

**51ST ANNUAL HIGHWAY
GEOLOGY SYMPOSIUM**

PROCEEDINGS

**Seattle, Washington
August 29th -September 1st 2000**



**Sponsored By
Washington State Department of Transportation**

51ST ANNUAL HIGHWAY GEOLOGY SYMPOSIUM

AUGUST 29TH -SEPTEMBER 1ST, 2000

Seattle, Washington

Welcome to the *51st Annual Highway Geology Symposium*. The local organizing committee extends a very warm welcome to the Evergreen State, and we hope you enjoy our state and particularly your stay in the Seattle area. We have planned this years meeting to provide you with valuable information concerning engineering geology and geotechnical engineering, and we believe that you will find this collection of work useful for future projects and in your present practices.

Washington State abounds with geologic wonders and scenic beauty that are one of a kind. We hope that your plans will enable you to enjoy these natural wonders.

Thank you for joining us and, once again, welcome to Washington.

**Steve Lowell
Tom Badger
Symposium Co-Chairmen**

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LOCAL ORGANIZING COMMITTEE

**Steve Lowell, Washington DOT
Tom Badger, Washington DOT
Lynn Moses, Washington DOT
Dave Jenkins, Washington DOT
Elizabeth Preston, Washington DOT
Pat Pringle, Washington DNR**

SPONSORED BY:

Washington Department of Transportation

The local organizing committee for the *51st Annual Highway Geology Symposium* would like to express its appreciation to the following exhibitors and sponsors. You are invited to visit their displays. If you have occasion to be in contact with these organizations at the Symposium or in the course of your work, please be sure to express your appreciation.

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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 March 14, 1950, in Richmond, Virginia. Attending the inaugural meeting were representatives from state highway departments (as referred to at the time) from Georgia, South Carolina, North Carolina, Virginia, Kentucky, West Virginia, Maryland, and Pennsylvania. In addition, a number of federal agencies and universities were represented. A total of nine technical papers were presented.

W.T. Parrott, an engineering geologist with the Virginia Department of Highways, chaired the first meeting. It is Mr. Parrott who originated the Highway Geology Symposium.

It was at the 1956 meeting that future HGS leader, A. C. Dodson, began his active role in participating in the Symposia. Mr. Dodson was the Chief Geologist for the North Carolina State Highway and Public Works Commission, which sponsored the 7th HGS meeting.

Since the initial meeting, 50 consecutive annual meetings have been held in 31 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 where the 13th annual HGS meeting was held. Since then, it has alternated, 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:

List of Highway Geology Symposium Meetings

<u>NO.</u>	<u>Year</u>	<u>HGS Location</u>	<u>NO</u>	<u>Year</u>	<u>HGS Location</u>
1 st	1950	Richmond, VA	2 nd	1951	Richmond, VA
3 rd	1952	Lexington, VA	4 th	1953	Charleston, W VA
5 th	1954	Columbus, OH	6 th	1955	Baltimore, MD
7 th	1956	Raleigh, NC	8 th	1957	State College, PA
9 th	1958	Charlottesville, VA	10 th	1959	Atlanta, GA
11 th	1960	Tallahassee, FL	12 th	1961	Knoxville, TN
13 th	1962	Phoenix, AZ	14 th	1963	College Station, TX

15 th	1964	Rolla, MO	16 th	1965	Lexington, KY
17 th	1966	Ames, IA	18 th	1967	Lafayette, IN
19 th	1968	Morgantown, WV	20 th	1969	Urbana, IL
21 st	1970	Lawrence, KS	22 nd	1971	Norman, OK
23 rd	1972	Old Point Comfort, VA	24 th	1973	Sheridan, WY
25 th	1974	Raleigh, NC	26 th	1975	Coeur d'Alene, ID
27 th	1976	Orlando, FL	28 th	1977	Rapid City, SD
29 th	1978	Annapolis, MD	30 th	1979	Portland, OR
31 st	1980	Austin, TX	32 nd	1981	Gatlinburg, TN
33 rd	1982	Vail, CO	34 th	1983	Stone Mountain, GA
35 th	1984	San Jose, CA	36 th	1985	Clarksville, IN
37 th	1986	Helena, MT	38 th	1987	Pittsburgh, PA
39 th	1988	Park City, UT	40 th	1989	Birmingham, AL
41 st	1990	Albuquerque, NM	42 nd	1991	Albany, NY
43 rd	1992	Fayetteville, AR	44 th	1993	Tampa, FL
45 th	1994	Portland, OR	46 th	1995	Charleston, WV
47 th	1996	Cody, WY	48 th	1997	Knoxville, TN
49 th	1998	Prescott, AZ	50 th	1999	Roanoke, VA
51 st	2000	Seattle, WA			

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 20-25 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

