



**Centennial Special Volume 3**

***The Heritage of Engineering Geology;  
The First Hundred Years***

Edited by

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## JOINT COMMITTEE ON ENGINEERING GEOLOGY

*Richard E. Gray*

### INTRODUCTION

The Joint Committee on Engineering Geology of the American Society of Civil Engineers (ASCE) and the Geological Society of America (GSA) have provided an active forum to discuss and investigate the common interests of applied geological science practitioners and civil engineering specialists since the early 1950s.

#### *Committee origin*

In October 1951, the Executive Committee of the American Society of Civil Engineers' Geotechnical Engineering (GT) Division, then designated the Soil Mechanics and Foundations Division (SMFD), unanimously voted to join with the Geological Society of America and form a Joint Committee on Engineering Geology, with the following objectives: "To keep the membership of the two organizations informed on progress and developments in the field of engineering geology, particularly as such problems are related to soil mechanics and foundation conditions; to recommend the formation of specific task committees as may be required to keep the profession informed as stated above, through the compilation of special reports, papers, monographs, and symposia."

The concept of having a committee on engineering geology within the framework of the ASCE was developed in the Engineering Geology Branch of the chief engineer's office of the Bureau of Reclamation (USBR) in Denver, Colorado. The first formal document concerning a committee was written by bureau geologist William R. Judd, in July 1950, to the late R. F. Blanks, chief of the Laboratories Division (USBR) and a member of the Soil Mechanics and Foundation Division (SMFD) Executive Committee. This memorandum proposed: "The organization of a new committee under the Soil Mechanics and Foundations Division of the ASCE to encompass and deal with all problems pertinent to engineering geology."

In April 1951, the Executive Committee appointed an ad hoc committee to be responsible for the organization of the new committee. A. E. Cummings, chief research engineer of Raymond Concrete Pile Company, was selected as chairman. The other members of the group were R. F. Blanks; E. B. Burwell, chief geologist of the U.S. Army Corps of Engineers; S. Paige, Columbia University; and K. Terzaghi, Harvard University.

On October 23, 1951, the ad hoc committee concluded: "There is real need for better cooperation between engineers and geologists. The best way of developing this cooperation is by means of a joint committee composed of engineers interested in geology and geologists interested in engineering selected from the Soil Mechanics and Foundations Division of ASCE and from the Engineering Geology Division of GSA. . . . The work should be

started by the appointment of an administrative committee consisting of three men from the ASCE and two men from the GSA, with an ASCE member as chairman. . . ."

Soon thereafter, R. F. Blanks became chairman of the SMFD Executive Committee and contacted K. Terzaghi to accept chairmanship of the group with the understanding that it would be Dr. Terzaghi's responsibility to set policies. In the interim, GSA named E. B. Burwell and R. Rhoades as their two representatives.

On March 3, 1952, the committee was approved by ASCE as a function of the SMFD. The first committee members were E. B. Burwell, H. O. Ireland of the University of Illinois, R. W. Spencer of the Southern California Edison Company, R. Rhoades of the Bureau of Reclamation (committee secretary), and K. Terzaghi (committee chairman). W. R. Judd was subsequently appointed assistant secretary to the committee and a nonvoting member.

### EARLY CONTRIBUTIONS 1953-1959

The committee held its first meeting on January 24, 1953, in St. Louis. Eleven possible tasks previously suggested by the ad hoc committee were discussed for action. Four task committee activities (Table 1) were adopted: (1) nomenclature and engineering properties of shales; (2) nomenclature and engineering properties of rocks, exclusive of shales; (3) products of weathering of bedrock and their engineering properties; and (4) influence of geological factors on tunnel construction. R. Rhoades asked to be replaced, and W. R. Judd was appointed secretary.

The four task committees submitted reports to the joint committee prior to their discharge in 1959. Task committee 3 sponsored a symposium at the GSA meeting in November 1955 and again at the ASCE meeting in February 1957. Task committee 4 sponsored a symposium on "Geological Factors in Tunnel Construction" at the ASCE meeting in June 1955.

