburg | The Netherlands |
| | Greece | Malaysia | New Zealand |
| | Hungary | Mexico | Norway |
| | Hong Kong | Morocco | Pakistan |
| | | | Poland |
| | | | Portugal |
| | | | Saudi Arabia |
| | | | Singapore |
| | | | South Africa |
| | | | Spain |
| | | | Sweden |
| | | | Switzerland |
| | | | Taiwan |
| | | | Turkey |
| | | | United Kingdom |
| | | | U.S.A. |
| | | | Venezuela |

The Fifth Anniversary of the IGS

by
J-P Giroud, President of the IGS

On 10 November 1983, the IGS was founded in Paris by sixteen individuals who acted as the first General Assembly and became the first Council of the IGS. This group of sixteen was quite international: it included representatives from eleven countries. They were all members of the "Interim Committee", initially comprised of 21 members, who were appointed at a meeting attended by 150 participants of the Second International Conference on Geotextiles, in Las Vegas, on 4 August 1982.

If the IGS was officially born on 10 November 1983, it was conceived on 4 August 1982 in Las Vegas. At this meeting, which I had the task - and, in retrospect, the honor - of moderating, the prevailing feeling was that our growing discipline needed to be organized and, at the very least, we wanted to make sure that the Second International Conference would be followed by a Third International Conference. It was fortunate that two international conferences had been organized without an international society to regulate the process. Miracles do not happen forever. A mechanism was necessary to ensure continuity.

Accordingly, on 11 November 1983, the first task of the First Council of the IGS was to select Vienna as the venue of the Third International Conference on Geotextiles: a good decision, which was based on the work that had been done by the Interim Committee. Since then, the IGS Council has made many decisions and has done a lot of work. Today, international conferences are only one of the many activities of the IGS, all inspired by the same goal - to promote education and communication on all matters regarding geotextiles, geomembranes and related products.

I had an opportunity in the last issue of IGS News to review with you the impressive achievements of the IGS; and many activities are planned for the next five years. But now, let us take a short pause, and enjoy the satisfaction of having done good work together and the comfort of belonging to a well organized discipline. On this fifth anniversary, let us wish a long and successful life to the IGS.

IS Kyushu '88 - Theory and Practice of Earth Reinforcement

by
R. Kerry Rowe - IGS News Editor

Approximately 260 attendees, including about 60 individuals from 24 countries outside Japan attended the 3-day symposium held in Fukuoka, Japan and enjoyed the outstanding hospitality of the Kyushu Chapter of the Japanese Society for Soil Mechanics and Foundation Engineering which hosted the conference in association with the Japanese Chapter of the IGS and with the support of the IGS. After being opened by the symposium chairman, Professor T. Yamanouchi, two keynote lectures were presented. The first, "Fabric Reinforced Retaining Walls", was presented by Professor B. Broms, President of the International Society for Soil Mechanics and Foundation Engineering (ISSMFE); the second, "Earth Reinforcement - West and East" was presented by Professor M. Fukuoka, Chairman of the Japanese Chapter of the IGS and a past president of the ISSMFE.

The papers presented at the conference dealt with topics such as: tests and materials, shallow and deep foundations, slopes and excavations, embankments and wall structures. The formal presentation of papers was followed by lively and informative discussion.

Many of the 21 papers and much of the discussion on tests and materials related to the importance of in-soil testing, however, it was pointed out by the chairman of the session that considerable care is required in interpreting some of these tests because they are, in fact, fairly complex boundary value problems.

A total of 14 papers were available for presentation or discussion in the session on "shallow and deep foundations". The topics discussed in this session included four papers on

piles (including stone columns), one paper on load carrying capacity of a soil layer supported by a geosynthetic over a void, seven papers on bearing capacity and geosynthetic reinforced roads, and two papers related to soil improvement.

The topic of "slopes and excavations" attracted 18 papers with topics ranging from micropiles/soil nailing/rock bolting (11 papers), slope reinforcement using geosynthetic sheets or metal strips/rods (4 papers), and three more general papers dealing with slopes and excavations (including reinforcement by electrochemical methods).

Embankments were the subject of the fourth session. Of the 21 papers on this topic, two papers dealt with the use of steel strips/bar reinforcement of embankments on soft clay,



IS Kyushu '88: Professor B. Broms presents the opening address.

six papers dealt with the use of geosynthetic sheet reinforcement of embankments, one dealt with the use of superlight fill, six dealt with steep embankments on good foundations (reinforced slopes/walls) and the remaining seven papers dealt with a variety of subjects varying from seismic resistance to the prevention of collapse of dispersive soil using geosynthetics.

The final session was on wall structures and a total of 20 papers were published. Four papers dealt with walls reinforced by steel strips, while thirteen dealt with walls or slopes reinforced with geosynthetics (both sheets and fibres), two were of a more general nature and were not specific to the type of reinforcement and one paper dealt with soil nailing as a method of reinforcing retaining walls.

The full proceedings of the conference* contain a total of 618 pages. The papers presented at the sessions and contained in the proceedings maintained an excellent balance bet-

ween field behaviour, theoretical development and laboratory testing. In his closing address, Dr. Giroud, President of the IGS, indicated that (besides generic theoretical papers), two-thirds of the papers dealt with geosynthetic reinforcement (geotextiles or geogrids) compared to less than 10% of the papers in early conferences on soil reinforcement held in the late '70s. He concluded by saying that "This clearly indicates that geotextiles and related products are taking the lion's share in the growing field of soil reinforcement."

The organization of the symposium was exceptional. It was a symposium which will long be remembered by those who attended, and well referenced by all those interested in soil reinforcement. Professors Yamanouchi, Miura, Ochiai and their co-workers are to be congratulated on an outstanding conference.

* Theory and Practice of Earth Reinforcement. Ed. T. Yamanouchi, N. Miura and H. Ochiai, Published by A.A. Balkema, P.O. Box 1675, 3000 BR Rotterdam, The Netherlands, 1988.

Professor M. Fukuoka Elected Honorary Member

The Council of the IGS has elected Professor Masami Fukuoka an Honorary Member of the IGS, in recognition of his great contributions and service to the IGS since its inception. The announcement of this honor was made by IGS President Giroud in the presence of the IGS Council and Japanese Chapter members attending the seminar on Geotextiles held in Tokyo on 11 October 1988 (see separate article).

Professor Fukuoka is only the second member of the IGS to be elected an Honorary Member (the first was Past President Schaerer - see IGS News, Vol 2, No. 3). He has had a very distinguished career which has involved thirty years as a researcher in the Public Works Research Institute from which he retired as Director in 1970. From 1970-71 he worked as a consultant for the Japan Highway Corporation. Since 1971 he has been Professor at the University of Tokyo

(1971-77) and at the Science University of Tokyo (1977-present).

Professor Fukuoka is a former President of the Japanese Society for Soil Mechanics and Foundation Engineering (1976-78), and the International Society for Soil Mechanics and Foundation Engineering (1977-81). He has been a Council member of the IGS since 1983 and was instrumental in forming the first Chapter of the IGS (the Japanese Chapter) in 1985. Professor Fukuoka is the Chairman of the Japanese Chapter which has 8 corporate members and 108 individual members.

Congratulations to Professor Fukuoka for his well deserved Honorary Membership, and for his dedication to the IGS.

