JOHN W. FONDAHL

1924–2008

Elected in 1993

“For innovations in methods of construction project controls
and in graduate education.”

BY THE FONDAHL FAMILY
SUBMITTED BY THE NAE HOME SECRETARY

JOHN FONDAHL, developer of planning techniques for complex construction projects and co-founder of the Stanford Construction Program, died September 13, 2008, at the age of 83. John was elected to the National Academy of Engineering (NAE) in 1993 and cited for innovations in methods of construction project controls and in graduate education.

John was born in 1924 in Washington, D.C. He met his future wife, Doris-Jane, in 1939 at McKinley Tech High School. During high school he was captain of a champion rifle team and an active member of the Cadet Corps. He graduated valedictorian in 1941. He received a four-year scholarship to Worcester Polytechnic Institute, while Doris enrolled at Mount Holyoke, about 50 miles away. Pearl Harbor changed everything—after one year of college, John entered the military, serving in the Pacific Theater with the Fifth Amphibious Corps of the U.S. Marines. John, a sergeant, and his father, a Lt. Colonel in a different Marine Corps outfit, were both Iwo Jima survivors. Upon returning, he entered Dartmouth College to study civil engineering. He married Doris in 1946. John received his M.S. in civil engineering from Dartmouth in 1947 and later became a registered civil engineer in California.
John worked as an engineer and structural detailer with the American Bridge Company in Pittsburgh, Pennsylvania, from 1947 to 1948. This experience increased his understanding of design practice but also encouraged him to gain construction experience. After teaching civil engineering at the University of Hawaii from 1948 to 1951, John spent one year as an engineer and estimator with Winston Brothers Company in Minneapolis, Minnesota. He then moved his family to Sacramento to work with Winston Brothers and the Al Johnson Construction Company as project engineer on the Nimbus Dam and Powerhouse Project from 1952 to 1955. His analysis of alternate construction methods during estimating and his design of temporary works during construction of this major infrastructure facility contributed significantly to the success of the project. Clark Oglesby, a professor of civil engineering at Stanford and also an eventual NAE member, brought one of his classes to the Nimbus project on a field trip. Clark was planning to develop a graduate construction program at Stanford and encouraged John to consider joining the faculty.

As a result, John became a professor of civil engineering at Stanford in 1955 and co-founded the Construction Engineering and Management Program with Clark Oglesby. He taught at Stanford for 35 years until retirement in 1990 and served as the first Charles A. Leavell Professor of Civil Engineering. His teaching focused on planning and construction engineering for large infrastructure projects. He later developed some of the first courses focusing on application of network planning techniques in construction. With Professor Oglesby, John also obtained research support from the Bureau of Yards and Docks, U.S. Navy, in 1958. Later renewed for a total duration of eight years, this pioneering support for research in construction eventually covered many critical topics: application of operations research techniques to construction operations, development of time-lapse motion picture techniques, application of engineering economics to policy decisions concerning construction equipment, and refinement of the critical path method of scheduling construction operations. John initiated research concerning the use of short-
interval time-lapse movies to analyze construction operations, developed the initial equipment and methods, and turned this work over to Professor Henry Parker when he joined the construction faculty in 1962.

John pursued multiple types of solutions to the “time-cost trade-off problem” to determine the performance rates for activities that would minimize the overall cost of a project, including indirect costs. He was recognized worldwide as a major contributor to development and use of the Critical Path Method for construction planning and project management. He developed the precedence methods of planning and scheduling, which used flow charts that represented activities as nodes of a diagram, to supplement the activity on arrow methods previously developed by DuPont and the U.S. Navy Special Project Office. The precedence method simplified the planning process and allowed the use of lag factors to begin a successor activity prior to full completion of its predecessor activities. He also investigated ways to increase use of CPM techniques in construction. His publication, *Non-Computer Approach to the Critical Path Method for the Construction Industry*, sold over 20,000 copies and was translated into over 20 languages. It provided an extremely valuable stepping stone between conventional procedures for analysis of construction plans and schedules to computer methods.

In an early example of start-up companies that grew out of research at Stanford, John and two former students founded Construction Data Systems Corporation. This firm assisted many owners and contractors in applying the new network techniques to develop detailed plans for complex infrastructure projects. John also helped found the Project Management Institute in 1969 and later served as its president and chairman. In 2007 this organization recognized his major contributions to the field as recipient of the James O’Brien Lifetime Achievement Award.

In another pioneering effort, John founded the Construction Institute at Stanford in 1960. One of the first industry affiliate programs at Stanford, this organization included progressive owners and contractors who established mutually beneficial
links with the graduate construction program. The plan to found the Construction Institute envisioned a group of firms and individuals from industry who would provide financial support and counsel for further development of the construction curriculum and for research on long-range problems of the construction industry.

The Construction Institute continues today to provide highly valuable support for the Stanford construction program. The member firms provide input about current construction practices and opportunities and support teaching by industry experts focusing on key topics such as accounting, estimating, labor relations, leadership, and real estate development. This interaction with industry provides expanded educational opportunities for the students and better prepares them for careers with leading firms. John also used the Construction Institute to maintain long-term links with graduates and friends of the program and to assist them in their careers.

John taught construction management courses in Egypt, Chile, Peru, Colombia, Venezuela, Denmark, Switzerland, South Africa, Australia, and Japan, and he traveled with one of the first American groups to visit China following its opening in 1979. He served on the boards of the Scott Company and Caterpillar, Inc. He was awarded the Golden Beaver Award for Services & Supply in Heavy Engineering Construction in 1976, which he deeply cherished. John was elected to the NAE in 1993 and to the National Academy of Construction in 2001. Other recognition of his many contributions to construction included his receipt of the American Society of Civil Engineers (ASCE) Construction Management Award in 1977 and ASCE’s Peurifoy Construction Research Award in 1990. John’s Peurifoy Award lecture highlighted the emergence of the construction engineer as a recognized member of the civil engineering profession and the need for further actions to implement new techniques, decrease disputes and litigation, improve contractual relationships, and increase professional teamwork.
In 1965 the Fondahl family found a house in Los Altos Hills (California) with spectacular views, where they have lived ever since. John taught his daughters to place concrete and worked incessantly on projects to improve the home. He and Doris were longtime supporters of local theater groups, including Bus Barn, Theatreworks, and ACT. On special occasions, John enjoyed sharing a bottle of Ridge wine with his family and friends and was a regular Ridge visitor on Father’s Day. Upon retirement he became a full-time gardener, planting and nurturing a large orchard and garden and engaging in year-round production of soups, jams, preserves, and juices. John loved hiking and cross-country skiing at Lake Tahoe, including leading his family on an annual hike up to Desolation Wilderness’s Crag Lake. John and Doris enjoyed traveling together to places around the world. In 1970 he and his family joined his father on a trip to their ancestral home in Fondalen, on the Holandsfjord in Norway.

Throughout John’s life the people who knew him valued his integrity, his stoicism, and his wisdom to hold his comments on matters of importance until he had reflected thoroughly on them. All who had the good fortune to know and work with John will deeply miss his reflective analysis, sage advice, realistic view of the context of construction, and unfailing sense of humor.

John is survived by Doris, his wife and companion of 70 years; daughters Lauren, Gail, Meredith, and Dorian; son-in-laws Ken Bilski, Joe Martinka, and David Wickline; and grandchildren Gwynne Bilski, Arielle Martinka, and Peter Martinka.