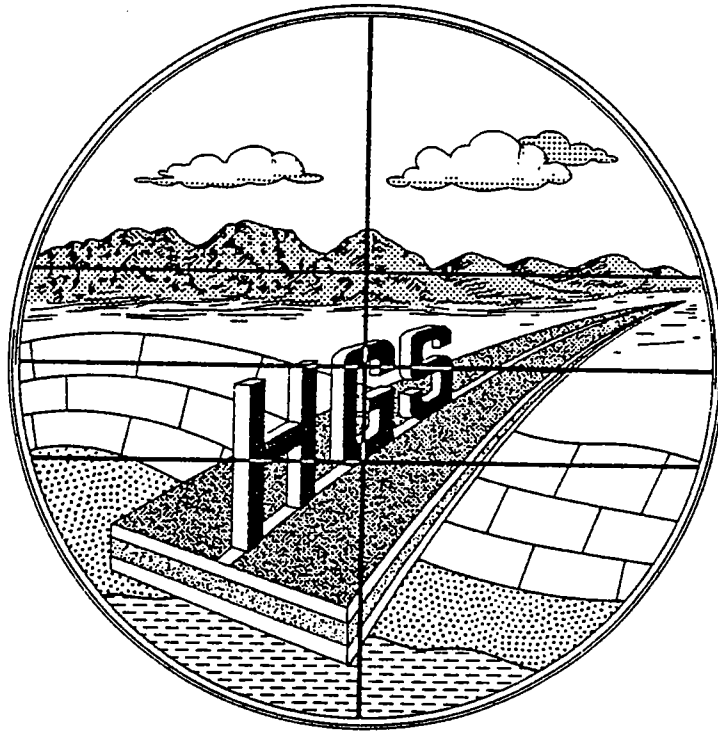


45 TH
HIGHWAY GEOLOGY
SYMPOSIUM

PORTLAND, OREGON
August 17-19, 1994

PROCEEDINGS



Scott F. Burns, Editor

Sponsored by
Portland State University
Oregon Department of Transportation
Washington Department of Transportation
Transportation Research Board

**45TH HIGHWAY GEOLOGY
SYMPOSIUM**

**PORTLAND, OREGON
AUGUST 16-20, 1994**

LOCAL COORDINATING COMMITTEE

Scott Burns, Dept. of Geology, Portland State Univ.

Harry Ludowise, Retired FHWA, Vancouver, WA

Sue D'Agnese, Oregon DOT

Bob Van Vickle, Oregon DOT

Steve Lowell, Washington DOT

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Highway Geology Symposium

HISTORY ORGANIZATION AND FUNCTION *

Established to foster a better understanding and closer cooperation between geologists and civil engineers in the highway industry, the Highway Geology Symposium (HGS) was organized and held its first meeting on February 16, 1950, in Richmond, Virginia. Since then 39 consecutive annual meetings have been held in 26 different states. Between 1950 and 1962, the meetings were held east of the Mississippi River, with Virginia, Ohio, West Virginia, Maryland, North Carolina, Pennsylvania, Georgia, Florida, and Tennessee serving as the host states.

In 1962, the Symposium moved west for the first time to Phoenix, Arizona. Since then, it has rotated, for the most part, back and forth from east to west. Following meetings in Texas and Missouri in 1963 and 1964, the Annual Symposium moved to different locations as follows:

<u>Year</u>	<u>HGS Location</u>	<u>Year</u>	<u>HGS Location</u>
1965	Lexington, KY	1966	Ames, IA
1967	Lafayette, IN	1968	Morgantown, WV
1969	Urbana, IL	1970	Lawrence, KS
1971	Norman, OK	1972	Old Point Comfort, VA
1973	Sheridan, WY	1974	Raleigh, NC
1975	Coeur d'Alene, ID	1976	Orlando, FL
1977	Rapid City, SD	1978	Annapolis, MD
1979	Portland, OR	1980	Austin, TX
1981	Gatlinburg, TN	1982	Vail, CO
1983	Stone Mountain, GA	1984	San Jose, CA
1985	Clarksville, IN	1986	Helena, MT
1987	Pittsburgh, PA	1988	Park City, UT
1989	Montgomery, AL	1990	Albuquerque, NM
1991	Albany, NY	1992	Fayetteville, AR