Congress 'Kunststoffe in der Geotechnik' (K-GEO 88) (Synthetic Materials in Geotechnics)

The "Deutsche Gesellschaft fuer Erd- und Grundbau" organized the first congress on synthetic materials in geotechnics on 29-30 September 1988 at the Congress Center, Hamburg (Germany).

The conference was organized in conjunction with the "Oesterreichischer Ingenieur- und Architektenverein" and the "Schweizerischer Verband der Geotextilfachleute", with the support of the "Forschungsgesellschaft fuer Strassen- und Verkehrswesen" and the "International Geotextile Society". Mr. C. Schaerer, the official representative of the IGS at the opening session, read a message from the President of the IGS.

The purpose of the congress was to exchange information and experience with geotextiles, as well as to provide a forum for the coordination of research and development amongst German-speaking organizations.

The papers presented gave a general view of the state of technology and the latest developments in the use of geotextiles, geomembranes, and related products. The main topics discussed were:

- filtration, drainage and separation with geotextiles
- long term behaviour of geotextiles and stability problems
- special applications
- waste disposals and water reservoirs.

Approximately 350 people attended the congress. Most of the attendees are involved with geosynthetics as either a manufacturer, designer, scientist or as an end-user.

The Exhibit attracted 62 manufacturers, designers and contractors who presented their new products and technologies.

Last but not least, the "Deutsche Gesellschaft fuer Erd- und Grundbau" took the "K-GEO 88" conference as an opportunity to launch a newly founded section "Kunststoffe in der Geotechnik" ("Synthetic Materials in Geotechnics").

It is intended that a German geosynthetic conference be organized every four years in one of the German-speaking countries.

(Reported by Mr. S. Tonus)

IGS Council Meeting

Tokyo, 9-10 October 1988

The IGS Council had a very productive meeting in Tokyo on 9-10 October 1988 under the chairmanship of Dr. Giroud. This meeting took place in connection with the Kyushu Conference, which was supported by the IGS and its Japanese Chapter. It was also followed by a seminar on geotextiles presented to the members of the Japanese Chapter, at which several Council members made presentations (see separate article).

Special thanks were addressed to Professor Fukuoka and to the members of the Japanese IGS Chapter for their outstanding hospitality and cooperation in organizing these meetings.

Below is a summary of the minutes of the meeting prepared by Mr. Massenaux, IGS Secretary.

1. IGS Awards - The Awards Rules were approved and it was decided that the IGS Award would consist of a specially engraved medal (see separate article). The Awards Committee members were also appointed: Messrs. C. Schaerer, Chairman, A. Arman, Secretary/Vice Chairman, M. Fukuoka, T. Ingold, M. Sotton. The Secretary of IGS also attends the Committee's meetings.

2. A long discussion centered on a proposal for a committee on manufacturing of geosynthetics, presented by Mr. Schneider, as requested at the previous Council meeting. Whilst in the mind of its initiators this committee was intended for gathering greater effective support for IGS objectives through its corporate manufacturing members, other members of the IGS Council questioned the actual support received for such a Committee and were concerned about the implications of the IGS creating a committee to which only part of the membership, i.e. corporate manufacturing members, would have access.

An agreement was finally reached which indicates that the committee is open to all corporate members of IGS and is required to have the secretary of IGS present at all meetings; its specific tasks are:

- to secure and improve a continuous flow of technical information to and from corporate members;
- to provide a platform for the exchange of opinions and ideas relating to production and application questions;
- to define the needs and raise funds for the promotion of the use of geotextiles and related products by education and training (free of commercialism), through the Education Committee of the IGS.

The Committee was thus established as "the committee for the study and interchange of information relating to the manufacture and application of geotextiles and related products". The IGS Secretary will contact all IGS corporate members and invite them to the first meeting.

3. The inventory of standards for geotextiles will be published in the Spring of 1989 mainly as diskettes; the inventory for geomembranes will be issued in 1990. The work is under way, under Professor Rigo's leadership.

4. A discussion was started on the following items:

- IGS policy regarding the support of international events and their organization: Mr. Perfetti agreed to prepare a proposal to be discussed at the next Council meeting.
- Use of the IGS promotion budget: the IGS Officers will discuss the matter at the next Officers meeting.

5. A thorough review of the activities of the IGS was presented by Professor Floss who had been specially appointed for this task at the Council meeting held in April 1988. He briefly reviewed the many achievements of the IGS in the past two years and focused on new actions. He proposed that the IGS undertake:

- greater involvement in research activities;
- increased effort for education;
- increased cooperation with national and regional groups; and
- establishing guidelines for quality control of geosynthetic products.

After discussion, it was decided to put several of these items on the agenda of the next Council meeting for further discussion and action.

6. Mr. Perfetti reported on coordination between IGS and ISO (International Organization for Standardization) on terminology.

7. The Council discussed the new, expanded newsletter and congratulated Professor Rowe, editor.

8. Free use of "geotextile" and similar words. The Council decided on the approach to be adopted in the specific case of Venezuela where problems have arisen detrimental to the Society and the geotextile profession generally. The Council also decided that the IGS should undertake a programme of informing official registration bodies internationally of the public nature of the terminology used in our discipline.

9. The Council approved the setting-up of an Indian IGS Chapter after Mr. Massenaux had reported on his review of the proposed bylaws of the Chapter.

10. Among the administrative matters dealt with:

- The Council suspended Mr. Andreu (Venezuela) from the Council since he still had not paid his membership dues for 1988. The Council also decided that this matter would be re-examined at its next meeting. A final decision will depend on any new developments, including any developments in connection with the matters reported under Item 8 above.

- The new directory 1988 was acknowledged; considering the work involved, its price will be kept in correlation to the IGS individual membership dues.

- Necessary conditions for the establishment of a Chinese Chapter were discussed. This led to amendments, proposed by Professor Fukuoka, to IGS guidelines regarding chapters. Two essential principles were established:

ed, firstly, that the bylaws of any chapter may not conflict nor be likely to conflict with any existing IGS chapter or group, and secondly, that the name of any chapter bears no recognition to the name or the political regime of the country in which the chapter is being established.

- A proposed draft for chapter bylaws prepared by Mr. Massenaux was accepted.
- Possible amendments to the IGS bylaws presented by Mr. Leflaive were discussed and opinions collected, especially about the frequency of the General Assembly, number of Vice Presidents, election to the Council, and student membership. A revised proposal will be discussed at the next meeting.
- An IGS promotion brochure in French will be printed, after the successful issue of an English and, recently, a German IGS brochure (copies available at the IGS secretariat).
- The budget regarding 1989 was left unchanged. A request from the U.K. section of IGS, presented by Mr. Rankilor, for a refund of part of the fees they collected was not accepted; this prompted a discussion on a policy regarding help to new chapters. It was decided to put this item on the agenda of the next Council meeting.

11. Name of the Society - The Council discussed the possibility of adapting the name of the Society (without changing the acronym IGS) to better reflect the variety of products and techniques. It was decided that it would be premature to change the name of the Society, but it was agreed that a note in the letterhead and other official documents will indicate the scope of the Society. Mr. Rankilor agreed to prepare a proposal.

12. Professor van Harten reported on the preparation of the 4th International Conference on Geotextiles and Geomembranes to be held in The Hague from 27 May to 1 June 1990. The call for papers will be issued in the coming weeks. Abstracts should be sent to the organizing committee before May 1989. Additional information can be obtained from the organizing committee in Holland or from the IGS Secretariat (see separate article).

