



No. 48, OCTOBER 1986

# GROUND PROFILE

THE SOUTH AFRICAN INSTITUTION OF CIVIL ENGINEERS  
DIE SUID-AFRIKAANSE INSTITUUT VAN SWIELE INGENIEURS



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The editorial content of Ground Profile is chosen, edited and arranged by the Editor. Views and ideas expressed are those of the person writing and signing the article. Views and ideas expressed are not those of the Editor or the Division of Geotechnical Engineering or of the S.A.I.C.E.

## EDITORIAL

With this last issue of the year it is hoped that we will once again bring Ground Profile back on programme. The October issue should hopefully reach you all before the end of 1986 and we will be ready for a new issue possibly with a new face in 1987. The editors would like to take this opportunity to wish all the readers a happy Christmas and a prosperous New Year.

Production of Ground Profile in the past year has been considerably complicated by a great shortage of voluntary editorial. We as editors have been required to chase up and search for information to publish. Since Ground Profile's success depends on the articles which are published in it, we would like to urge you our readers to consider letting us have something during 1987. We would like to remind you that Ground Profile will publish any items of news, notices, short papers or papers which would otherwise not find their way into more sophisticated journals such as The Civil Engineer in South Africa. Please assist us.

Ground Profile is likely to change somewhat in 1987. The intention is that the publication should be extended to include news letters of the South African Institution of Engineering Geologists and as much information as we can obtain on the activities of groups such as SANGORM, SANCOT, SANCOLD and the ISRM.

The costs of production of Ground Profile are largely covered by advertising. In this regard we required approximately eight pages inside the magazine to cover our printing and typesetting costs. Should any of our members wish to advertise they should please contact the Editor and if you do know of any firms that would benefit from advertising directly to the 700 odd members of the Division we would appreciate it if you could let us know.

In this issue it seems fitting to recognise the contribution from Bryan Tromp over the past year. He has worked hard at producing some of the issues and has been responsible for obtaining most of the advertising which recovered our costs in 1986.

It is with some sadness and a sense of loss that we say good-bye to Trevor Giddings. Trevor has accepted a job in the United Kingdom and left South Africa at the end of October. His contribution not only to Ground Profile but to the Geotechnical fraternity is recognised with thanks. We would like to wish him all the best for his future and trust that he will find happiness in the country of his choice.

EDITOR: J.A. WATES



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## CHAIRMANS REPORT FOR 1986

### 1. INTRODUCTION

This year has perhaps seen less activity on the visible items such as courses and conferences. Relatively successful courses were run on Finite Elements in Geotechnical Engineering and on Filters. Site visits have also been arranged and the Geotechnical Division has participated in the annual series of lectures arranged by the Wits Branch. The programme for 1987 includes a major conference on Waste Disposal as well as a Workshop and Review on the new code of practice for Lateral support which is under preparation by the Division. We also anticipate a visit from Professor Broms who is currently the president of the ISSMFE.

### 2. SUB-COMMITTED ACTIVITIES

In this sphere the Division has perhaps been more active than in the past. Behind the covers work which requires special mention is:

#### 2.1 Training of Geotechnical Personnel

In this regard, provision has been made for incentives to encourage graduate engineers to follow the geotechnical profession. A prize for project work in final year is being sponsored by the Division. Thanks to Fritz Wagener for leading this sub-committee.

#### 2.2 Code of practice on Lateral support

Much has already been done by Mr Ross Parry Davies and his sub-committee. We look forward to a new and up to date version shortly.

#### 2.3 Fees for Specialised Services

There has been some activity in this field. Recent changes in the regulations governing those fees which are particularly relevant to geotechnical services have been promulgated. The Division has played a significant roll in obtaining the modifications to the Act.

### 3. RESEARCH

Ken Schwartz has been involved in preparing a motivation for sponsorship of full scale monitoring projects to further the knowledge of soil structure interaction and the performance of structures. Ian Brackley is compiling a register of research in progress in South Africa.

