

## TESTING FORUM

### Topsoil (Specifications and Testing Procedures)

Topsoil specifications for use for horticulture purposes are varied and not standardized. It is hoped that this note will be helpful in providing information as a first step in the preparation of a specification and test procedures. As one evaluates this information, the reader will conclude that the writer is a geotechnical engineer experienced in the use of topsoil in applications primarily related to construction projects.

Evaluation of topsoil should provide for a textural or particle size classification. The classification of the U.S. Bureau of Soils is most commonly used. This system classifies on the basis of the amounts of sand (2-mm to 53- $\mu$ m [Nos. 10 to 270] sieve), silt (53- $\mu$ m [No. 270] sieve to 0.05 mm) and clay (0.05 to 0.005 mm) present. Aggregate coarser than a 2-mm (No. 10) sieve is not a part of the classification but is mentioned as a prefix. Particle size relates to a large degree to water retention, permeability, shrinkage, dry hardness, and other such properties.

A major constituent of a topsoil is organic matter. Its presence is usually evaluated by color. Quantitatively, the amount can be determined by carbon combustion methods or by ignition loss. The former test is better because the results are not affected by low temperature volatiles other than organic matter, but the testing equipment is not as readily available as that for ignition loss.

The nutrient content of topsoil is important. The compounds evaluated are potash ( $P_2O_5$ ) and potassium ( $K_2O$ ). The acidity or alkaline condition of the soil is also important. These soil properties relate to the need for fertilizers or lime dust in the case of acidity. The latter item in addition to lowering acidity also could be considered as an aggregate when considering the particle size distribution. These items will not be discussed in this note. Nutrient testing procedures will be found in *A Testbook of Soil Chemical Analysis* by P. R. Hesse (Chemical Publishing Co., New York, 1972).

It is the writer's observation that architects and engineers describe topsoil in many ways in their specifications. The Construction Specification Institute (CSI) has recommendations as do many State Departments of Transportation. ASTM has specifications and testing procedures for peat soils that are not well coordinated nor do they address topsoil.

The CSI Guide Specification Section 02811 includes a number of items for evaluation that are as follows, not including nutrients. The quantity of organic matter is not specified. The relevant items are:

1. mechanical analysis: 25.4-mm (1-in.) sieve = 99 to 100%, 4.75-mm (No. 4) sieve = 97 to 99%, and 150- $\mu$ m (No. 100) sieve = 40 to 60%;
2. free of pests, pest larvae, and matter toxic to plants;
3. maximum soluble salts—500 ppm;
4. maximum 5% by volume of slag, cinders, stones, or other extraneous materials exceeding 51 mm (2 in.) in diameter; and
5. free of viable Bermuda grass, quack grass, Johnson grass, nut

sedge, poison ivy, Canada thistle, and whatever else the specifier desires.

It is the writers suggestion that a topsoil specification be as follows:

Type of soil—sandy loam, silt loam, or clay loam (U.S. Bureau of Soils Classification) and

Composition: weeds—none; plus 4.75-mm (No. 4) sieve fraction—stones, wood, sod, and so forth—maximum 5%; and minus 2-mm (No. 10) sieve fraction: organic matter—4 to 20% by weight, silt and clay—36 to 68% by weight, and sand—12 to 60% by weight.

The following laboratory testing procedures should be used. Air dry the sample and separate on a 4.75-mm (No. 4) sieve. Evaluate the plus 4.75-mm (No. 4) sieve fraction both for quantity and quality. Separate a portion of the minus 4.75-mm (No. 4) sieve fraction on the 2-mm (No. 10) sieve breaking down silt-clay particles. Record the amount of the plus 2-mm (No. 10) sieve. Use the minus 2-mm (No. 10) sieve for the following tests. The organic matter to be determined by ignition loss at 537.8°C (1000°F) from an initial weight at 100°C (230°F), the sand to be determined by decanting another portion of the sample to remove the organic matter and the silt clay. The silt clay will be the difference between 100 and the sum of the organic matter and sand.