Unlike most groups and organizations that meet on a regular basis, the Highway Geology Symposium has no central headquarters, no annual dues, and no formal membership requirements. The governing body of the Symposium is a steering committee composed of approximately 20 engineering geologists and geotechnical engineers from state and federal agencies, colleges and universities, as well as private service companies and consulting firms throughout the country. Steering committee members are elected for three-year terms, with their elections and re-elections being determined principally by their interests and participation in and contribution to the symposium. The officers include a chairman, vice chairman, secretary, and treasurer, all of whom are elected for a two-year term. Officers except for the treasurer may only succeed themselves for one additional term.

A number of three-member standing committees conduct the affairs of the organization. The lack of rigid requirements, routing, and the relatively relaxed overall functioning of the organization is what attracts many of the participants.

Meeting sites are chosen two or four years in advance and are selected by the Steering Committee following presentations made by representatives of potential host states. These presentations are usually made at the steering committee meeting which is held during the Annual Symposium. Upon selection, the state representative becomes the state chairman and a member protem of the Steering Committee.

The symposia are generally for two and one-half days, with a day-and-a-half for technical papers and a full-day for the field trip. The symposium usually begins on Wednesday morning. The field trip is usually Thursday, followed by the annual banquet that evening. The final technical session generally ends by noon on Friday.

The field trip is the focus of the meeting. In most cases, the trips cover approximately from 150 to 200 miles, provide for six to eight scheduled stops, and require about eight hours. Occasionally, cultural stops are scheduled around geological and geotechnical points of interest. To cite a few examples, in Wyoming, the group viewed landslides in the Big Horn Mountains; Florida's trip included a tour of Cape Canaveral and the NASA space installation; the Idaho and South Dakota trips dealt with principally with mining activities; North Carolina provided stops at a quarry site, a dam construction site, and a nuclear generating site; in Maryland, the group visited the Chesapeake Bay hydraulic model and the Goddard Space Center; the Oregon trip included visits to the Columbia River Gorge and Mount Hood; the Central Mineral Region was visited in Texas; and the Tennessee trip provided stops at several repaired landslides in Appalachia. The Colorado field trip consisted of stops at geological and geotechnical problem areas along Interstate 70 in Vail Pass and Glenwood Canyon, while the Georgia trip in 1983 concentrated on highway design and construction problems in the Atlanta urban environment. The 1984 field trip had stops in the San Francisco Bay area which illustrated the planning, construction and maintenance of transportation systems. In 1985, the one day trip illustrated new highway construction procedures in the greater Louisville area. The 1986 field trip was through the Rockies of recent interstate construction in the Boulder Batholith. The trip highlight was a stop at the Berkeley Pit in Butte, Montana, an open pit copper mine.

At the technical sessions, case histories and state-of-the-art papers are most common with highly theoretical papers the exception. The papers presented at the technical sessions are published in the annual proceedings. Some of the more recent proceedings may be obtained from the Treasurer of the Symposium.

* Revised from the 41st Highway Geology Symposium Proceedings.

(Taken from the 43d Highway Geology Symposium Proceedings)

EXHIBITORS

You are invited to visit their displays in the Mt. St. Helens Room. They are listed by booth numbers:

- 1) Hilfiker Retaining Walls, Eureka, California
- 2) A.B. Chance Co., Centralia, Missouri
- 3) Maccaferri Gabions Inc., Seattle, Washington
- 4) KeyStone Pacific Northwest, Beaverton, Oregon
- 5) Hayward Baker Inc., Seattle, Washington
- 6) R.S.T. Instruments Inc., Yakima, Washington
- 7) Tensar Earth Technology Inc., Atlanta, Georgia
- 8) Preformed Line Products, Cleveland, Ohio
- 9) Geokon Inc, Lebanon, New Hampshire
- 10) Brugg Cable Products Inc, Santa Fe, New Mexico
- 11) Piling Accessories, Matthews, North Carolina
- 12) Camp Dresser McKee, Albuquerque, New Mexico
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Highway Geology Symposium