### 4. PUBLICATIONS

Ground Profile has maintained its standard throughout the past year. Timing has however been affected by a lack of editorial matter and reorganisation of production. Bryan Tromp's assistance and hard work is acknowledged with thanks. The possibility exists that the SAIEG will combine its newsletter with Ground Profile in 1987. This will increase the amount of editorial matter available for publication and should result in a more interesting and readable publication. Liaison with SANCOT, SANGORM, SANCOLD and ISRM is also being encouraged. We hope to bring you more news of their activities in future.

### 5. CONTINUING EDUCATION AND TRAINING

The need for relevant and meaningful post graduate education has been recognised by the Division and the problems associated with proliferation in the number of courses, conferences and symposiums offered by the various technical and commercial bodies throughout the country has been noted. For this reason the Division has concentrated in those areas where they feel there are shortages. It is not always easy to fill the gaps and we would therefore appreciate comments and guidance from our members in this regard. We do however feel that less rather than more conferences and conferences of a higher standard should be presented.

6. **LIAISON WITH OTHER GROUPS WITHIN THE EARTH SCIENCE FRATERNITY**

In this regard we have initiated contact with SANGORM, SAIEG, SANCOT, SANCOLD and ISRM. A liaison committee has been established and through this committee it is intended that information will be disseminated to all members interested in our common fields of activity.

7. **THE DIVISION HAS ALSO RECOGNISED THE NEED FOR BROADENING THE SCOPE OF THE DIVISIONS ACTIVITIES**

There has hitherto been no attempt to define the fields of engineering which are served by the Geotechnical Division. In this regard the drift away from geotechnics of fields such as roads and tailings is recognised. Although there is no intention to prevent the formation of special interest groups, it is considered to be important to serve all members associated with Geotechnical Engineering and in this regard an attempt is to be made to draw in the special fields of Geosynthetics and Rock Mechanics.

8. **RELATIONSHIP WITH THE INTERNATIONAL COMMUNITY**

South African Geotechnical Engineers have for many years been members of the International Society for Soil Mechanics and Foundation Engineering. We are now faced with increasing isolation and are being barred from attendance at conferences and symposia in many countries of the world. The Division therefore recognises the need for more rather than less communication with our friends overseas. At this time we have to pursue personal contacts on a low key basis in order to ensure that we do not become totally isolated. Confrontation should be avoided at all costs. In this regard it is encouraging to note that the communication between ourselves and the vice president for Africa Mr. A. Mattedor has been good and that we have given our full support to the forthcoming regional conference in spite of the fact that most South Africans will not be able to attend.

9. **TREVOR GIDDINGS**

It is with some sadness and a sense of loss that we say goodbye to Trevor Giddings. Trevor has left to take up a job in the United Kingdom and leaves behind him a gap in the Geotechnical fraternity. Trevor's contributions to the activities of our division are acknowledged with thanks and we wish him all the best for his future life.

10. **COMMITTEE FOR 1987**

The following have been elected to serve on the committee for 1987.

Peter Day	Fritz Wagener
Ross Parry Davies	John Wates
Ron Scheurenberg	Clive Wilson
Ken Schwartz	Kelvin Legge (Graduate)
Derek Sparks	

John Wates was elected Chairman and Ronnie Scheurenberg as treasurer by the outgoing committee. Congratulations to new committee members, Peter Day, Derek Sparks and Clive Wilson on their election.

11. **GEORGE DONALDSON AND GARY JONES**

George Donaldson and Gary Jones did not make themselves available for re-election to the committee for next year. Their contribution to geotechnics is recognised with thanks.

12. **THANKS**

Finally as Chairman I would like to thank all the committee members and those who have been co-opted into service in the past year for the hard work that they have put in. A special word of thanks goes to our secretary Ronnie Scheurenberg whose efforts have been great.

JOHN WATES



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## ISSMFE LIST OF MEMBERS

Copies of the 1986 List of Members of the ISSMFE may be obtained on request from the secretary, R.J. Scheurenberg, P.O. Box 221, Rivonia 2128. Tel: (011) 803-3200.

### PUBLICATIONS

Overseas publications recently received by the Secretary of the Geotechnical Division are listed below. Persons interested in seeing any of the publications listed should please contact R.J. Scheurenberg, P.O. Box 221, Rivonia 2128. Tel: (011) 803-3200.