C. W. Britzius  
Twin City Testing and  
Engineering Laboratory, Inc.  
St. Paul, Minn.

### Committee D-18 News

#### Standards Activity Within the Subcommittees of D-18 Soil and Rock

The following report is a summary of the standards activities within the subcommittees of Committee D-18 on Soil and Rock as discussed at the June 1981 meeting. Contact Main Committee Chairman Ivan Johnson or Subcommittee Chairman as listed for further details.

#### D18.04 Hydrologic Properties of Soil and Rock

CHAIRMAN: CHARLIE RIGGS

- "Standard Method of Test for Constant Head Permeability of Coarse Grained Soils" is ready for subcommittee ballot.
- "Standard Test Method for Pump-in-Borehole Testing of Rock" is under review in the subcommittee.
- "Proposed Standard Test Method for Hydraulic Conductivity of Fine Grained Soils Using A Flexible Sidewall Permeator" is also under review in the subcommittee.

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## *D18.06 Physico-Chemical Properties*

CHAIRMAN: GARY OLHOEFT

- Standards D 422 "Dispersive Clay Double Hydrometer Test" and (with D18.13) "Method for Carbonate Content of Soils" are being discussed in the subcommittees.
- Another joint effort of D18.06 and D18.13 is a draft standard for "Determination of the Soluble Salt Content of Soils by Refractometer." This one is also under subcommittee discussion.
- A proposed standard for "Pinhole Erosion Test for Identification of Dispersive Clays" has been balloted by the subcommittee, but has not been approved to date.
- D18.13 will do a mini-symposium on "Electrical Properties of Soils" at the Jan. 1982 meeting.
- Other subjects under subcommittee study are thermal conductivity and carbon content by loss on ignition.

## *D18.08 Special and Construction Control Tests*

CHAIRMAN: JIM TALBOT

- D 1556-64 "Standard Test Method for Density of Soil in Place by the Sand-Cone Method" is under subcommittee ballot.
- D 2844 "Test for Resistance *R*-Value and Expansion Pressure of Compacted Soils" is in revision, as well as D 2937 which defines the use of a drive cylinder to check compacted density.
- A new draft standard for an "Impact Compaction-Degradation Test" for weak rocks has been referred from D18.96 to D18.08, and finally to D18.03 on Texture, Plasticity, and Density Characteristics of Soils. Bill Lovell is to be chairman of a task group appointed by Dick Ladd.

## *D18.14 Soil and Rock Pollution*

CHAIRMAN: TOM ZIMMIE

- A Subcommittee position paper "A Hydrogeologic View of Waste Disposal in the Shallow Subsurface" has been completed and is in this issue. The paper takes sharp exception to certain criteria of regulatory agencies.
- Dissatisfaction with the current subcommittee name has led to the adoption of the new title "Geotechnics of Waste Management." The Subcommittee scope statement will also be changed.
- Following the guidelines of another ASTM Committee, D-32 on Catalysts, a "Tentative Standard Test Method for Determination of the Pore Volume Distribution in Soils and Rocks by Mercury Intrusion Porosimetry" has been written. The standard is currently under study by the subcommittee.
- A "Tentative Standard Method for Determining Soil Loss by Sheet and Rill Erosion" has also been prepared following the procedure of the Universal Soil Loss Equation as described in Agricultural Handbook No. 537. This one is also under subcommittee study.
- Don Clark has a draft standard method for "Determining Distribution Ratios by the Short-Term Batch Method." Such a method is used to assess the degree to which a chemical species will

be removed from solution as the solution migrates through the ground.

## *D18.15 Stabilization with Admixtures*

CHAIRMAN: MEHMET ANDAY

- Three standards on soil-cement stability lacked "Significance and Use" and "Precision and Accuracy" sections: D 558-57 (Test for Moisture-Density Relations of Soil-Cement), D 559-57 (Wetting and Drying Tests of Compacted Soil-Cement Mixtures), and D 560-57 (Freezing and Thawing Tests of Compacted Soil-Cement Mixtures). These statements have been added and the subcommittee has been balloted for approval.
- Standards D 2901 and D 806, Titration Tests for Cement Content, require substantial revision and are being worked on by subcommittee Chairman Anday and subcommittee Vice-Chairman Packard.
- A new standard for "Method of Preparation of Test Specimens of Asphalt-Stabilized Soils" has successfully completed subcommittee balloting and will be forwarded to main committee for approval.
- With the retirement of Walker Shearer, D18.15 needs a new chairman for Calcium Chloride Stabilization.
- Work continues on standards for "Compressive Strength of Soil-Lime Mixtures" and "Determination of Optimum Lime Content by the pH Method."
- A new working group has been formed to develop a method for screening proprietary admixtures for stabilization. Don Fohs of the Federal Highway Administration is to head this effort.
- A "Tentative Standard Test Method for Slake Durability of Shale and Similar Rocks" has been written. Materials that fail this test are candidates for stabilization by additives. (This standard was subsequently transferred to D18.03.)