EMERITUS MEMBERS OF THE STEERING COMMITTEE FOR THE HIGHWAY GEOLOGY SYMPOSIUM

R.F. Baker

Virgil E. Burgat

Robert G. Charboneau

Hugh Chase

A.C. Dodson

Walter F. Fredericksen

John Lemish

George S. Meadors, Jr.

David Mitchell

W.T. Parrot

Paul Price

David L. Royster

Mitchell Smith

Ed J. Zeigler

Berke Thompson

Bill Sherman

Burrell Whitlow



Highway Geology Symposium

MEDALLION AWARD WINNERS

Hugh Chase	1970
Tom Parrot	1970
Paul Price	1970
K.B. Woods	1971
R. J. Edmonson	1972
C.S. Mullin	1974
A.C. Dodson	1975
Burrell Whitlow	1978
Bill Sherman	1980
Virgil Burgat	1981
Henry Mathis	1982
David Royster	1982
Terry West	1983
Dave Bingham	1984
Vernon Bump	1986
C.W. "Bill" Lovell	1989
Joseph A. Gutierrez	1990
Willard McCasland	1990
W.A. "Bill" Wisner	1991
David Mitchell	1993

In 1969, the Symposium instituted an awards program, and with the support of Mobile Drilling Company of Indianapolis, Indiana, designed a plaque to be presented to individuals who have made significant contributions to the Highway Geology Symposium over a period of years. The award, a 3.5" medallion mounted on a walnut shield and appropriately inscribed, is presented during the banquet at the Annual Symposium.

LIST OF PARTICIPANTS
45TH HIGHWAY GEOLOGY SYMPOSIUM
PORTLAND, OREGON
AUGUST 16-20, 1994

Charles Allen
Geography Department
Portland State University
Portland, Oregon 97207-0751

Tim Beck
California Dept. of Transportation
5900 Folsom Blvd.
Sacramento, California 95819

Stuart Ashbaugh
Geology Department
Portland State University
Portland, Oregon 97207-0751

Dick Bell
420 NW Ponderosa Ave.
Oregon State University
Corvallis, Oregon 97330

Ken Ashton
West Virginia Geological Survey
PO Box 879
Morgantown WV 26507

Joseph Bigger
Brugg Cable
New London CT 06320

Tom Armour
Nicholson Construction Company
PO Box 98
Bridgeville PA 15017

Todd Black
Illinois Dept. of Transportation

Tom Badger
Washington State Dept. of
Transportation
PO Box 167
Olympia WA 98507-0167

Janine Boer
Geology Department
Portland State University
Portland, Oregon 97207-0751

John S. Baldwin
West Virginia Dept. of Transportation
312 Michigan Ave.
Charleston WV 25311

Robert Bookwalter
Brugg Cable
Santa Fe NM

Michelle Barnes
Geology Department
Portland State University
Portland, Oregon 97207-0751

Jon Bounds
Oregon Dept. of Transportation
Region 3 Geology
3500 Stewart Parkway Blvd.
Roseburg OR 97470

Nancy Boyd
Washington Dept. of Transportation
Engineering Geologist
PO Box 167
Olympia WA 98507-0167

Tom Boyd
140 Maple St.
Castle Rock WA 98611

Tom Bumala
Slope Indicator Co.
PO Box 300316
Seattle WA 98103

Scott Burns
Geology Department
Portland State University
Portland, Oregon 97207-0751

Glenda Burns
Guest
Portland, Oregon

Bob Burk
Golder Associates
4104 148th Ave. NE
Redmond WA 98052

Dave Busby
KeyStone Pacific Northwest
12655 SW Center #310
Beaverton OR 97005

Tom Capell
Oregon Dept. of Transportation
2950 State St.
Salem OR 97310

Pete Castro
Oregon Dept. of Transportation
Foundation Unit
Transportation Building #316
Salem OR 97310