- International Association of Engineering Geology : List of Members 1985.
- Geotecnia - Revista da sociedade portuguesa de geotecnia - Lisboa (46), March 1986; including (in Portuguese)
  - Engineering geological investigations for the design of tunnels.
  - Site investigations, design and construction - a tunnel case history.
  - In situ tests on rock masses for dam foundations.
  - Soil nailing in excavation - behaviour and design.
  - Application of boundary element methods in analysis of underground structures.

### 9TH AFRICAN REGIONAL CONFERENCE

The authors are reminded that the closing date for papers is 31 December 1986 and that copies of the papers should also be sent to the Geotechnical Division.

Trevor Giddings was co-ordinating the South African effort. Since he has now left for the U.K. would all authors and other interested members please direct their queries to the Editor.

### BOOKS

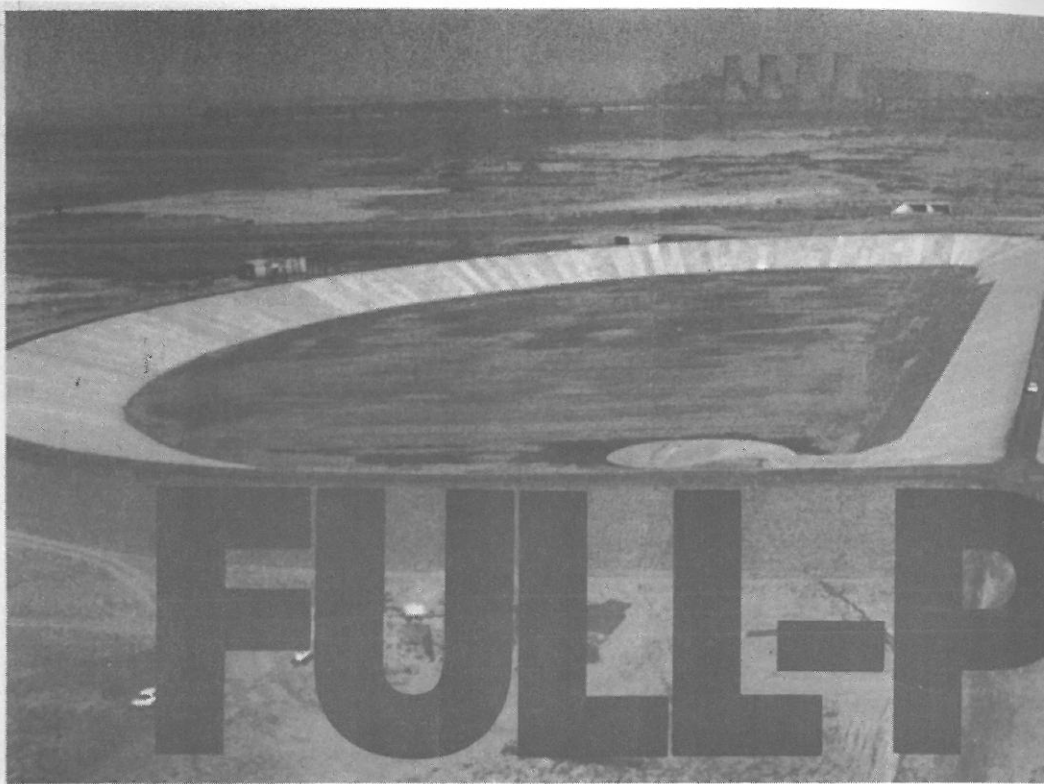
Soil Movement Induced by Tunnelling and their effects on pipelines and structures by Attewell, Yates and Selby, 532 pp, ISBN 0-216-91876-6.

Ground Movements and their effect on structures : by Attewell and Taylor, 460 pp, ISBN 0-903384-36-1.

Geotextiles by N.W.M. John, 256 pp, ISBN 0-216-91995-9.