## *New Subcommittee D18.20 on Impermeable Barriers*

### SCOPE

It shall be the responsibility of Subcommittee D18.20 to develop standards for the use of nearly impermeable barriers in geotechnical applications. The applications include those situations in which slurries, membranes, or compacted materials are used to inhibit the migration of water or other fluids into or through soil or rock media.

—Professor C. W. Lovell  
Purdue University

## **Symposium on Acoustic Emissions in Geotechnical Engineering Practice**

The Symposium on Acoustic Emissions in Geotechnical Engineering Practice, sponsored by ASTM Committee D-18 on Soil and Rock, was attended by 50 to 100 people and involved two

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state-of-the-art papers, two panel discussions, and five symposium papers. Richard E. Gray of GAI Consultants, Inc. and Vincent P. Drnevich of the University of Kentucky served as chairmen.

The state-of-the-art for rocks was given by H. Reginald Hardy, entitled "Applications of Acoustic Emission Techniques to Rock and Rock Structures." It presented a review of acoustic emission as it pertains to the area of rock mechanics, with the major thrust to field applications. The paper first discussed the general concepts involved in the acoustic emission technique and briefly reviewed the early history of the subject. This was followed by a general discussion of techniques currently in use for monitoring and analysis of data and a description of a number of ongoing field studies in which AE techniques are being used. Finally, the paper considered the various limitations of the technique, as well as future research and development.

Glenn M. Boyce, W. Martin McCabe, and Robert M. Koerner presented a symposium paper "Acoustic Emission Signatures of Various Rock Types," an investigation of ten rock types in unconfined compression that has led to four distinct types of stress versus acoustic emission response curves, that is, signatures. They have been correlated to conceptual ideas on brittle rock behavior. Frequency analysis on all rock types at each stage of the various stress ranges was also performed. Peak frequency shiftings are presented, with suggestions on the use of this information.

The symposium paper "In Acoustic Emission Monitoring of Soil and Rock Grouting" by Peter J. Huck and Robert M. Koerner discussed acoustic emission monitoring and the promise in its use before and after grouting to indicate the effectiveness of the grout in stopping groundwater seepage, and during grout injection to detect hydraulic fracturing. The latter application has the potential for permitting the use of increased injection pressures (and hence productivity) while actually decreasing the risk of extensive hydraulic fracture during injection.

In the first Panel Discussion, the moderator, Rainer Massarsch, showed applications in rock in Sweden. It was well attended.

The state of the art for soils by Robert M. Koerner, W. Martin McCabe, and Arthur E. Lord, Jr. was entitled "Acoustic Emission Behavior and Monitoring of Soils." It discussed the application of acoustic emission techniques to soils, which is a recent event, with little activity before the 1970s. However, interest has been generated in the soils area to the point in which at least five equipment manufacturers are currently marketing acoustic emission systems specifically for geotechnical engineering applications. This state-of-the-art paper on acoustic emission activity in soils presents findings on the basis of fundamentals, small scale laboratory tests, and large scale laboratory tests. Field situations include slope stability monitoring of dams and embankments, soil movements arising from horizontal and vertical deformations, seepage monitoring, and grout-hydrofracture monitoring. Specific case histories in each group were presented.

Three symposium papers followed. K. Tanimoto and J. Nakamura in "Studies of Emission in Soils" described a study on acoustic emission in soils, by the method of triaxial compression test, to

correlate acoustic emission and deformation properties of soils. It has been made obvious that the acoustic emissions are closely connected with the rate of axial strain and the kind and magnitude of volume changes during shear.