Richard Cross
New York State Thruway Authority
PO Box 189
Albany NY 12201

Guest of
Richard Cross
Albany NY

Ms. Joy Cuprys
Surface Systems Inc.
PO Box 34053
Truckee CA 96160

Sue D'Agnese
Oregon Dept. of Transportation
3500 Stewart Parkway
Roseburg OR 97470

Jim Dahill
Wyoming Dept. of Transportation
PO Box 1708
Cheyenne WY 82002-1708

Kathe Dahill
Guest
Cheyenne WY

Steven A. Davis
Oregon Dept. of Transportation
Engineering Geology Group
2950 State St.
Salem OR 97310

Jeff Dean
Oklahoma Dept. of Transportation
622 Elmwood
Edmond OK 73013

Guest of
Jeff Dean
Edmond, Oklahoma

Tom DeRoo
Mt. Hood National Forest
2955 NW Division St.
Gresham OR 97030

Mr. Steve Drussell
R.S.T. Instruments Inc.
241 Lynch Rd.
Yakima WA 98908

Mr. William G. Edwards
210 N. Allen St.
A.B. Chance Co.
Centralia MO 65240

William Fletcher
Oregon Dept. of Transportation
Salem, Oregon

Don Gaffney
Michael Baker, Jr., Inc.
Box 280
Beaver PA 15009

Diane Gaffney
Guest
Beaver Falls PA 15010

David Gerraghty
Ministry of Transportation & Highways
3149 Production Way
Burnaby, British Columbia

Mohammed Ghweir
New Mexico State Highway &
Transportation Dept.
PO Box 1149
Santa Fe NM 87504-1149

Bob Gietz
Washington State Dept. of
Transportation
Construction Materials Engineer
PO Box 167
Olympia WA 98507-0167

Russell Glass
N.C. Dept. of Transportation
PO Box 3279
Asheville NC 28802

Sandra Glass
Guest
Asheville NC

Jim Goudzwaard
U.S. Army Corps of Engineers
Portland, Oregon

Fred Gullixson
Oregon Dept. of Transportation
Engineering Geology Group
2950 State St.
Salem OR 97310

Joe Gutierrez
635 Friar Tuck Rd.
Winston-Salem NC 27104

Guest of
Joe Gutierrez
Winston-Salem NC

Mike Hager
Wyoming Dept. of Transportation
PO Box 1708
Cheyenne WY 82003-1708

Cindy Hager
Guest
Cheyenne WY

Phil Hansen
U.S. Bureau of Reclamation,
Geology Group
Grand Coulee Power Office GCP-7250
PO Box 620
Grand Coulee WA 99133

Jim Hardcastle
Dept. of Civil Engineering
University of Idaho
Moscow ID 83844-1022

Andrew Harvey
HAZCON, Inc.
1520 NW 136th Ave.
Portland OR 97229

Bob Henthorne
Kansas Dept. of Transportation
PO Box 498
Chanute KS 66720

Harold Hilfiker
Hilfiker Retaining Walls
PO Box 2012
Eureka CA 95502-2012

John Hofstetter
Preformed Line Products
PO Box 91129
Cleveland OH 44101

Steve Huddleston
Camp Dresser & McKee
2400 Louisiana Blvd. NE
AFC #5 Suite 740
Albuquerque NM 87110

Richard Humphries
Golder Assoc.
3730 Chamblee Tucker Rd.
Atlanta GA 30341

Jim Huss
Oregon Dept. of Transportation
9002 SE McLoughlin
Milwaukie OR 97222

Jay Jayaprakash
Transportation Research Board
2101 Constitution Ave., N.W.
Washington DC 20418

