
ALFRED S. HARRISON

A Biographical Sketch

Alfred Harrison grew up in Los Angeles, California. After high school, he entered the U.S. Navy's wartime V-12 Program in 1944 and attended the University of Southern California (USC). Because his grandfather was a mining engineer, Harrison decided on civil engineering as his field of study. At USC he became interested in soil mechanics, fluid mechanics, and hydraulics. After receiving his Bachelor of Science in Civil Engineering in 1947, he went on to graduate study at the University of California at Berkeley where he worked under Professor Hans Albert Einstein, a noted professor of hydraulics and specialist in sedimentation. As a teaching and research assistant from 1947-1950, he worked closely with Einstein and did the computations for many of Einstein's research experiments. During his years at Berkeley, Harrison developed a deep interest in river engineering, a field he would pursue throughout his professional life.

While at the University of California, Harrison studied sedimentation processes and completed his master's thesis on the armoring of river bottoms. His work was funded by the Missouri River Division of the U.S. Army Corps of Engineers which was then studying the armoring problem as it prepared to build the large mainstem dams on the Missouri River. Because of this research work, Don Bondurant of the Omaha District recruited Harrison to work in the general hydraulics section under Nick Barbarossa. There he learned about open channel hydraulics and practical applications of river engineering in addition to working on sedimentation problems.

In the district, he quickly rose to be head of the general hydraulics section in 1951 and then of the hydraulics and sediment section in 1954. He was involved in virtually every aspect of the hydraulic study and work on the mainstem dams and of flood control, bank protection, and channel stabilization projects. From 1952-60 Harrison worked on the diversions during the dam closures at Fort Randall, Oahe, Gavins Point, and Big Bend Dams. To calculate the backwater program for simulated water surface profiles for the complex diversion at Oahe, he wrote his own program using Bell-2, an early computer program, that ran on an IBM 650 computer. He was also involved in reservoir surveys and aggradation and degradation studies for the Missouri River reservoirs. Harrison also did the measurement, analysis, and publication of sediment load on the Missouri River and its tributaries.

After joining the Missouri River Division in 1964 as chief of hydraulics and hydrology, he supervised the review and approval of hydraulic design, hydrologic engineering, water quality, and sedimentation aspects of Corps of Engineer projects in the Missouri River Basin. These included the six large dams which were constructed on the Missouri River for water supply, power, navigation, and recreation, along with the multi-purpose dams on the Platte River, Osage River, and Kansas River basins, small dams constructed in urban watersheds, open river navigation projects, and channel stabilization on the Missouri River. He was also involved in design, construction, and

operation of levees for rural flood control as well as numerous projects for urban flood protection involving dams and levees, channel improvements, and bridge modifications. These projects included many nonstructural measures such as flood plain zoning, flood proofing buildings, river bank protection, and river bed stabilization. From 1964-1969, Harrison was in charge of promoting and coordinating the use of computers for engineering applications in the Missouri River Division.

From 1978 until he retired in 1988, Harrison was chief of the technical engineering branch of the Missouri River Division. He managed senior-level engineers and architects responsible for technical review and approval of the Civil Work's and military construction projects of the Omaha and Kansas City Districts. These districts engaged in projects involving multi-purpose reservoirs, streambank protection, flood control projects throughout the Missouri River Basin and navigation on the Missouri River. He also participated in military programs in designing and constructing Army and U.S. Air Force base facilities.

In 1988 he retired from the Army Corps of Engineers after 38 years of service and began an active consulting career. In 1989, he became an engineer for Harza Engineering Company. In Pakistan, he directed a team doing feasibility reports and designs for flood and bank protection projects for agricultural areas along the Indus river.

In 1991, he served as a consultant in Louisiana for Ebasco Services, Inc. From 1992-94, Harrison was a design engineer for Louis Berger International both in Karachi, Pakistan, and Jakarta, Indonesia, studying channel and river navigation.

Foreign Assignments

1964 - Taiwan

Six weeks with Agency for International Development (AID) to review alternate flood control plans for Tan Shui River at City of Taipei.