"Acoustic Emissions During Static Cone Penetration of a Soil" was presented by W. C. B. Villet, J. K. Mitchell, and P. T. Tringale. As a rigid object is pushed into a soil, acoustic emissions are generated by soft grains sliding over one another, sliding over the penetrating object, and being crushed. Laboratory tests to date have been performed on a single graded sand. Initial results indicate that:

1. The resultant frequency distribution curves can be divided into two categories, one associated with lower confining stresses and penetration rates, the other with higher confining stresses and penetration rates.
2. The amplitude of the signal increases with penetration rate.
3. The amplitude of the generated signal is larger in a dry, than in a saturated sample.

Anatoly M. Fish and F. H. Sayles, in "Acoustic Emissions During Creep of Frozen Soils," discussed deformation, time-dependent failure, and acoustic emissions during unconfined compression tests of frozen Fairbanks silt. Acoustic emissions are detected when the applied stress exceeds a threshold level. This threshold stress is related to the limit of long-term strength of the frozen soil. Experimental data were presented and unified constitutive equations describing deformation, time-dependent failure, and the accumulation of the acoustic emissions during short-term creep of frozen soils were derived.

In the second Panel Discussion, Moderator Massarsch showed results on sensitive Swedish clays. The future of standardization of acoustic emission methods with respect to ASTM activity was discussed. Difficulties with selection of equipment that shall be considered as standard was emphasized, as well as questions as to what parameters to measure. It was concluded that standardization of acoustic emission tests is somewhat premature. A new subcommittee on "Nondestructive Testing" in D-18 may be required in the near future. Attendance at this session was poor.

The papers will be published in STP 750 and discussions are invited. For information on the STP and the discussions contact Jane Wheeler, Managing Editor, Special Technical Publications, ASTM, 1916 Race St., Philadelphia, Pa. 19103.

—Professor C. W. Lovell  
Purdue University

### Awards

Jean-Louis Briaud and Donald H. Shields were named the 1981 recipients of the C. A. Hogentogler Award by ASTM. They received their awards on 24 June 1981 during ceremonies hosted by Committee D-18 in Detroit, Mich. The two men were cited for their paper, "A Special Pressure Meter and Pressure Meter Test

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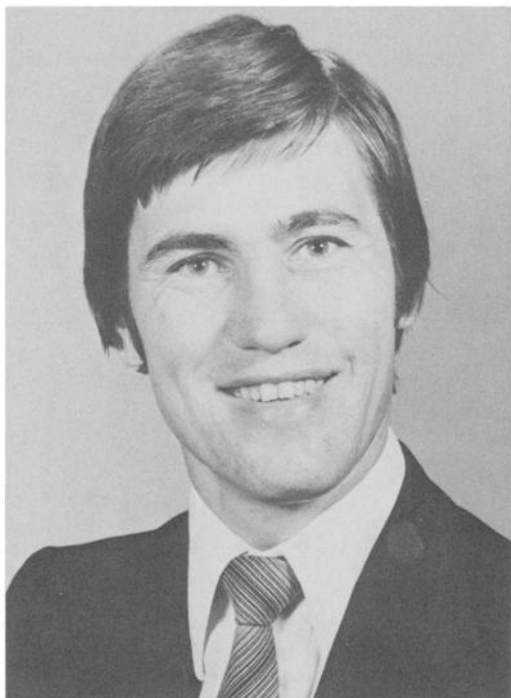
for Pavement Evaluation and Design," that appeared in the Sept. 1979 issue of *Geotechnical Testing Journal* by ASTM Chairman of the Board, Sydney D. Andrews. Mr. Briaud is an assistant professor in the Geotechnical Division of the Civil Engineering Department of Texas A&M University. Mr. Shields is head of the Department of Civil Engineering of University of Manitoba, Winnipeg, Canada. Professor Briaud is a member of ASTM.