T. H. Thornburn replaced K. Terzaghi as chairman in October 1957, and the following year the committee's purpose was modified to read: "To keep the membership of the two organizations informed on the progress and developments in the field of engineering geology, particularly as applied to civil engineering problems, and still more particularly as such problems are related to soil mechanics and foundation conditions." In November 1958, the committee sponsored a session that led to publication of *Engineering geology case histories, number 3*, "Symposium on Rock Mechanics," under guidance of A. B. Cleaves and W. R. Judd (Trask, 1959). This symposium and further activity by W. R. Judd, chairman of the GSA-EGD Panel on Rock Mechanics, culminated in the establishment of the U.S. National Committee on Rock Mechanics within the National Research Council in 1968.

The final reports of the four task committees were released in 1959. Summaries are given in Appendix A, and the contributing members are listed in Table 1.

TABLE 1. ROSTER OF TASK COMMITTEE MEMBERS

## TASK COMMITTEE 1—NOMENCLATURE AND ENGINEERING PROPERTIES OF SHALES

J. W. Early	R. H. Merrill
H. Forbes	S. S. Philbrick (chairman)
M. E. King	J. A. Trantina
K. S. Lane	V. Wolkodoff

## TASK COMMITTEE 2—NOMENCLATURE AND ENGINEERING PROPERTIES OF ROCK, EXCLUSIVE OF SHALES

E. A. Abdun-Nur	L. A. Obert
N. E. Grosvenor	H. B. Stuart
J. Hardin	T. F. Thompson
V. Jones (chairman)	A. Van Valkenburg, Jr.
R. W. Lemke	D. O. Woolf
R. C. Mielenz (successor chairman)	

## TASK COMMITTEE 3—PRODUCTS OF WEATHERING OF BEDROCKS AND THEIR ENGINEERING PROPERTIES

W. V. Conn	D. G. Moya
D. U. Deere	R. H. Nesbitt
P. P. Fox	F. R. Olmstead
J. P. Gould	P. Reiche
R. E. Grim	A. W. Root
J. W. Hill	J. R. Schultz
K. B. Hirashima	G. F. Sowers
C. P. Holdredge	T. H. Thornburn (chairman)
G. A. Kiersch	

## TASK COMMITTEE 4—INFLUENCE OF GEOLOGICAL FACTORS ON TUNNEL CONSTRUCTION

R. N. Carpenter	C. Rankin
A. B. Cleaves (chairman)	A. B. Reeves
T. W. Fluhr	E. B. Waggoner
A. N. Nicol	

TABLE 2A

PAPERS ON PORE PRESSURES  
NEW ORLEANS, NOVEMBER 1967

CHAIRMEN: L. B. JAMES AND R. C. HIRSCHFELD

*Principles of effective stress*  
R. C. Hirschfeld*Pore pressures in dams and foundations*  
K. V. Taylor*Effect of pore pressures on the stability of slopes*  
D. U. Deere and F. D. Patton*Role of pore pressures in subsidence caused by ground water withdrawal*  
J. F. Poland*Pore pressure effects in soils during earthquake*  
H. B. Seed

TABLE 2B

PAPERS ON LEGAL ASPECTS OF  
CONSTRUCTION ENGINEERING GEOLOGY  
NEW ORLEANS, FEBRUARY 1969

CHAIRMAN: E. WAGGONER

*The contractor, the law, and engineering geology*  
Alfred M. Petrofsky, Jacobs Associates, San Francisco*Owner, designer, and the geologist*  
Arthur R. Reitter, Tudor Engineering Company, San Francisco*The changed conditions clause in construction contracts—an appraisal from the standpoint of the owner and his counsel*  
B. Palmer King, Bureau of Reclamation*Legal aspects of construction engineering geology*  
Abraham E. Margolin, Attorney, Kansas City, Missouri

## CONTRIBUTIONS 1960–1988

A task committee on "Classification and Properties of Shales" was appointed in 1962 with S. S. Philbrick as chairman. The work of this committee culminated in a symposium on shale and a field trip at the ASCE Denver Water Resources Conference in May 1966.