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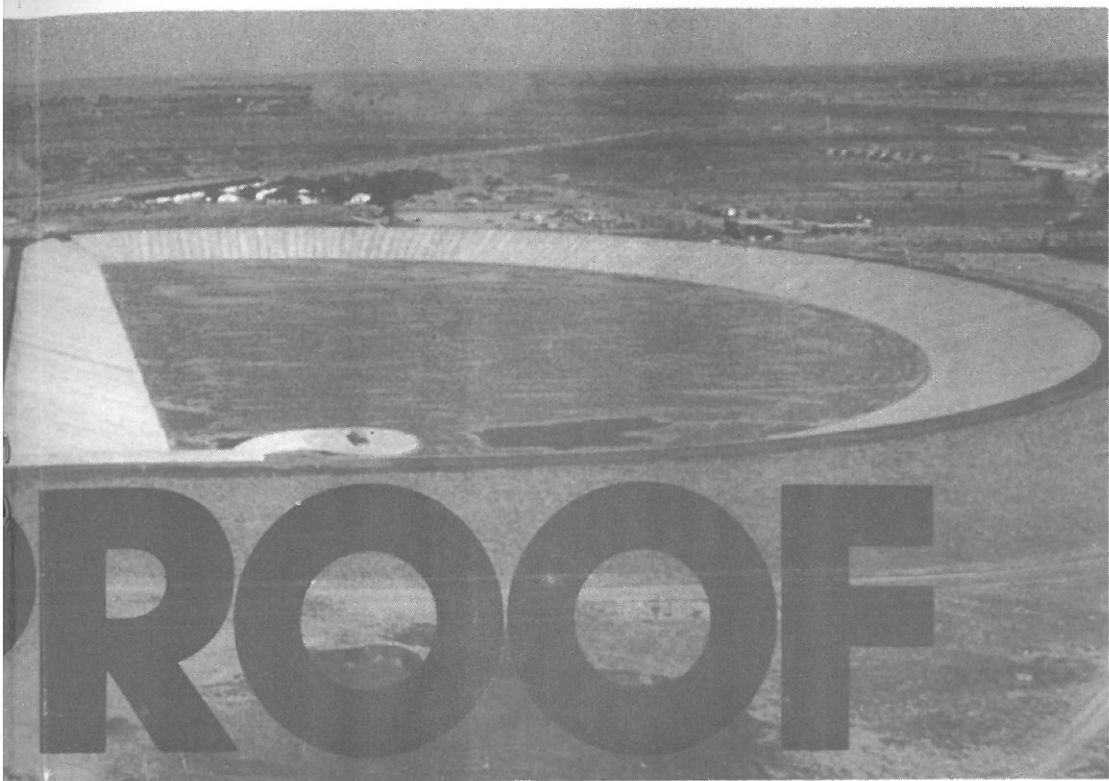
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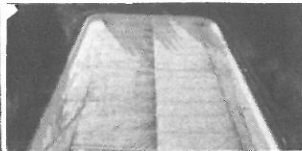


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## NOTICE OF SINKHOLE AND KARST CONFERENCE

The 2nd Multidisciplinary Conference on Sinkholes and the Environmental Impacts of Karst will be held February 9 - 11, 1987, in Orlando, Florida, USA. This meeting is a continuation of the interdisciplinary communication so successfully initiated at the First Multidisciplinary Conference on Sinkholes in 1984. Geologists and geographers study how and where sinkholes form, but engineers must apply this information. For man to benefit from what we learn about the unique environmental effects of karst terrain, communication is critical.

The proceedings of the first meeting, "Sinkholes: Their geology, engineering, and environmental impact", has become the "state-of-knowledge" in its field. The second volume, and the second meeting, will be expanded in scope and should be even more successful than the first. Our banquet speaker will be Dr. Yuan Daoxian, Director of the Karst Institute in Guilin, China, who will speak on environmental problems of karst geology in China. A new field trip visiting the west coastal area of Florida's classic karst will precede the meeting.

Technical papers and case studies will be presented on the following broad subjects:

1. Geology and engineering studies of karst areas with emphasis on sinkholes and other practical aspects.
2. Hydrogeology and environmental problems of karst.
3. International examples of applied karst geology and hydrology.
4. Specific engineering considerations of karst terrain.
5. Any additional related topics.

In an effort to make this meeting accessible to as many professionals as possible, worldwide, the registration fee will be only \$125 which includes the proceedings and the banquet. Speakers and students will receive a reduced rate. An extremely favourable hotel rate of \$28/room (1-4 persons) has been negotiated at the International Inn, which is convenient to Orlando's many tourist attractions, so that participants may economically bring their families.