Regarding the 5th International Conference, it was noted that the deadline for receiving candidacies was still open (candidacies from countries outside Europe being welcome until 31 December 1988, see IGS News Vol. 4, No. 2, p3).

The Council also discussed the organization of conferences to be supported by the IGS: Bombay (December 1988), San Diego (February 1989), and Liege (March 1989).

13. The Council discussed help to groups of people interested in geotextiles in developing countries. It agreed in principle to organize a series of Post-The Hague Conferences in order to "spread knowledge about geotextiles". Mr. Myles agreed to prepare a proposal for the organization of this series of conferences. Also, the Council agreed to collect and send publications to IGS members in Bangladesh, recognizing the extreme financial difficulties in this country.

14. The next Council meeting will take place on 6-7 March 1989 in Brussels in connection with the Liege Conference on Reflective Cracking (8-10 March 1989).

News of the World

Kuriyama Dam and the Public Works Research Institute - Japan

Following the IGS Council meeting and the Japanese Seminar on Geotextiles, a number of IGS members visited Kuriyama Dam and the Public Works Research Institute.

Kuriyama Dam, which is located north of Tokyo, has been constructed by the Tokyo Electric Power Company to provide water to the 1050 MW Imaichi Pumped Storage Power Scheme. Kuriyama Dam has involved extensive use of a 1.5 mm thick PVC geomembrane over an area of 18 hectares as well as extensive use of geotextiles for geomembrane protection. The IGS visitors were guided by Mr. T. Kato.

The Public Works Research Institute, located in Tsukuba Science City (near Tokyo), has a wide range of excellent facilities. The facilities visited by the IGS members, and which are being used in connection with geosynthetics, included: (i) large indoor test facilities where large-scale models and full scale geosynthetic reinforced slopes and walls are being constructed and subjected to controlled rainfall conditions; (ii) a centrifuge test apparatus; (iii) a dam model vibration test laboratory which can be used to examine the role of geosynthetics when earth structures are subjected to seismic loading; (iv) field test facilities for earthwork construction; and (v) a field pavement test facility. The IGS visitors left

greatly impressed by the work being conducted at PWRI. The IGS visitors were guided through the facilities by Dr. K. K. .a and Mr. H. Miki, and were greeted by Dr. Narita, director of the research center, who hosted a magnificent reception.

The IGS visitors are indebted to Professor M. Fukuoka and the staff of the Tokyo Electric Power Co. and the Public Works Research Institute for their wonderful hospitality and a fascinating glimpse of the extensive research being conducted in Japan.

(Reported by Dr. R.K. Rowe)



Photograph taken at the IGS visit to Kuriyama Dam, 12 October 1988. From left to right: Mr. T. Masuda, Prof. M. Fukuoka, Dr. J-P Giroud, Mr. T. Kato (Photo by Mr. D. Cazzuffi)

Geotextiles in France

The French Geotextile and Geomembrane Society (CFGG) recently elected its new officers:

- Mr. *Alain Leclerc*, representing SFEC (the Industrial Fabrics Association) and Director for Research and Development of the Sommer Company, is the new President, replacing Mr. E. Leflaive who has completed his term as President;
- Mr. *J. Perfetti* and Mr. *P.M. Spillemaecker* were elected as Vice-Presidents (Mr. Spillemaecker replacing Mr. J. Girollet who has completed his term of office);
- Mr. *Bernard Leclercq* was elected General Secretary and Treasurer, replacing Mr. J. Puig.

The new address of the Secretariat is:

CFGG
ITF Lyon
B.P. 60
69130 Ecully France
Tel: 78 33 34 55 Telex: ITEXFRA 330 316 F

This year marks the 10th anniversary of the CFGG. The Society now has 90 Institutions and Companies as members. It has been active in publishing Guidelines, standardizing testing methods, coordinating research and developing contacts both at the national and international level. Its plans are to continue these endeavours, including efforts for a stronger European cooperation.

The CFGG has initiated a quality policy for geotextiles in France through a Quality Assurance Program under the sponsorship of the Ministry of Industry. This program is now being implemented by the appropriate authority.

The objectives of the CFGG are scientific and technical. The "Association Francaise des Producteurs de Geotextile" (AFPG, French Association of Geotextile Producers) has been established to deal with non-technical issues so as to allow CFGG to concentrate on technical matters.

(Reported by Mr. Etienne Leflaive)

Geosynthetiques '88

Recent technological advancements constituted the theme of this one-day seminar held on 7 June 1988 in Quebec City, Canada at the Chateau Frontenac, and in Montreal on 9 June 1988 at Auberge des Gouverneurs.

Seminar attendees included specifiers, designers, and users as well as testing technicians, academics and students.

Lectures covered most types of geosynthetics; geotextiles, geomembranes, reinforcement and drainage geogrids, and other geoproducts. Guest speakers included Dr. Jean-Pierre Giroud, President of the IGS, Mr. Robert Denis and Mr. Bob Carroll.

(Reported by Mr. J. Cote)

International Organization for Standardization (ISO)

AFNOR has announced its wish to relinquish the Secretariat of Technical Committee 38, Subcommittee 21 (ISO/TC 38/SC21), which deals with geotextiles. The forthcoming meeting in Orlando, U.S.A., 30 Jan.- 2 Feb. 1989 will still take place. In the absence of the Secretariat, BSI (the British Standards Institute), which is the Secretariat of ISO/TC 38, will act as interim secretariat for this meeting, and will hand over to a new secretariat at a mutually convenient date. A number of countries have expressed interest in taking over the Secretariat of SC21.

Seminar on Geotextiles - Tokyo

The Japanese Chapter of the IGS sponsored a one-day seminar on Geotextiles in Tokyo on 11 October 1988. The seminar was attended by approximately 100 members of the Japanese Chapter of the IGS together with members of the IGS Council. Following an opening address by Professor M. Fukuoka, five lectures were presented by members of the IGS Council. The lectures covered the topics of Retaining Structures

(E. Leflaive - France), Reinforced Embankments (R.K. Rowe - Canada), Protection of Waterway Banks and Slopes (R. Floss - Germany). Leakage Control Design for Lining Systems (J-P Giroud - U.S.A.) and Geomembrane Testing (J.M. Rigo - Belgium). Proceedings (in English) were published by the Japanese Chapter.

Following the lectures, IGS President J-P Giroud introduced the members of the IGS Council to the Japanese section and then announced that Professor Masami Fukuoka had been elected an Honorary Member of the IGS (see separate article).

The Geotextile seminar was followed by a reception for all seminar attendees. This provided an excellent opportunity for the members of the IGS Council to meet with members of the Japanese Chapter and to discuss the current activities in Japan.

The eight Corporate Members of the IGS in Japan sponsored a dinner with the IGS Council. The informal atmosphere of the dinner encouraged a very active and warm interaction between the Council and the representatives of the Corporate Members. A number of the Japanese took particular delight in assigning Japanese names to various members - perhaps the most abstruse being for Bernard Myles whose Japanese name means "Dancer who remains on the beach"!

In speeches at the dinner, Professor Fukuoka and Dr. Giroud spoke of the very important role played by Corporate Members in the IGS and highlighted the broad representation of Corporate Members in Japan which included extensive representation from contractors as well as manufacturers. Dr. Giroud also commended the Japanese Chapter on the quality and quantity of their activities and commented on the advancements in technology related to geotextiles and related products which was evident in the work conducted by members of the Japanese Chapter.