### Symposium

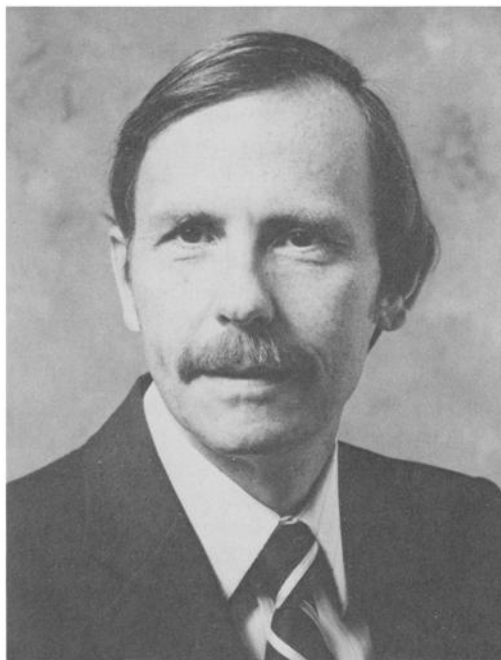
An ASTM symposium, "Performance and Behavior of Calcareous Soils," was held at the Stouffers-Lauderdale Surf Hotel, Ft. Lauderdale, Fla., Jan. 1981 during the mid-winter meeting. The program was organized by Subcommittee D18.13 on Marine Geotechnics and took place during the regular D-18 committee meeting on soil and rock. The chairman for the symposium was Kenneth R. Demars at the University of Delaware. During the one-day symposium, 20 papers were presented on a wide variety of engineering topics dealing with calcareous soil and rock. An STP is being prepared from the symposium papers.

### Seminar

ASTM Subcommittee D18.13 will hold a seminar on "Electrical Properties of Marine Sediments" during the D-18 meetings at Dutch Inn Resort Hotel, Lake Buena Vista, Fla. on 26 Jan. 1982. Emphasis will be placed on applications, measuring equipment,



*Jean-Louis Briaud, recipient of the 1981 C. A. Hogentogler Award.*



*Donald H. Shields, recipient of the 1981 C. A. Hogentogler Award.*



*The D18.13 symposium participants were left to right, front row: J. S. Olsen, University of Utah; James Angemeer, McClelland Engineers, San Francisco; I. Noorany, San Diego State University; Ronald Chaney, Lehigh University; H. W. Hunt, Associated Pile and Fitting Corp., Clifton, N.J.; and S. M. Bembem, University of Massachusetts; back row: R. W. Crossley and G. H. Beckwith, both with Sergeant, Hauskins and Beckwith, Phoenix; S. K. Saxena, Illinois Institute of Technology; R. A. Erchul, U.S. Naval Academy; K. R. Demars, University of Delaware; H. J. Lee, U.S. Geological Survey, Menlo Park, Calif.; F. L. Beringen, Fugro, The Netherlands; and Adrian Richards, Lehigh University.*

and laboratory and field testing methods. Ron Erchul is the chairman. The papers to be presented are: "Galvanic Electrical Resistivity Measurements in Offshore Applications" by Robert F. Corwin, Harding-Lawson Associates; "Electrical Methods for the In Situ Prediction of Mechanical Properties of Sediments" by K. Arulanandan, University of California, Davis; "Laboratory Procedures to Accurately Measure Electrical Properties of Sediments" by Gary R. Olhoeft, U.S. Geological Survey; "Electrical Methods Used to

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Measure Diffusion Coefficients in Sediments" by V. C. Nacci, University of Rhode Island; "Thermo-Electric Effect in Moist Soils and Analogous Electrical Systems" by H. Y. Fang and R. C. Chaney, Lehigh University; and Electrical Resistivity Used to Measure Liquefaction of Sands" by R. A. Erchul, Virginia Military Institute.

For further information contact Ron Erchul, Virginia Military Institute, Department of Civil Engineering, Lexington, Va. 24450; (703)463-6331 or Kenneth Pearson, ASTM Standards Development Division, 1916 Race St., Philadelphia, Pa. 19103; (215) 299-5520.

## Call for Papers

The 23rd U.S. Symposium on Rock Mechanics will be held 25-27 Aug. 1982 at the University of California, Berkeley. An announcement and call for papers has been issued by the cosponsors, the U.S. National Committee for Rock Mechanics, the International Society for Rock Mechanics, and the University.

The theme of the symposium, "Issues in Rock Mechanics," will highlight aspects including in situ stress measurement; geological stress determinations; mechanical, thermal and hydraulic properties of rock masses; rock mass exploration; rock fracture mechanics; brittle-ductile transition; deformation mechanisms and texture development; scaling of test data; numerical modeling; instrumentation; statistics in rock mechanics; rock reinforcement; energy recovery and storage; dynamic rock mechanisms and related applications; creep mechanisms; and large-scale field experiments.