Terry Jensen
Jensen Drilling Co.
1775 Henderson Ave.
Eugene OR 97403

Mark Johnston
Nicholson Construction Co.
PO Box 98
Bridgeville PA 15017

Bob Johnston
Parsons Brinkerhoff
303 Second St. #700 North
San Francisco CA 94107-1317

Peter Jones
Rogue River National Forest
PO Box 520
Medford OR 97501

Judy Jones
Guest
Medford OR

Bill Kane
Dept. of Civil Engineering
University of the Pacific
Stockton CA 95211

Guest of
Bill Kane
Stockton CA

Clay Kelleher
Geology Department
Portland State University
Portland, Oregon 97207-0751

Mark Koelling
Hayward Baker Inc.
2701 California Ave.
Seattle WA 98116

Hank Knobel
Central Mine Equipment
4215 Rider Trail N.
Earth City MO 63045

Jeff Keaton
AGRA E & E
4137 S. 500 W.
Salt Lake City UT 84125-1399

Rick Kobernik
Oregon Dept. of Transportation:
Geology
3500 NW Stewart Parkway
Roseburg OR 97470

Warren Krager
RZA-AGRA, Inc.
7477 SW Tech Center Drive
Portland OR 97223

Tom Kuper
David Newton & Associates
Portland OR

John Kuiper
AGRA E & E
7477 SW Tech Center Drive
Portland OR 97223

William N. Laval
Lewis-Clark State College
Lewiston ID 83501

Michael T. Long
US Forest Service
PO Box 10607
Eugene OR 97440

Bill Lovell
School of Civil Engineering
Purdue University
1284 Civil Engineering Building
W. Lafayette IN 47907-1284

Steve Lovell
Washington State Dept. of
Transportation
Chief Engineering Geologist
PO Box 167
Olympia WA 98507-0167

Harry Ludowise
FHWA-Retired
Vancouver WA

Gail Ludowise
Guest
Vancouver WA

Marcia Malstrom
Oregon Dept. of Transportation
Geotechnical Group
2950 State St.
Salem OR 97310

Douglas Marsh
Oregon Dept. of Transportation
Region 1 Geology
9002 SE McLoughlin Blvd.
Milwaukie OR 97222

David Martin
Maryland State Highway Administration
2323 W. Joppa Rd.
Brooklandville MD 21002

Guest of
David Martin
Brooklandville MD

Matt McMahon
Pennsylvania Turnpike Comm.
2400 Ardmore Blvd.
Pittsburgh PA 15221

Michael McDonough
Geokon Inc.
48 Spencer St.
Lebanon NH 03766

Keith Mills
Oregon Dept. of Forestry
2600 State St.
Salem OR 97310

Curran Mohny
Oregon Dept. of Transportation
9002 SE McLoughlin
Milwaukie OR 97222

Paul Moser
Brugg Cable
Switzerland

Lynn Moses
Washington State Dept. of
Transportation
Engineering Geologist
PO Box 167
Olympia WA 98507-0167

Keith Nottingham
Idaho Dept. of Transportation
PO Box 8028
Boise ID 83707-2028

George Odom
Texas Dept. of Transportation
125 E. 11th St.
Austin TX 78701-2483

Linda Odom
Guest
Austin TX

Dermot O'Keefe
Oregon Dept. of Transportation
9002 SE McLoughlin
Milwaukie OR 97222

Steve Palmer
Washington Division of Geology
2820 Lilly Rd. NE
Olympia WA 98506

Guest of
Steve Palmer
Olympia WA

Brian Peterson
Geology Department
Portland State University
Portland, Oregon 97207-0751

Gary Peterson
Squier Associates
PO Box 1317
Lake Oswego OR 97035

Tim Pfeiffer
Oregon Dept. of Transportation
Geotechnical Group
7187 SW 81st Pl.
Aloha OR 97007

Larry Pierson
Oregon Dept. of Transportation
2950 State St.
Salem OR 97310

Pat Pringle
Washington Div. of Geology
& Earth Resources
PO Box 47007
Olympia WA 98504-7007

Ann Pryor
Tensar Earth Technology Inc.
5775 B Glenridge Dr. #450
Atlanta GA 30328