The IGS Council members are very grateful to the Corporate Members

Asahi Chemical Industry Co., Ltd.
Japan Spunbond
Kajima Institute of Construction Technology, Kajima Corporation
Kumagai Gumi Co., Ltd.
Maeda Corporation
Okasan Kogyo Co., Ltd.
Ohbayashi Corporation
Tokyu Construction Co., Ltd.

(Reported by Dr. R.K. Rowe)

ISO Publishes Its Official Definition of Nonwovens

ISO, the International Organization for Standardization, has issued its first ever International Standard establishing a definition for nonwovens. The definition, published on 1 May 1988, is in both English and French, and carries the reference: ISO 9092: 1988 (E/F). This definition resulted from the efforts of a Nonwovens working group within the Textiles Committee of ISO, of which the secretary general of EDANA was the co-convenor. EDANA regards the definition as a satisfactory compromise, and EDANA's Board of Governors, at its meeting of 6 June 1988 in Stockholm, adopted this ISO definition for use by EDANA, upon recommendation of the Technical Committee.

(Reported by Mr. S. Tonus)

European Mechanics Colloquium

The European Mechanics Colloquium on "Mechanical Aspects of Soil Reinforcement" was held in Chamrousse (near Grenoble), April 19 to 22, 1988 and was organized by J-P. Gourc, P. de Buhan and R. Nova.

Participants:

Thirty-two of the sixty invited participants originated from European countries other than the host country (France) with the representation being as follows: Austria (1), Belgium (5), Germany (2), Greece (1), Italy (7), Poland (6), Spain (3), Sweden (2), Switzerland (1), United Kingdom (4).

The primary goal of the symposium was to provide an interchange of ideas between researchers involved in theoretical modelling and experimental testing related to Soil Reinforcement. This resulted in many fruitful group discussions between experts. In many cases, it was the first meeting between these researchers. Of particular note was the extensive discussions concerning basic concepts like the thickness of the slip zone versus soil and inclusion characteristics.

A number of the papers presented, including some of those related to either analytical or numerical aspects of soil reinforcement, have been selected by the Organizing Committee for possible publication in a special issue of two international journals.

(Reported by Dr. J-P. Gourc)

The Venezuelan Society of Manufacturers of Geotextiles (AFG de Venezuela)

The Venezuelan Society of Manufacturers of Geotextiles was founded as a non-profit organization in December 1987 to meet the need for coordination between producers, contractors and engineers interested in the use of geotextiles in civil works.

The main purpose of the Society is the diffusion of information relating to the utilization of geotextiles and the benefits arising from the use of geotextiles.

The Society is currently involved in the organization of the First Symposium of Geotextiles to be held in Venezuela. The conference is scheduled to be held in Caracas in January 1989.

The executive committee of AFG de Venezuela are: Mr. Claude Voirol (President), Mrs. Mirian Ferrer, Mr. Fredy Plitman (Vice-president), Mr. Federico Grupp (Treasurer), Mr. Holland Heinrich and Mr. Ernesto Alio (Secretary).

CEN - European Committee for Standardization

In view of the 1992 "free" European Common Market, a proposal has been made to CEN by the Institut Belge de Normalisation (IBN) for a new project: "Geotextiles and Related Products, Terminology, Sampling, Methods of Tests".

The IGS inventory of geotextile test methods has been presented as a reference document for this project.

Report on the Activities of the U.K. Section of the IGS

The inaugural meeting of the U.K. section of the International Geotextile Society was held at the Institution of Civil Engineers, London, on 29 September 1987. Since the inaugural meeting a number of other well attended evening meetings have been held:

November 1987	- Manchester	addressed by Mr. Mercer
February 1988	- London	addressed by Dr. Murray
May 1988	- Nottingham	addressed by Professor Brown and Mr. Dawson
June 1988	- Oxford	addressed by Dr. Greenwood

The next meeting will be the Annual General Meeting on 27 October 1988, followed by an open meeting on the subject of geotextiles in embankment construction. The meeting will be addressed by Mr. P. Rankilor, Dr. J. Greenwood and Mr. S. Corbett.

The U.K. Chapter is proposing to put together for publication and distribution a permanent record of case histories by U.K. engineers on all aspects of geotextiles.

(Reported by Mr. P.R. Rankilor)

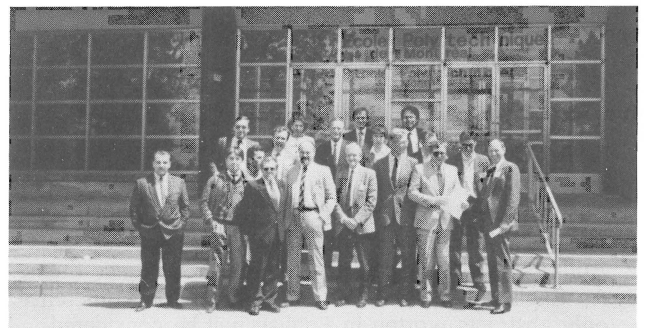
Professor K. Gamski

It is with great regret that we inform IGS members that Professor K. Gamski (University of Liege, Belgium) died on 16 September 1988.

Professor Gamski was one of the pioneers in the study of geotextiles and geomembranes. In 1978 he created a Rilem Technical Committee on Testing of Geotextiles and more recently another Rilem Technical Committee on Testing of Geomembranes (see photograph).

Professor Gamski was a member of the IGS, an author of more than 200 publications, mostly related to geotextiles and geomembranes, and an organizer of many conferences and seminars on geotextiles and geomembranes.

Professor Gamski was appreciated for his knowledge of materials science and for his very warm nature. He will be greatly missed.



Photograph taken at the meeting of the RILEM Technical Committee on Testing of Geomembranes at Ecole Polytechnique de Montreal, 8 June 1988. From left to right: R. Denis (Canada), J-P Gourc (France), J.M. Rigo (Belgium), J.P. Benneton (France), A. Rollin (Canada), D. Cazzuffi (Italy), A. Vidovic (Canada), D. Fayoux (France), J-P Giroud (U.S.A.), K. Gamski (Belgium), J. Mlynarek (Poland), P. Pierson (France), S.E. Hoekstra (Netherlands), S. Sunjoto (Indonesia), C. Bernhard (France), T.S. Ingold (U.K.), F. Gousse (France), and R.M. Koerner (U.S.A.).

Corporate Profile: Okasan Kogyo Co. Ltd.

Okasan Kogyo Co. Ltd., was founded in 1971 to engage in the sale, leasing, and installation of construction materials. Okasan does not, however, simply provide materials. Its professional staff works closely with customers to assess their needs and to propose the optimal construction method, technology, and materials to solve the problems presented by construction in Japan, with its faults and volcanoes, precipitous mountains, and cities built on alluvial deposits. As part of its customer-oriented, flexible approach to construction, Okasan has developed its leasing and rental services and opened branches throughout Japan, so as to make its materials more widely available.

The products Okasan handles include liner plates, Civillift for removing soil from shafts, the OK Ladder, manhole steel forms, corrugated pipe, Kanapipe flexible draining pipe, corrugated RF-type flumes, Fabriform, Insituform, the Multi-Anchored Retaining Wall Method, the Expanded Polystyrol (EPS) Construction Method, and Tensar geogrids.

