



*H. Bolton Seed*

## Harry Bolton Seed

1922–1989

By James K. Mitchell

Harry Bolton Seed was born in Bolton, England, on August 19, 1922. He studied at King's College, London University, receiving the B.Sc. in civil engineering in 1944 and the Ph.D. in structural engineering in 1947. Following two years as assistant lecturer at King's, he came to the United States to study soil mechanics at Harvard University under the tutelage of Karl Terzaghi and Arthur Casagrande. He received the S.M. from Harvard in 1948 and spent the next year as an instructor. This was followed by a year as a foundation engineer for Thomas Worcester, Incorporated, in Boston.

In 1950 Professor Seed joined the civil engineering faculty at the University of California, where he spent the remainder of his career as an engineering educator, researcher in geotechnical engineering, and consultant to numerous companies and government agencies. He built the program in geotechnical engineering at Berkeley into one of the largest and best in the world. A major factor in this development was his bringing colleagues together from different areas of geotechnical engineering, including geological engineering and rock mechanics, as well as soil mechanics and foundation engineering. He served as chairman of the Civil Engineering Department from 1965 to 1971, a period during which it rose to number one ranking in the United States for the quality of its graduate programs.

Professor Seed had an enormous impact on every area of

research activity in which he worked. His early work on the mechanics of pile foundations still forms the basis of modern methods of pile-soil interaction. His research on soil compaction and the influences of methods of compaction on soil structure and mechanical properties provides the foundation for current understanding. His contributions to analytical methods of pavement design were of the first rank.

About 1960 he introduced the field of geotechnical earthquake engineering, and he is recognized worldwide as the "father" of this field. His pioneering studies included the development of methods for site response analysis, for the analysis of soil-structure interaction, for seismicity evaluation, and for assessment of liquefaction potential. The results of his research have led to a total revision of concepts and methods for earthquake-resistant design of earth dams, nuclear power plants, coastal facilities, and building foundations, as well as revision of codes of practice, design procedures, and regulations. This work, founded on sound scientific principles, has been adopted throughout the world. He served as a consultant on projects all over the world and to virtually every major federal agency and large engineering organization in the United States.

Through his research Professor Seed developed design methods that revolutionized many aspects of engineering practice and thinking. They have had enormous influence on the safety of critical structures such as major dams, nuclear power plants, and high-rise buildings. His investigations of major disasters, such as the 1964 Great Alaska earthquake, the 1971 San Fernando earthquake in California, the 1976 failure of the Teton Dam, the 1979 slide at the Port of Nice in France, and the 1985 Mexico City earthquake, have, with the aid of modern methods of analysis and experimental techniques, led to a basic understanding of their causes and to the measures that must be taken to prevent similar occurrences in the future. His selection by the government of Egypt, under AID sponsorship, to make a seismic safety evaluation of the Aswan High Dam placed the safety of literally millions of people in his hands. His work in all these areas will have an impact on the world for generations to come.

Harry Seed's work as an engineering educator, scholar, and

servant of his profession was unsurpassed. He was the epitome of a model scholar, devoted to the advancement of engineering science and practice. He devoted large amounts of time to public service activities. He was always brilliant as a public speaker and was recognized for years as the best lecturer and teacher in his department. He guided fifty Ph.D. candidates to the successful completion of their dissertation research; many of them have gone on to distinguished careers of their own in the geotechnical engineering field. His writings—nearly three hundred papers and reports—are exceptionally lucid and insightful and provide eloquent testimony, as well as a lasting record of his work. He was active, maintaining a full schedule of teaching, research, and professional activity until very shortly before his death.

Professor Seed received many awards and honors for his contributions. Among them are more awards from the American Society of Civil Engineers (ASCE) than any other engineer in the history of the society. These include the Norman Medal twice, the J. James Croes Medal three times, the Thomas A. Middle-brooks Award four times, the Thomas Fitch Rowland Prize, the Arthur M. Wellington Prize, the Walter L. Huber Civil Engineering Research Prize, and the Karl Terzaghi Award. For his excellence as an educator he received the Distinguished Teaching Award from the University of California and the Vincent Bendix Award and the Lamme Award from the American Society for Engineering Education.

Other awards include election as fellow of King's College, London University; the T. K. Hsieh Award of the British Royal Society and Institution of Civil Engineers, Great Britain; the Distinguished Engineering Achievement Award of the Institute for the Advancement of Engineering; and the first Kevin Nash Gold Medal of the International Society for Soil Mechanics and Foundation Engineering.

He was selected as Faculty Research Lecturer at the University of California in 1986, the highest honor that the faculty can bestow on one of its own. Other distinguished lectureships awarded to Professor Seed include the Horace A. McCrary Lecture at the Massachusetts Institute of Technology; the Karl

Terzaghi Lecture of the American Society of Civil Engineers; the Henry M. Shaw Lecture at North Carolina State University; Terzaghi Memorial Lecturer at Bogazici University, Turkey; the Rankine Lecture of the Institution of Civil Engineers, Great Britain; Northern Testing Services Distinguished Lecturer; Martin S. Kapp Memorial Lecturer of the ASCE; James H. Haley Memorial Lecturer, Boston Society of Civil Engineers; Distinguished Civil Engineering Lecturer, University of Nevada; Charles Schwab Memorial Lecturer, American Iron and Steel Institute; and the Nabor Carrillo Lecturer, Mexican Society for Soil Mechanics.

Dr. Seed was elected to the U.S. National Academy of Engineering in 1970, to honorary membership in the American Society of Civil Engineers in 1985, to the U.S. National Academy of Sciences in 1986, and to honorary membership in the Earthquake Engineering Research Institute in 1988. In 1987 he was awarded the National Medal of Science by President Reagan, and in 1988 he was awarded the first honorary doctorate presented by the Ecole Nationale des Ponts et Chaussees in Paris.

Dr. Harry Bolton Seed was truly a giant of his generation, and all of us are the richer for having had him among us. For those who knew him well, he will be most remembered as a generous and compassionate gentleman, with wit, incisive insights, and wide-ranging interest in the world around him. No problem was too small to be analyzed and solved; every person was given his time and consideration. He was truly a teacher in the highest sense of the word.