For further information regarding attendance and contributions to the conference please write directly to: Dr. Barry F. Beck, Director, Florida Sinkhole Research Institute, College of Engineering; University of Central Florida; Orlando, Florida, 32816; U.S.A.



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## **NOTICES**

### **OVERSEAS CONFERENCES AND COURSES**

- Speciality Sessions and Symposium on Computer Aided Design and Monitoring in Geotechnical Engineering : AIT Bangkok, Thailand, 1 - 9 December 1986
- Symposium on Coastal Lowlands : Geology and Geotechnology : The Hague, Netherlands, 25 - 27 May 1987.
- Second International Conference on Case Histories in Geotechnical Engineering : St. Louis, Missouri USA, 1 - 5 June 1988.
- Fifth Australia New Zealand Conference on geomechanics : Sydney, Australia, 22 - 26 August 1988.
- International Conference on Rheology and Soil Mechanics : Coventry Lanchester Polytechnic, Coventry U.K., 12 - 17 September 1988.

### **GEOSYNTHETICS**

#### **SOUTH AFRICAN CHAPTER OF IGS**

Engineering technology associated with geosynthetics is expanding rapidly and it seems that the full potential for use of synthetics in geotechnical engineering has yet to be realised.

A group known as the International Geotextile Society has been formed under the chairmanship of Prof. J.P. Giroud. He will be visiting South Africa in August 1987 and will probably be speaking to us on applications of geotextiles to geotechnics. He will also be looking to encouraging South Africans to form a regional chapter of the IGS.

To form a regional chapter of the IGS at least half of the regions IGS members must make an application to the international executive committee. Thus far there are thirteen IGS members in South Africa.

Anyone interested in membership of the Society can contact John Wates at (011) 836-2471 or Colin Cleaver at (031) 72-2345.

### **PAPERS IN THE TRANSACTIONS**

#### **INNOVATIVE DESIGN**

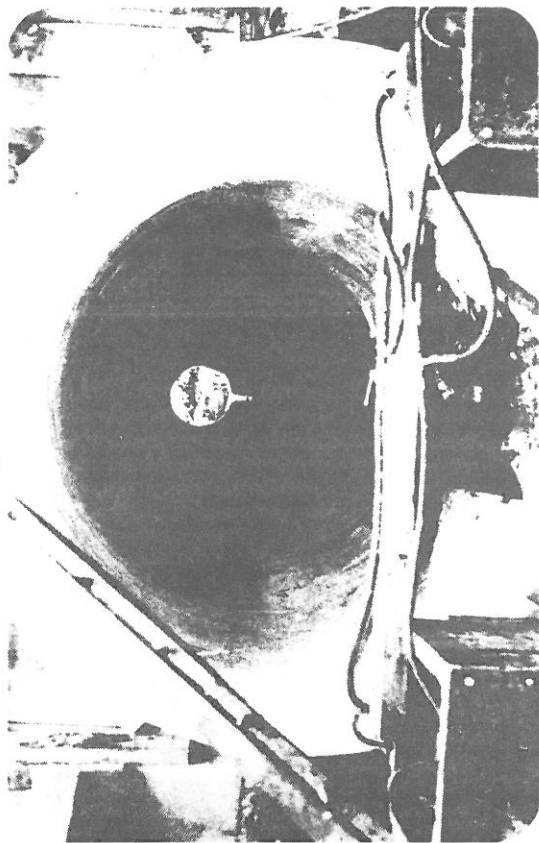
The paper on "Prediction of deformation of deep excavations and tower block foundations" by Johan Lourens and Dr. H. Czapla was adjudged by the Institution to be the best dealing with innovative design or construction of a project during 1985.

The award for this achievement was made at the 1986 AGM which was held on 13 November at Portland Park, Halfway House.