Okasan led in the introduction of Tensar geogrids to Japan where its use in steep-sloped embankments and roadbed reinforcement has found wide application. Developed in Great Britain, Tensar geogrids are produced by an expansion process that orients the polymer material either monaxially or biaxially for greatly improved tensile strength. Tensar geogrids can be used in a very wide range of applications, including construction of steep-sloped embankments and building vertical reinforced soil retaining walls. They also have great potential in erosion control projects.

Okasan is the sole agent for Tensar in Japan. In addition to being a supplier of geogrids, Okasan also provides con-

by
Mr. Kenkichi Maruyana, Manager
R&D Division; 4-25 Hamamatsu-cho 2-chome
Minato-ku, Tokyo 105, Japan



Slope Stabilization Using Geogrids

sulting services in the application of these materials to solve civil engineering problems.

Research and development is a priority for Okasan. The company develops and tests innovative construction methods and materials. We also participate in international conferences and technical seminars, both to contribute our expertise and also to learn from leading researchers and specialists. As part of that effort, Okasan is a member of the Japanese Chapter of the IGS and hopes to contribute through it to further progress in the development of geotextiles and related products and their applications.

4th International Conference on Geotextiles and Geomembranes

The organizers of the 4th International Conference on Geotextiles, Geomembranes and related products (to be held 27 May - 1 June 1990) have adopted the motto "Reliable, Durable, Effective" to set the tone of the conference. The themes of the conference sessions will be: soil reinforcement; roads and railways; drainage, bank and bed protection; irrigation channels and reservoirs; environmental control; properties and testing; and special applications.

The Organizing Committee welcomes the submission of Abstracts of original contributions, subject to the following:

1. Abstracts should be typed on a special Abstract Reproduction Form which will be sent on request. Abstracts should be received by the Secretariat before 15 May 1989.
2. Authors should indicate the relevant conference theme.
3. As English is the official language of the Conference, only abstracts written in English will be considered.
4. All abstracts will be reviewed by two members of the Scientific Committee and evaluated. The Paper Selection Committee will select 90 papers for presentation in one of the parallel sessions, 40 for presentation in poster session; 180 selected abstracts will be published as such in Vol. 1 of the Proceedings.
5. All authors will be notified of the decision of the Paper Selection Committee before October 1989.

6. The full paper of each accepted abstract should reach the Secretariat before 15 March 1990. The subject matter of the full paper should be identical with the subject matter of the accepted abstract and of the relevant presentation at the Conference.
7. Accepted papers or posters may not be published or presented at an international meeting before this Conference.
8. The copyright of an accepted paper or abstract will be held by the Conference publishers. If a paper or abstract contains any copyrighted material, it is the author's responsibility to obtain permission for reprinting. Acknowledgement and full reference must be given in the text.

English will be the official language for the Conference. However, there will be simultaneous translation from and into English, French and German.

For more details please contact:

G. den Hoedt, c/o Holland Organizing Centre
16 Lange Voorhout, 2514 EE The Hague
The Netherlands
Phone: 31.70.65 78 50; fax: 31.70.65 58 07
telex: 33111 (hoc NL)

IGS Awards - Call for Submissions

IGS Awards have been established by the Council of the IGS in order to honor producers, users, engineers, and scientists who make outstanding contributions in the field of manufacturing, application and knowledge of geotextiles, geomembranes, and related products.

At its meeting in Tokyo, 9 October 1988, the IGS Council approved the rules for the IGS Awards and appointed the Awards Committee.

All IGS members can compete. Entries must be mailed no later than 31 March 1989 to the Secretary of the IGS, Brussels, Belgium.

Purpose of the IGS Awards

The IGS Awards will be granted to **individuals** or to **groups of individuals** in recognition of outstanding contributions either completed, or the validity of which has been demonstrated, during 1987-1988.

Awards will be made every two years. Consequently, there will be an awards competition again for 1989-1990, 1991-1992, etc.

The Awards

There will be two categories of Awards

- Young IGS Member Achievement Award for IGS members who are less than 36 years of age on 31 December 1988, and
- IGS Award, regardless of age.

A maximum of 5 awards will be granted per period.

The Award will consist of a specially commissioned medal and a diploma. It will be presented at, or in connection with, the IGS General Assembly. The winning entries will also be given large publicity by other means.

Awards Committee and Procedures

The members of the Awards Committee, as appointed by the officers of IGS are:

- Prof. Ara Arman (U.S.A.)
- Prof. Masami Fukuoka (Japan)
- Dr. Terry Ingold (U.K.)
- Mr. Michel Sotton (France)

The Secretary of IGS will attend all meetings of the Awards Committee as a non-voting member. The Past-President (Mr. C. Schaerer) will chair the Committee.

The Awards Committee will review all entries and will determine the award recipients using a point system. The recipients will be chosen by 2 January 1990.

Obviously, all members of the Awards Committee have a duty to keep secret all discussions of the Awards Committee.

Entries

Entries describing special achievements in any field related to IGS objectives must be submitted by the candidates themselves under the following headings: products; testing and testing equipment; instrumentation; monitoring and performance evaluation; design and design methods; fundamental aspects; construction and construction methods; any combination of the above; others.

The Awards Rules specify the various other requirements for submission. The text of these rules and further details can be obtained by contacting the Secretariat of IGS, in Brussels, Belgium.

The officers and Council Members of IGS hope that the creation of these IGS Awards will foster a keen interest from IGS members. IGS members may send either entries for themselves or nomination of potential candidates, to the Secretary of IGS, Dr. Guy Massenaux, Brussels, Belgium (see page 15 for the address).

The Why and How of Terminology

by
J. Perfetti*

Terminology does not appear to be a subject of major concern at the present time. It must be admitted that terminology is a subject that brings no great kudos to those who establish it. In short, people are not greatly interested in terminology, as was evident at the last ISO meeting of TC 38 Subcommittee 21.

What is a terminology? The general dictionary definition is:

“A set of technical terms specific to a science, technology or art, together with their meanings and their relationships with the ideas or concepts which they express”.

Terminology is not merely a compilation of definitions; it is not a dictionary. Geotextile terminology, as I see it, must reflect the **concept** which a group of professionals wishes to introduce into the existing technical environment. Geotextile terminology must demarcate the field.

This can only be done if a responsible multidisciplinary team

(specialists in textiles, chemicals, plastics, geotechnics, soil mechanics, sales and marketing) is constituted and adopts a working programme with clearly defined objectives.

The difficulties which we have encountered since the creation of the Geotextile Terminology Group WG1 of ISO are partly attributable to:

- The comparative immaturity of the Geotextile field;
- The multidisciplinary nature of this sector of activity, which involves industry, civil engineering and the scientific world;
- The possibility of the development of new market segments and hence the adoption of conservative wait-and-see attitudes on the part of industry.

Nevertheless, the fact remains that a definition of the term “geotextile” must be rapidly formulated in order to avoid the proliferation of neologisms whose perpetrators often fail to realize their possible economic consequences (the Customs problems, for example).

Following more than two years of discussions, it is apparent that there are two possible approaches for arriving at a definition of the term "geotextile" and, consequently, to establishing coherent terminology.

The first is a product approach, taking into account the elements necessary for the manufacture of geotextiles, such as:

- Production techniques: e.g. extrusion, spinning, dry-laying, wet-laying.
- The form in which the product comes: linear element (thread, fibre); two-dimensional element; three-dimensional element.
- The nature of the raw material of which it is composed: animal, vegetable, mineral, synthetic.