Prospective authors are invited to submit extended abstracts of not more than three to four typed double-spaced pages (1000 to 1200 words plus one or two figures) by 29 Jan. 1982 to: Organizing Committee, 23rd Rock Mechanics Symposium, c/o Professor Richard E. Goodman, Department of Civil Engineering, 440 Davis Hall, University of California, Berkeley, Calif. 94720. Authors will be notified by 1 March 1982; the deadline for completed papers, ready for publication, is 1 May 1982. For further information about papers, write to Professor Goodman at the address given above or call (415)642-5525. For a final symposium program with registration information, available in May 1982, write to Continuing Education in Engineering, University of California Extension, 2223 Fulton St., Berkeley, Calif. 94720.

## Conferences

### Grouting

The Geotechnical Engineering Division of the American Society of Civil Engineers, in cooperation with the ASCE Underground

Technology Research Council, is sponsoring a conference on grouting in geotechnical engineering, set for the Monteleone Hotel, New Orleans, La., 10-12 Feb. 1982. The two and one-half day conference is being organized into five consecutive half-day sessions that will cover the following topics: (1) properties of grouting materials and grouted soil and rock; (2) grouting technology; (3) grouting theory and the design of grouting projects; (4) measurement, testing, and control for grouting; and (5) grouting applications such as mines, dams, hydraulic structures, and water control. Further information can be obtained from Dr. W. H. Baker, Hayward Baker Company, 1875 Mayfield Road, Odenton, Md. 21113.

### Soil and Rock Sampling

The Engineering Foundation is sponsoring a conference on "Updating Subsurface Sampling of Soils and Rocks and Their In Situ Testing" to be held at the Miramar Hotel, Santa Barbara, 3-8 Jan. 1982. The principle objective of the conference will be to focus on the newly developed practices of soil and rock sampling and in situ testing and provide a discussion on their merits and demerits and optimum ways of implementation to get quality results. The topics to be included in the conference are site investigations, new methods of subsurface investigations such as geophysical methods, various sampling techniques, and in situ testing. Two sessions each on in situ testing of soils and in situ testing of rocks only are planned.

The attendance in the conference is limited to 150 people. A number of leading workers from practicing as well as academic communities will present feature lectures and act as discussion panel members. For more information related to the conference, please contact Engineering Foundation, 345 East 47th St., New York, N.Y. 10017, or Professor S. K. Saxena, Department of Civil Engineering, Illinois Institute of Technology, Chicago, Ill. 60616.

## Peat Testing Manual

An excellent state-of-the-art reference on peat and organic soils entitled *Peat Testing Manual* has been published by the National Research Council of Canada. The price is 3.00 per copy, payable to the Receiver General of Canada, credit National Research Council of Canada. Orders should be sent to: Publications Section, National Research Council of Canada, Building M-58, Ottawa, Ontario, K1A 0R6 Canada.

## American Society for Testing and Materials

### *Committee D-18 on Soil and Rock*

#### Information Form for Applicants for Technical Committee Membership

1. Full Name \_\_\_\_\_ Position \_\_\_\_\_  
 Organization \_\_\_\_\_  
 \*Street Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_ Phone \_\_\_\_/\_\_\_\_/\_\_\_\_  
 (Area Code) \_\_\_\_\_  
 ( ) \*Check here if this is applicant's home address
  2. Requested classification: ( ) Producer ( ) User ( ) General Interest
  3. Society membership status:  
 ( ) Member (membership No. \_\_\_\_\_)  
 ( ) Membership applied for
  4. If you are liaison representative from another society of ASTM Committee, please designate: \_\_\_\_\_
  5. Major product of, or service performed by, your organization: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 How long has company been active in this field? \_\_\_\_\_  
 How long have you been active? \_\_\_\_\_
  6. Technical interests: \_\_\_\_\_
  7. Qualifications (education and experience): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  8. What laboratory facilities, if any, do you have available for cooperative committee activity? \_\_\_\_\_  
 How much time could you devote to specific research or cooperative assignments? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  9. Are you participating in technical committee work of other professional or technical organizations and, if so, what are the organizations and what is the extent of your participation? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  10. Please list by number in order of preference not more than three subcommittees or sections in which you have an interest and for which you would be willing to contribute additional time and effort toward their "Standards" activities (see list on front).  
 (1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_
- Applicant's Signature \_\_\_\_\_ Date \_\_\_\_\_

## Application for 1981 ASTM Membership

Application is made for a membership in the American Society for Testing and Materials.