1973 - Taiwan

Six weeks to review alternate flood control plans for Tan Shui river at Taipei.

1983 - Ecuador

Two weeks for AID to evaluate effective post-flood rehabilitation measures for Guayas River delta.

1985 - Bangladesh

Two weeks for Harza Engineering Company. Consulted on impacts of engineering works on Ganges and Brahmaputra Rivers.

1987 - Brazil

Two weeks for Partnership of the Americas. Consulted on developing navigation and environmental impacts on Parnaiba River, State of Piaui.

1989-90 - Pakistan

Eighteen months for Harza Engineering Company, Chicago. Team leader for Flood and Protection Sector Project, directing feasibility reports and designs for flood protection projects in Indus River Basin.

1991 - Pakistan

Two months in Karachi for Louis Berger International, Inc. Design engineer for feasibility study of inland waterway navigation along Indus River and canal system.

Selected Professional Publications

Design of Unlined Erodible Spillways. Lecture notes for the Corps of Engineers course in Hydraulic Design of Spillways and Outlet Works at the Waterways Experiment Station, Vicksburg, Mississippi, 1984-86-88.

“The Importance of Sediment Management - Issues and Procedures,” *Proceedings of Workshop on Management of River and Reservoir Sedimentation in Asian Countries*, East-West Institute, Honolulu, 1984.

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“The Importance of Sediment Management - Issues and Procedures,” *Proceedings of Workshop on Management of River and Reservoir Sedimentation in Asian Countries*, East-West Institute, Honolulu, 1984.

Study of Effects of Channel Stabilization and Navigation Project on Missouri River Levels - Sediment Characteristics of the Missouri River, Sioux City to the Mouth, MRD Sediment Series No.33, Missouri River Division Corps of Engineers, Omaha, Nebraska, 1984.

Study of Effects of Channel Stabilization and Navigation Project on Missouri River Levels - Computed Hydraulic Characteristics of Missouri River Reaches Before and After Stabilization, Missouri River Division Corps of Engineers, Omaha, Nebraska, 1984.

“Sediment Aspects of Missouri River Reservoirs,” *Proceedings of the 9th ICOLD Congress, Rio de Janeiro, Brazil, 1982.*

Review of Taipei Area Flood Control Project, Missouri River Division, Corps of Engineers. Omaha, Nebraska, 1973

Computer Simulation of Missouri River Floods, Missouri River Division, Corps of Engineers, Omaha, Nebraska, 1973

Riprap Stability of Earth Embankments Tested in Large and Small Scale Wave Tanks, Technical Memorandum No.37, U.S. Army Engineers Coastal Engineering Research Center, Fort Belvoir, Virginia, 1972.

“Movable Bed Model for Alluvial Channel Studies,” *Proceedings 12th Congress of International Association for Hydraulic Research, Fort Collins, Colorado, 1967.*

Report on Review of Taipei Area Flood Control Planning Phase II. U.S. Army Corps of Engineers, Washington, D.C., 1965.

“Computing Suspended Sand Loads from Field Measurements,” *Proceedings of Federal Interagency Sedimentation Conference, Denver, Colorado, 1963.*

“Deposition at Heads of Reservoirs,” *Proceedings of 4th Iowa Hydraulics Conference, Iowa City, Iowa, 1952.*

Segregation of Grain Sizes in a Degrading Bed, University of California Studies in Engineering, Berkeley, California, 1950.

Professional Societies and Affiliations:

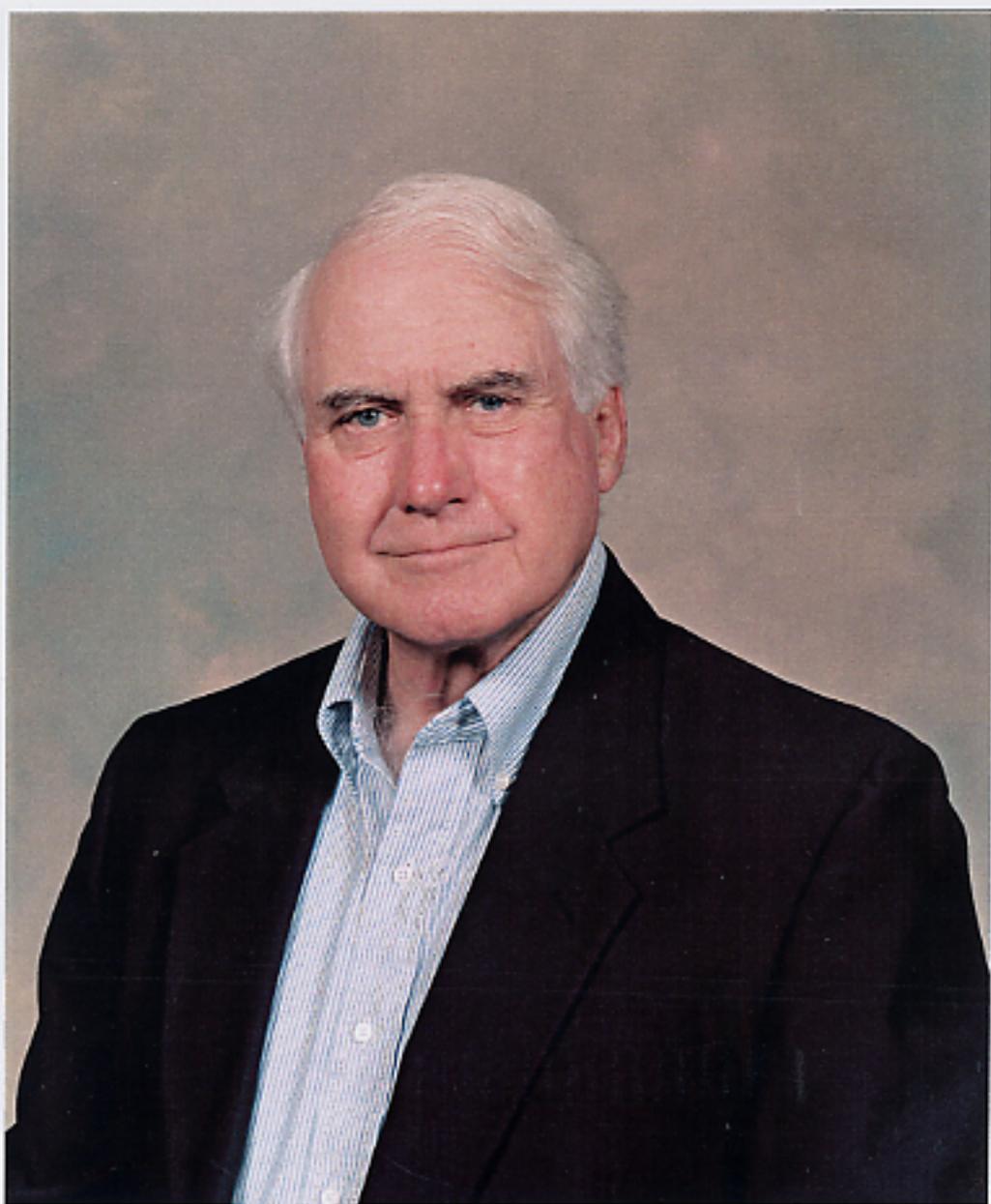
Life Member, American Society of Civil Engineers
Member, American Geophysical Union

Member, U.S. Committee on Large Dams (USCOLD)
Member, International Commission on Irrigation and Drainage (ICID)
Member, International Association for Hydraulic Research (IAHR)

Honors and Awards:

1995 Recipient of ASCE's Hans Albert Einstein Award for Significant Contributions to
Sedimentation and River Engineering
U.S. Department of the Army, Decoration for Meritorious Civilian Service
Installed in Missouri River Division Gallery of Distinguished Civilian Employees
Tau Beta Pi Engineering Honorary, University of Southern California
Chi Epsilon Civil Engineering Honorary, University of Southern California
Sigma Xi Scientific Honorary, University of California at Berkeley

Registration: Registered Professional Engineer in the State of Nebraska.



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