The second approach is a market approach, which considers

the functions which the product is expected to perform during its life. Factors to be considered include:

- The use of criteria such as permeability to distinguish a geotextile from a geomembrane;
- The hydraulic and/or mechanical roles; and
- The definition of functions such as Drainage, Filtration, Separation, Reinforcement and Protection.

Which approach should we adopt? This is a question to which many people in the geotextile community do not yet have an answer. It is the objective of the Terminology Committee of the IGS to seek an answer to this question and to facilitate the timely development of rational and workable Geotextile terminology.

*Mr. Jacques Perfetti is a Research and Development Engineer with Rhone-Poulenc Fibres, France. He is chairman of ISO TC38 Subcommittee 21 working group on Terminology and also chairman of the IGS technical committee on terminology.

News of Members

New Address of Du Pont de Nemours Int. Switzerland

The mailing address, telephone, telex and telefax for Du Pont headquarters in Geneva will now be as follows:

Du Pont de Nemours International S.A.
P.O. Box 50
2, Chemin du Pavillon
CH -1218 Le Grand-Saconnex, Geneva, Switzerland
Tel: (22) 88 51 11 effective 28 November 1988
(22) 717 51 11 as of April 1989
Fax: (22) 88 51 09 effective 28 November 1988
(22) 717 51 09 as of April 1989
Telex: 415 777 DUPCH

New address for Professor R.D. Holtz

Effective immediately Professor R. (Bob) D. Holtz, Executive Vice-President of the North American Geosynthetics Society, is

Department of Civil Engineering
The University of Washington
Seattle, Washington 98195
U.S.A. (Phone: 206-543-7614)

High Strength Geotextile and Geogrid Testing

GeoSyntec has recently completed construction of a pair of high capacity (270 kN) roller grips that have been specially designed for high strength geotextile and geogrid tensile testing. This equipment has been custom designed by GeoSyntec for use with Instron test equipment. With this equipment GeoSyntec has successfully measured modulus values on polyester woven geotextiles with strengths exceeding 700 kN/m.

With the continual growth in the use of high strength geotextiles and geogrids, GeoSyntec has also added equipment to its Soil Interaction and Performance Testing Laboratory. This new equipment provides the capability to perform high capacity (1000 kPa) direct shear and anchorage (pullout) testing.

Mr. Robert H. Swan has been appointed as Program Manager for Soil Interaction and Performance Testing and he will be responsible for testing conducted with the new roller grips.

ICI Sells Its Terram Geotextiles Business to Exxon Chemical

ICI Fibres has sold 0.5 per cent of its assets - its TERRAM geotextiles business - to Exxon Chemical (U.K.), as part of its strategy to concentrate resources on its growing core businesses of nylon and speciality polyester.

Terram, a heat-bonded polyolefin nonwoven, is made at Pontypool in South Wales for applications in civil engineering including soil separation, filtration, erosion control and other geotextile end-uses. The business employs 140 people.

Exxon Chemical is strong in woven polypropylene geotextile fabrics in the United States, and ICI Fibres Terram nonwoven operation is seen as fitting well into the development of its worldwide geosynthetics business.

New Geocomposite For Landfills

A new geomembrane/geotextile composite for capping steep slopes of waste disposal landfills has been developed and is being produced in the U.S. The geocomposite is a laminate of Hypalon and a needlepunched polyester geotextile marketed under the tradename Terra-Tuff (TM). The product was designed for capping of steep slopes where high coefficients of friction are needed to retain cover soils without slippage. Terra-Tuff also exhibits a high degree of flexibility and toughness to withstand the stresses which occur during installation. Terra-Tuff is manufactured with 260-700 g/m² polyester geotextiles dependent on application. The geotextiles are laminated to one or both sides of non-reinforced Hypalon sheet and the product is manufactured in 7.6 m roll widths for application efficiency in landfills capping. The product is manufactured by JPS Elastomerics, Northampton, Massachusetts, U.S.A.

A successful application of Terra-Tuff has been demonstrated on the Kearny Landfill, a very large steep sloped (1.7:1 horizontal to vertical) landfill operated under the Hackensack Meadowlands Development Commission (HMDC), New Jersey, U.S.A. Product design assistance and technical development for Terra-Tuff was provided by R.K. Frobels, consulting geosynthetics engineer.

Matériaux Techniques Côté moves

Matériaux Techniques Côté Inc. and its associated enterprises announces the relocation of all of its operations into their newly constructed facilities in Boucherville, Québec, Canada (south shore of Montréal). The new address is:

Matériaux Techniques Côté Inc.,
1440, Joliot-Curie,
Boucherville, Québec, Canada J4B 7L9

Peggs Nominated Convenor of Working Group

Dr. Ian Peggs (U.S.A.) has been nominated as convenor of the International Organization for Standardization's TC38/SC21 working group on Durability of Geotextiles. This group will hold meetings at the ISO meeting scheduled for Orlando, Florida, U.S.A. in January 1989 (see page 15 for details).

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).

Some current research projects are listed below. This format may be used as a guide for future submissions.

Dr. P.M. Jarrett, Dr. R.J. Bathurst and Dr. G. Karpurapu
Department of Civil Engineering
Royal Military College
Kingston, Ontario, Canada

Topic 1: Pullout Capacity

Pullout tests are being conducted to investigate anchorage mechanisms for geogrid/soil composites.

Topic 2: Geosynthetic Reinforced Walls

Large-scale model testing of geosynthetic-reinforced retaining walls is being conducted. These tests are being carried out on retaining wall models 3.0 m high and 2.4 m wide in the RMC Retaining Wall test facility. The test models typically comprise 60 cubic metres of soil. The test facility allows retaining wall models to be surcharged to 100 kPa pressure. Finite element techniques are being developed to simulate the observed laboratory behaviour of the retaining walls.

Topic 3: Geosynthetics in Road Applications

Large-scale testing of geoweb/granular fill composites and single-sheet geosynthetic reinforcement is being conducted to assess the improvement in load-deformation behaviour of granular road bases over compressible terrain. Finite element techniques are being developed to model the observed laboratory behaviour.

Dr. R. Kerry Rowe
Geotechnical Research Centre
The University of Western Ontario
London, Ontario, Canada

Topic 1: Reinforced Embankments on Very Soft Soils

Finite element techniques are being developed and used to analyze reinforced embankments on soft foundations. Particular consideration is being given to the development of strain within the soil and how this relates to allowable strain in the geosynthetic.

Topic 2: Reinforced Embankments on Brittle or Softening Soils

The purpose of this project is to extend techniques developed for soft insensitive soils to brittle soils which exhibit strain-softening. Particular consideration will be given to the importance of the modulus of the geosynthetic in limiting strain, and consequent softening, within the foundation.

Topic 3: Time-Dependent Interaction Between Geosynthetics and the Foundation

Consideration is being given to the effect of time-dependent softening (relaxation) of geosynthetics at the same time as a foundation material gains strength due to consolidation.

Topic 4: Reinforced Soil Walls

Finite element techniques have been developed for the analysis of reinforced soil walls. These techniques are now being applied to the analysis of instrumented walls. It is hoped that the finite element analysis will provide additional insight regarding the range of applicability of various simplified methods of analysis and will also provide a better understanding of how reinforced soil walls behave.

Dr. J.N. Mandal
Department of Civil Engineering
Indian Institute of Technology
Bombay, India

Topic 1: Soil-Geotextile Friction

Laboratory tests are being performed to determine soil-geotextile friction properties using direct shear, pullout and triaxial tests under undrained conditions.