- ☐ **Organizational** an individual, business, governmental, research or professional organization, or trade association, or separate facility thereof subscribing to the purposes of the Society provided in the Charter and Bylaws.
- ☐ **Member** an individual or an institution (educational, public library, or a scientific engineering, or technical non-profit society) subscribing to the purposes of the Society provided in the Charter and Bylaws.

## Benefits and Fees for 1981

	<b>Organizational</b>	<b>Member</b>
Annual fee <sup>1</sup> .....	\$350.00 min.	\$50.00
Participation on ASTM Technical Committees .....	Official Rep. <sup>2</sup>	See #4 below
Annual Book of ASTM Standards:		
Free part .....	One	One
Parts at 20% discount <sup>3</sup> .....	47	5
Price of complete set (Parts 1-48) including free part .....	\$1,350.00 <sup>5</sup>	\$1,635.00 <sup>5</sup>
Annual subscriptions to:		
Standardization News .....	1 free	1 free
Other publications (other than the Book of Standards) at 20% discount .....	No limit	No limit

- 1) Membership year is 1 January to 31 December. Fees are payable in advance and are not pro-rated. Election to membership will become effective upon payment of fees.
- 2) Organizations applying for membership should select an official representative qualified to exercise the rights and privileges of membership. This includes voting on Society Ballot, and if appropriate, on technical committee matters. The official representative for the membership may be changed as needed by notifying the ASTM Headquarters. Committee participation is not transferable. Application will have to be submitted by the new representative to the appropriate committees. A member not officially serving on ASTM committees may not vote in committee matters.
- 3) Discount available only when order is placed on the Order/Invoice form furnished at the time of fee billing and only after the fee has been paid. Quantity prices available on request. All publications will be shipped to the address of membership.
- 4) For members serving on technical committees, their organizations may ask for this membership to be transferred without payment of additional fees. However, no additional free part or discount for the Book of ASTM Standards will be allowed. Committee participation is not transferable. Application will have to be submitted by the new member to the appropriate committee.
- 5) Prices are net with *all* allowable discount and provision for *free* part *deducted*.

NOTE: Membership benefits and publication's prices are subject to change.

## Preliminary Questionnaire of the Task Group to Prepare New Standards for Radiography of Soils

Committee D-18 has formed a task group to prepare new standards for radiography (X-ray) of soil samples. The task force is administratively under the direction of Subcommittee D18.07.

The task force is seeking information, data, and literature on X-ray radiography techniques used by many agencies and individuals. If you can assist the task force with any of the above, please complete the questionnaire below and mail it to the task force chairman. Please mark appropriate boxes below.

1. Do you use or have you used X-ray radiography to analyze soil samples or models Yes ☐ No ☐

2. Do you have published ☐ or unpublished ☐ reports you can make available to the committee Yes ☐ No ☐ Please give titles or sources on a separate sheet.

3. Do you use radiography

(a) as a routine tool to determine quality of samples ☐

(b) occasionally to analyze critical specimens ☐

(c) for model analysis ☐

(d) for research ☐

(e) other ☐ Please explain \_\_\_\_\_

4. Would you be willing to assist the task group in collecting data ☐, preparing standards ☐, performing tests ☐, and so on ☐ Yes ☐ No ☐

5. Are you aware of any agency who uses or has used radiography to analyze soils Yes ☐ No ☐

6. If yes, please give name and address of agency, and, if available, the name of person to contact for information.

Agency's name and address:

Contacts:

Preparer's name and address:

Phone:

*Please mail completed form by 30 Dec. 1981 to:*

Ara Arman

Chairman, Task Group on X-ray Radiography

c/o Louisiana State University

College of Engineering

Baton Rouge, LA 70803



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