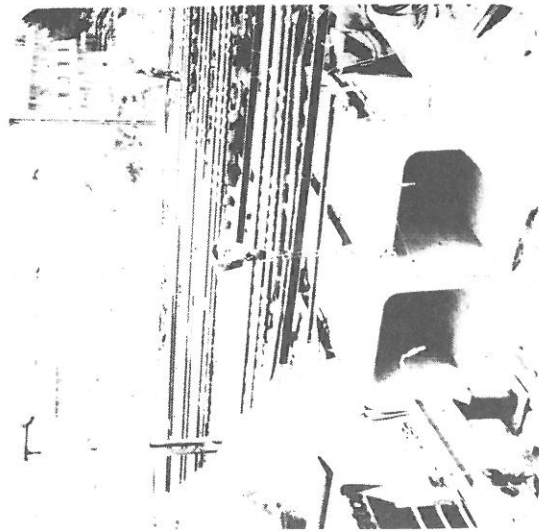
Dr. Czapla is from Germany and made the trip to South Africa primarily to receive the award but also to take a short holiday.

Messrs. Lourens and Czapla are to be congratulated on their excellent contribution to the practice of geotechnical engineering in South Africa.

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## **GEOTECHNICAL DIVISION AWARDS**

### **J.E. JENNINGS AWARD IN GEOTECHNICAL ENGINEERING**

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The originality of the publication and its contribution towards the advancement of geotechnical engineering in South Africa will be taken into account. In the event of no publication during the year being considered of sufficient merit, the sub-committee may recommend that no award be made for that year. The sub-committee may decide to divide the award between the authors of publications it considers of equal merit. If the sub-committee considers more than one publication during the year to be of exceptional merit, it may recommend that the runner-up be carried forward for consideration together with nominations for the following year. The decision of the sub-committee will be subject to ratification by the Geotechnical Division Committee.

### **J.E. JENNINGS AWARD 1985**

The 1985 award was made to Ken Schwartz for his paper: "Collapsible Soils" published in the July 1985 issue of the Civil Engineer in South Africa.

Ken graduated from Wits in 1970 and again in 1975 with an MSc. He started his career with the Johannesburg City Engineers Department and has worked with Ove Arup and Steffen Robertson and Kirsten. After co-founding Schwartz, Tromp and Associates in 1980 he has continued working in his fields of specialisation which include the evaluation and behaviour of foundations and earth structures on problem soils, piled foundations and lateral support systems.

Ken's contribution to the state of the Art on collapsible soils has been recognised by this award. We would like to take this opportunity to congratulate him on a piece of good work.

## **WASTEMANAGEMENT CONFERENCE**

### **NOTICE OF CHANGE OF DATE**

Owing to a clash with a conference on Wastemanagement in the United States we have changed the dates of the South African conference to 17, 18 and 19 August 1987.

Synopses for sixty papers have been received. Of these more than fifteen are from overseas. Professor Bengt Broms, the current ISSFME president, will visit South Africa at the time of the conference and will be delivering the keynote address and two of the papers. In addition we will have as many as eight other overseas participants, some of whom will be delivering keynote addresses on the speciality sessions.

We will be advertising a call for registration early in 1987 but should you like further information now please contact John Wates or Jenny Park at (011) 836-2471



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## MOISTURE CONDITION

dry (a.)  
slightly moist  
moist  
very moist  
wet

## CONSISTENCY (GRANULAR SOILS)

very loose  
loose  
dense  
medium dense  
very dense

## CONSISTENCY (COHESIVE SOILS)

very soft  
soft  
firm  
stiff  
very stiff

## ROCK HARDNESS

very soft rock  
soft rock  
medium hard rock  
hard rock  
very hard rock  
extremely hard rock

## WEATHERING GRADES

unweathered  
slightly weathered  
medium weathered  
highly weathered  
completely weathered

## GRAIN SIZE CLASSIFICATION

very fine-grained  
fine-grained  
medium-grained  
coarse-grained  
very coarse-grained

## FRACTURE CLASSIFICATION

widely fractured rock mass  
closely fractured rock mass

## ROUGHNESS CLASSIFICATION

smooth (a.)  
slightly rough  
medium rough  
rough (course)  
very rough

## VOGTOESTAND

droog  
effens klam  
klam  
baie klam  
nat

## STEWIGHEID (KORRELRIGE GRONDE)

baie los  
los  
dig  
mediumdig  
baie dig

## STEWIGHEID (KOHESIEWE GRONDE)

baie sag  
sag  
ferm  
styf  
baie styf

## ROTSHARDHEID

baie sagte rots  
sagte rots  
mediumharde rots  
harde rots  
baie harde rots  
uiters harde rots