Topic 2: Tensile Properties of Geotextiles

A modified triaxial testing machine is being used to determine the tensile properties of geotextiles.

Topic 3: Stability of Soil Using Geotextiles

Consideration is being given to the use of geotextiles to increase the bearing capacity of poor foundations and the failure pattern in slopes.

Dr. R.M. Koerner
Geosynthetic Research Institute
Drexel University
Philadelphia, PA, U.S.A.

Topic 1: *Effect of Holes in Geotextiles*

This study is aimed at the effect of intentional or accidental holes in geotextiles (installation of strip drains, monitoring pipes, abrasion, etc.) on the wide width tensile strength.

Topic 2: *Effect of Alkalinity on Geotextiles*

A multi-part study, the effects of calcium hydroxide and sodium hydroxide at pH = 7, 10 and 12, has been completed and the results are being analyzed. Both strength and permeability are being assessed.

Topic 3: *Effect of Soil Clogging of Geotextiles*

Long-term flow tests are being compared to gradient ratio tests for over one year. Soil/fabric structure is being investigated to see if practical guidelines can be developed.

Topic 4: *Confined Stress/Strain and Strain/Time Geosynthetic Behaviour*

The effect of soil confinement versus unconfined behaviour is being assessed.

Topic 5: *Strip Drain Kinking Behaviour*

The effect of axial shortening of prefabricated vertical drains (or strip drains) is being investigated using a kinking test device. Guidelines as to flow reduction should result.

Topic 6: *Centrifuge Modelling of Soil/Geosynthetic Interaction*

Using a 1.2 m radius centrifuge at up to 60 g acceleration allows the study of a wide range of problems. Included are composite geomembrane liners on slopes and embankment reinforcement using geotextiles and geogrids.

Topic 7: *Environmental Stress Rupture of Geomembranes and Seams*

Using ASTM D 2552 test method, a wide range of geomembrane materials are being evaluated at various constant stress levels under elevated temperature in a prescribed wetting agent.

Topic 8: *Biological Growth and Degradation of Geosynthetics*

An ongoing field-oriented study at landfill sites is being used to evaluate geotextiles and geonets in simulated and actual conditions. Micro-organisms identification and biocide treatment are included in the study.

Topic 9: *Field Monitoring of Geosynthetic Performance*

Strain gauges are being installed on a variety of geomembranes and geotextiles to see if their field performance mirrors their original design assumptions. Feedback into the current design models is the long-term goal of this study.

I.D. Peggs, R.M. Charron, L.G. Tisinger, R.H. Swan Jr.
GeoSyntec, Inc.
Boynton Beach, Florida, U.S.A.

Topic 1: *Durability of Polyethylene Geomembrane Seams (Peggs)*

Thermal analytical techniques and microscopy of microtome sections are being used to determine those factors that affect the durability of the different types of geomembrane seams and geomembranes manufactured from different resins.

Topic 2: *Environmental Stress Cracking of Polyethylene Geomembranes (Tisinger)*

Direct comparisons of the environmental stress cracking performance of various Linear Medium and High Density Polyethylene geomembranes are being made.

Topic 3: *Relationship of Geomembrane Seam Shear and Peel Strengths (Charron)*

A field seam integrity study is currently under way to evaluate seaming techniques. Correlation of seam peel and shear characteristics will be investigated.

Topic 4: *Durability of Geosynthetics (Peggs, Tisinger)*

Geosynthetics that have been in service for up to 15 years are being examined by thermal analytical techniques and scanning electronmicroscopy.

Topic 5: *Locating Holes in Landfill Liner Geomembranes (Peggs)*

Portable equipment for locating holes in dry, installed geomembranes is being developed.

Topic 6: *Carbon Dispersion Characteristics in Polyethylene Geomembranes (Charron)*

The effects of carbon agglomerate geometry on tensile and environmental stress cracking properties of geomembranes is being determined.

Topic 7: *In-isolation Creep Behaviour of Polyester Geosynthetics (Swan)*

The long-term creep behaviour of selected high tenacity polyester filaments, yarns, woven geotextiles, and geogrids is being evaluated.

Topic 8: *Non-destructive Examination of Geomembrane Seams and Plastic Pipe Joints (Peggs)*

A combination of acoustic emission and ultrasonic techniques is being investigated to non-destructively assess the continuity, and ultimately the integrity, of geomembrane seams and pipe fusion joints.

Have you a Publication in 1988?

The March issue of IGS News will contain a listing of those papers, conference proceedings and books relating to geotextiles **which we know about**. To be sure that your publication is listed, please send details by 31 January 1989 to:

Dr. R.A. Douglas, Dept. of Forest Engineering
University of New Brunswick
P.O. Box 4400; Fredericton, N.B.
E3B 5A3, Canada
Telex: 014-46-202 Fax: 1.506.4534599

Reflective Cracking in Pavements: Assessment and Control

Liege, Belgium - 8-10 March 1989

Internationally recognized specialists have agreed to pool their knowledge to obtain a better understanding of the parameters influencing reflective cracking and have formed a Technical Committee under the auspices of RILEM (International Union of Testing and Research Laboratories for Materials and Structures).

One major step toward realizing this objective is the organization of an International Conference in Liege (Belgium) in March 1989.

This conference is supported by the IGS and the Belgium Ministry of Public Works. There will be four sessions at the Conference; namely,

Introductory session: Two introductory lectures will be presented, one by Prof. Haas (Canada), and the other by Dr. Colombier (France).

- Laboratory and full scale experiments: Ten papers will be presented.
 - Design methods: Ten papers will be presented.
 - Case histories: Thirty papers have been submitted.
- The final invitation to attend will be mailed in the near future.

For further information, please contact:

Prof. J.M. Rigo, State University of Liege
Civil Engineering Department
Quai Banning, 6
4000 Liege, Belgium
Phone: 32-41-520180
Fax: 32-41-522169
Telex: 41 488 GC ULG-B

Information Sources

The U.S. Environmental Protection Agency (EPA) Office of Research and Development announces the update and publication of the Technical Resource Document entitled "Lining of Waste Containment and Other Impoundment Facilities." This report, compiled and written by Dr. Henry Haxo Jr., Matrecon, Inc., has been reviewed internationally. The report is a compilation of available information on the manufacture, design, construction and evaluation of geomembranes, geonets and geotextiles for waste landfills, surface impoundments and waste piles. The information for the revision was obtained from Government and private research both domestic and foreign and field experiences. The report includes the latest EPA information on composite liners, double liners, and response action plans. This document now represents the state-of-the-art for geosynthetics.

The report is scheduled for printing in October 1988. Copies may be obtained from the U.S. Environmental Protection Agency, Center for Environmental Research Information, 26

W. Martin Luther King Drive, Cincinnati, OH 45268. The requestor should cite Report No. EPA 600/2-88-052.

Geotextiles Handbook by T.S. Ingold and K.S. Miller has been published by Thomas Telford Ltd., 1988, 1 Heron Quay, London E14 9XF. Price UK Pounds 12, Outside UK Pounds 15, ISBN 0 7277 13337.

The book "Application of Polymeric Reinforcement in Soil Retaining Structures", edited by P.M. Jarrett and A. McGown has been published by Kluwer Academic Press (Dordrecht, Boston, London) in cooperation with NATO Scientific Affairs Division. This book represents the proceedings of a NATO Advanced Research Workshop held in Kingston, Ontario, 8-12 June 1987. It includes the results of a prediction exercise together with a collection of papers from leading authorities on soil reinforcement drawn from the NATO countries.