Frank Reckendorf
SCS Retired Sedimentation Geologist
950 Market St NE
Salem OR 97301

Larry Rockers
Kansas Dept. of Transportation
2300 Van Buren
Topeka KS 66611

Erik J. Rorem
Brugg Cable
Portland OR

Mike Schroeder
Oregon Dept of Transportation
9002 SE McLoughlin
Milwaukie OR 97222

David Scofield
Squier Associates
PO Box 1317
Lake Oswego OR 97035

Panneer Selvam
BELL 4190
University of Arkansas
Fayetteville AR 72701

Steve Senior
Ministry of Transportation, Ontario
1201 Wilson Ave, Rm 310 Central Bldg.
Downsview ON M3M 1J8 Canada

Bill Sherman
Geotechnical Consultant
2780 Spruce
Cheyenne WY 82001

Guest of
Bill Sherman
Cheyenne WY

Mike Shippey
Oregon Dept. of Transportation
Salem OR

Will Sitz
Alabama Dept. of Transportation
1409 Coliseum Blvd.
Montgomery AL 36130

Josh Smith
Oregon Dept. of Transportation
632 Pine St.
Sublimity OR 97385

Maureen Soar
Geology Department
Portland State University
Portland, Oregon 97207-0751

Thomas P. Sokol
Pensylvania Turnpike Comm.
2400 Ardmore Blvd.
Pittsburgh PA 15221

David Stella
Maccaferri Gabions Inc.
331 Andover Park E.
Seattle WA 98188

Pamela Stinnette
Dept. of Civil Engineering
Univ. of South Florida
4202 E. Fowler Ave. ENB118
Tampa FL 33620

Jim Stroud
Vulcan Materials Co.
PO Box 4239
Winston-Salem NC 27115

Irv Studebaker
Mining Dept.-Montana Tech.
West Park
Butte MT 59701-8997

Steven Sweeney
New York State Thruway Authority
88 Gipp Rd.
Albany NY 12203

Ernil Taylor
Piling Accessories
3467 Gribble Rd.
Matthews NC 28105

Robert A. Thommen
Brugg Cable Products, Inc.
720 Avenida Castellano
Santa Fe NM 87505

Sam Thornton
Univ. of Arkansas
4190 BEC, U. of Arkansas
Fayetteville AR 72701

Rachel Thurston
Oregon Dept. of Transportation
9002 SE McLoughlin Blvd.
Milwaukie OR 97222

Rob Tiedemann
Ecological Design Inc.
Boise ID

Frank Toor
Oregon Dept. of Transportation
Region 3 Geology
3500 Stewart Parkway
Roseburg OR 97470

Keith Turner
Colorado School of Mines
2010 Washington Circle
Golden CO 80401

Guest of
Keith Turner
Golden CO

Don Turner
Oregon Dept. of Transportation
Geotechnical Group
2950 State St. SE
Salem OR 97310

Mike Vierling
New York State Dept. of Transportation
323 Boght Rd.
Watervliet NY 12189-1106

Kristi Vockler
Geology Department
Portland State University
Portland, Oregon 97207-0751

Ken Walsh
Geology Department
Portland State University
Portland, Oregon 97207-0751

Rich Watanabe
Oregon Dept. of Transportation
Geotechnical Engineering Group
2950 State St.
Salem OR 97310

Skip Watts
Engineering Geosciences
Radford University
Box 6939
Radford VA 24142

Terry West
Dept. of Earth & Atmospheric Sciences
1397 Civil Engineering Bldg.
Purdue University
W. Lafayette IN 47907-1397

Ruth Wilmoth
Carlson Testing
2422 SE 138th Ct.
Vancouver WA 98684

Earl Wright
Kentucky Dept. of Transportation
Div. of Materials, Geotechnical Branch
Frankfort KY 40622

Sheryl Zinsli
Geology Department
Portland State University
Portland, Oregon 97207-0751

List is complete as of August 15, 1994