## GRADE VAN VERWERING

onverweer  
effens verweer  
mediumverweer  
hoogsverweer  
totaalverweer

## KORRELGROOTTE-KLASSIFIKASIE

baie fynkorrelrig  
fynkorrel = , fynkorrelrig  
mediumkorrelrig  
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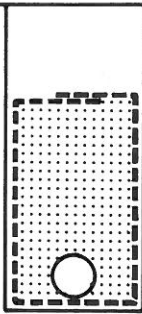
**PHONE 826-3481**

**P.O. BOX 236  
BENONI  
1500**



**NOEL HUNT GEOFABRICS** (PTY) LIMITED  
IEDMSI BEPERK

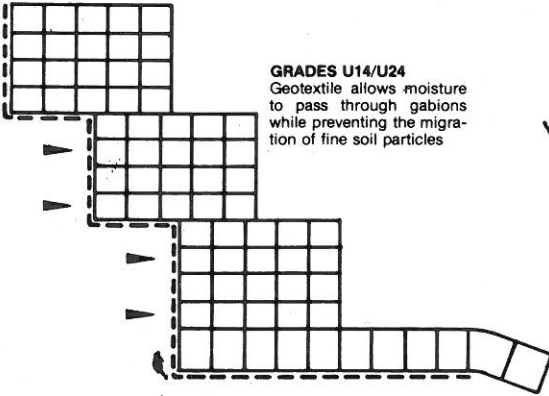
**bidim**<sup>®</sup>  
GEOTEXTILES



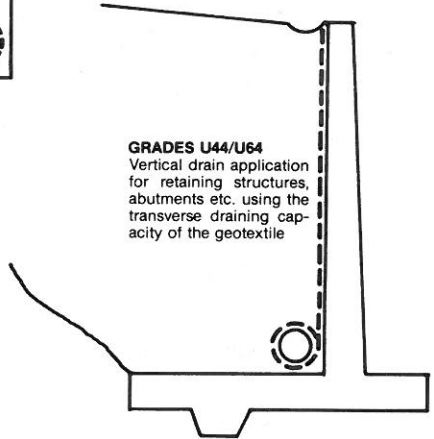
**GRADES U14/U24**  
Normal permeability  
 $3 \times 10^{-3}$  m/s  
Normal throughflow up to 220l/m<sup>2</sup>/sec  
Simple subsurface drain configuration



**GRADES U44/U64**  
Transverse permeability  
 $6 \times 10^{-4}$  m/s  
Transverse throughflow up to 68l/hr/m width of fabric  
Cut-off drain application in limited access or where stone is expensive



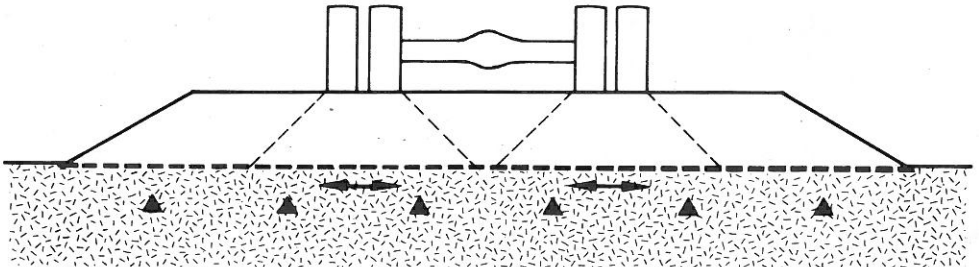
**GRADES U14/U24**  
Geotextile allows moisture to pass through gabions while preventing the migration of fine soil particles



**GRADES U44/U64**  
Vertical drain application for retaining structures, abutments etc. using the transverse draining capacity of the geotextile

**GRADES U34/U44**

Geotextile used as an interlayer between base material and subgrade prevents contamination of the selected fill while reinforcing the soil interface. Moisture moving upwards due to applied stress is transported away laterally thus accelerating consolidation.



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011-9703085

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021-538110

NATAL  
031-722345