Publications Recommended by the IGS

Conference 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 Building, Suite 450, St. 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 Building, Suite 450, St. Paul, MN, 55101, U.S.A.

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 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.

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 have already received a free copy \$10 per additional copy for members - Price for nonmembers: \$20

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

Geotextiles & Geomembranes

an official Journal of the IGS

The international journal *Geotextiles & Geomembranes* is an official journal of the IGS. Individual IGS members may obtain a subscription to the journal at a discount of 40 percent off the list price. Such 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)

Papers published in recent issues are listed below:

VOL. 6 Nos. 1-3, 1987

Fabric Reinforced Embankment Test Section, Plaquemine Parish, Louisiana, U.S.A.

JACK FOWLER and EARL V. EDRIS JR. (U.S.A.) (1-32)

Soft Soil Stabilization Designs using Geosynthetics

ROBERT M. KOERNER, BAO-LIN HWU and MARK H. WAYNE (U.S.A.) (33-52)

Stabilization of Very Soft Soils Using High Strength Geosynthetics: the Role of Finite Element Analyses

R. KERRY ROWE and KRIS L. SODERMAN (Canada) (53-80)

The Influence of Fabric Geometry on Soil/Geotextile Shear Strength

ROBERT H. SWAN JR. (U.S.A.) (81-88)

Discussion: Current Design Methods by

R.M. Koerner, B-L. Hwu and M.H. Wayne

DANA N. HUMPHREY (U.S.A.) (89-92)

Seaming and Joining Methods

FRANK K. KO (U.S.A.) (93-108)

Preloading with Prefabricated Vertical Strip Drains

R.D. HOLTZ (U.S.A.) (109-132)

Geosynthetic/Soil Studies Using a Geotechnical Centrifuge

ARTHUR E. LORD JR. (U.S.A.) (133-156)

Testing and Monitoring of High Strength Geosynthetics

GREGORY N. RICHARDSON and JOHN A. BOVE (U.S.A.) (157-172)

Method to Establish the Maximum Allowable Load Under Working Conditions of Polyester Reinforcing Fabrics

WIM VOSKAMP and PAUL RISSEEUW (The Netherlands) (173-184)

Design Optimization of Geosynthetic Reinforced Embankments over Soft Foundations

GARY WILLIBEY and LUCAS S. VAN'T HOOG (U.S.A.) (185-196)

Shore Line Extension with High Strength Geotextile and Ice Assistance - a Manufacturer's View

BERNARD MYLES (U.K.) (197-210)

Geosynthetic Material and Physical Properties Relevant to Soil Reinforcement Applications

JOHN N. PAULSON (U.S.A.) (211-224)

Geogrid Reinforcement for Cochrane Bridge Embankment

ROBERT M. MATTOX (U.S.A.) (225-232)

Overview of Wilmington Harbor South Project

BRUCE L. UIBEL (U.S.A.) (233-246)

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Geotextiles in India

J.N. MANDAL (India) (253-274)

Laboratory Determinations of Clay-Geotextile Interaction

A.B. FOURIE and K.J. FABIAN (Australia) (275-294)

Effect of High Alkalinity Levels on Geotextiles. Part 2: NaOH Solution

Y. HALSE, R.M. KOERNER and A.E. LORD Jr. (U.S.A.) (295-306)

Technical Notes

Determination of Frictional Properties of Geotextiles

EUGENIUSZ DEMBICKI and JACEK ALENOWICZ (Poland) (307-314)

Use of Geotextiles in Hydraulic Works in Heilongjiang, China

HONG YOU-WEI and SHENG SHOU-TIAN (Peoples Republic of China) (315-318)

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 20 February 1989 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

Mr. Silvio Tonus
Associate Editor, IGS News
Du Pont de Nemours Int. S.A.
P.O. Box 50
2, Chemin du Pavillon
CH-1218 Le Grand-Saconnex
Geneva, Switzerland
Fax (22) 885109

Officers of the IGS

Dr. Jean-Pierre Giroud (President)
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1200 S. Federal Highway
Suite 204
Boynton Beach, FL 33435
U.S.A.

Dr. Guy Massenaux (Secretary)
EDANA
Avenue des Cerisiers, 51
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Calendar of Events

First Indian Geotextiles Conference
Bombay, India
8-9 December 1988
Contact: Dr. J.N. Mandal
Organizing Secretary
FIGC-88
Civil Engineering Department
IIT, Powai, Bombay - 400 076
India

RILEM Conference: Reflective Cracking in Pavements
Liege, Belgium
8-10 March 1989
Contact: J.M. Rigo
State University Liege
Quai Banning 6
B4000 Liege, Belgium

International Congress on Progress and Innovation in Tunnelling
Toronto, Canada
9-14 September 1989
Contact: Prof. K.Y. Lo
Dept. of Civil Engineering
The University of Western Ontario
London, N6A 5B9 Canada

Second International Landfill Symposium
Porto Conte, Sardinia, Italy
9-13 October 1989
Contact: Prof. R. Cossu
Istituto di Idraulica
Universita di Cagliari
Piazza d'Armi
09100 Cagliari, Italy

2nd GRI Seminar: Durability and Aging of Geosynthetics
Philadelphia, Pennsylvania, U.S.A.
8-9 December 1988
Contact: M.V. Ashley
Geosynthetics Research Institute
Drexel University, Rush Bldg. 1
No. 10
Philadelphia, PA 19104, U.S.A.

TRI 59th Annual Conference
Washington, D.C., U.S.A.
5-6 April 1989
Contact: Textile Research Institute
P.O. Box 625, Princeton
New Jersey 08542, U.S.A.

ASTM Symposium: Microstructure and the Performance of Geosynthetics
Orlando, Florida, U.S.A.
26 January 1989
Abstracts Due: 1 April 1988
Papers Due: 1 October 1988
Contact: Dr. I. Peggs
GeoSyntec Inc.
3050 SW 14th Place, Suite 18
Boynton Beach, FL 33426 U.S.A.

3rd International Symposium on Numerical Models in Geomechanics
Niagara Falls, Ontario, Canada
8-11 May 1989
Contact: Prof. S. Pietruszczak
Dept. of Civil Engineering
McMaster University
Hamilton, L8S 4L7 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 Center
16 Lange Voorhout
2514 EE The Hague
The Netherlands

ISO/TC38/CS21 Meetings
Orlando, Florida, U.S.A.
30 January - 2 February 1989
Contact: Dr. A.J. Hall
2 Park St.
London W1A 2BS, U.K.

2nd International Symposium on Environmental Geotechnology
Shanghai, China
15-17 May 1989
Contact: Prof. S. Pamukev
Dept. of Civil Engineering
Lehigh University
Bethlehem, PA 18015, U.S.A.

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

Twelfth International Conference on Soil Mechanics and Foundation Engineering
Rio de Janeiro, Brazil
13-18 August 1989
Contact: Prof. Costa Nunes
12th ICSMFE
Caixa Postal 1559
20000 Rio de Janeiro, RJ, Brazil

Geosynthetics '89
San Diego, California, U.S.A.
20-24 February 1989
Contact: L. Honnigford
Secretary General
IFAI
345 Cedar Bldg., Suite 450
St. Paul, MN 55101 U.S.A.

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