R. C. Hirschfeld replaced T. H. Thornburn as chairman in 1967.

Continuing its practice of alternating sponsorship of sessions between ASCE and GSA meetings, the committee sponsored a session on "The Significance of Pore Pressures in Engineering Geology" (Table 2A lists the papers presented) at the GSA meeting in November 1967. In 1969, the committee sponsored a session on "Legal Aspects of Construction Engineering Geology" (Table 2B) at the ASCE meeting. A second endeavor in 1969 was a session "Dynamic Problems in Engineering Geology" (Table 2C) organized by G. A. Kiersch for the GSA meeting.

R. E. Gray replaced R. C. Hirschfeld as chairman in 1970. A session on "Geologic Aspects of Subsurface Waste Disposal" was held in January 1971 at the ASCE meeting. The committee also sponsored a paper on "Engineering Geology Education" (Kenney and Spencer, 1971).

In November 1972 at the GSA meeting, the committee sponsored a session on "Environmental Geology Mapping;" the papers were published in *Engineering geology case histories, number 10*, as "Geologic Mapping for Environmental Purposes" (Ferguson, 1974).

In January 1974, two committee-sponsored sessions were held during the ASCE meeting: "Recent Developments in the Classification and Index Properties of 'Shale'" and "The Geotechnical Environment of Valleys."

R. L. Schuster replaced R. E. Gray as chairman in 1974. In that year, both the management board of GSA's Engineering Geology Division and the Association of Engineering Geologists (AEG), requested expansion of the committee to include representatives of AEG. The executive committee of the Geotechnical Engineering Division invited AEG to appoint two representatives

TABLE 2C

PAPERS ON DYNAMIC PROBLEMS IN ENGINEERING GEOLOGY ATLANTIC CITY, NEW JERSEY, NOVEMBER 1969
<i>Some engineering geology aspects of surface faulting and related tectonic movements</i> M. G. Bonilla
<i>Geologic investigation of landslides along the Middle Fork Eel River, California</i> Michael E. Huffman, R. G. Scott, P. J. Lorens, and Lawrence B. James
<i>Seismic events related to newly built reservoirs</i> William I. Gardner
<i>The in-situ measurement of compressional and shear wave velocities for use in foundation design</i> Richard J. Holt and V. J. Murphy
<i>American Falls—preservation and enhancement study</i> Thomas A. Wilkinson and J. D. Guertin
<i>Horizontal configuration and the rate of erosion of Niagara Falls</i> Shailer S. Philbrick

TABLE 3. JOINT COMMITTEE ON ENGINEERING GEOLOGY

GSA MEMBERS 1951–1988	TERM
E. B. Burwell	1951–1955
R. Rhoades	1951–1953
E. B. Eckel	1953–1959
P. D. Trask	1957–1961
A. B. Cleaves	1958–1963
R. C. Mielenz	1958–1961
S. S. Philbrick	1961–1966
L. B. James	1963–1969
J. M. Kellberg	1963–1964
G. A. Kiersch	1967–1970
H. F. Ferguson	1969–1978
P. L. Hilpman	1970–1979
J. B. Ivey	1978–1984
C. R. McClure, Jr.	1979–1985
L. Chaturvedi	1984–1987
R. T. Pack	1985–1988
JOINT-COMMITTEE CHAIRMAN – ASCE MEMBERS	
K. Terzaghi	1951–1957
T. H. Thornburn	1957–1967
R. C. Hirschfeld	1967–1970
R. E. Gray	1970–1974
R. L. Schuster	1974–1978
T. Howard	1978–1985
N. Sitar	1985–