REPORT OF THE MEMORIAL RESOLUTION COMMITTEE FOR B. FRANK MCCULLOUGH

The special committee of the General Faculty to prepare a memorial resolution for B. Frank McCullough, professor emeritus, civil engineering, has filed with the secretary of the General Faculty the following report.

Sue Alexander Greninger, Secretary
General Faculty and Faculty Council

IN MEMORIAM
B. FRANK MCCULLOUGH

Joe W. Neal, ninety-six, passed away at his home in Austin on January 14, 2013. He was born in Watertown, Dr. B. Frank McCullough was born on March 25, 1934, reared by Godly parents. He served the University, his family, his church, and his community and died on November 26, 2012, in Austin, Texas.

Dr. McCullough, Adnan Abou-Ayyash Centennial Professor Emeritus in transportation engineering at The University of Texas at Austin, was known nationally and internationally as the “father of continuously reinforced Portland cement concrete pavement” and for his pioneering and sustained development work on continuously reinforced, post-tensioned, and precast concrete pavements. His research and resultant design applications related to highway and airport pavements have led to numerous specifications, design methods, and construction procedures for concrete pavement used by the Texas Department of Transportation (TxDOT) and countless other transportation agencies in the United States and around the world.

Dr. McCullough grew up in central Austin near Memorial Stadium and always had a great love for UT Austin, for sports, and for education. He graduated from Austin High School in 1952 and entered UT Austin to study civil engineering. He married Norma Jean Walsh, his childhood sweetheart, on September 1, 1956, in the Church of Jesus Christ of Latter-day Saints chapel on Red River Street. In 1957, he earned his BS degree in civil engineering at UT Austin.

Dr. McCullough went to work at Convair Aircraft in Fort Worth, but soon returned to Austin to work for the Texas Highway Department (now TxDOT) as a design-research engineer for nine years. While working there, he earned his MS in 1962 by attending night classes at The University of Texas at Austin. His master’s thesis was based on a study of a newly constructed continuously reinforced concrete pavement in Comal County, Texas.

Dr. McCullough was determined to become a researcher and professor. In 1966, he enrolled in the University of California at Berkeley, where he earned a PhD in 1969. During that time, he was employed as a structural design engineer, working for Woodward-Clyde.

In 1970, Dr. McCullough returned to Austin to join the faculty of UT Austin as an assistant professor of civil engineering. He was promoted to associate professor in 1972 and to full professor in 1976. Being a true “orange blood” UT sports fan and someone who deeply appreciated the beauty of the Texas Hill Country, Austin and the University became Dr. McCullough’s lifelong home.

During a teaching career that spanned nearly forty years, Dr. McCullough taught hundreds of students. He held the Phil M. Ferguson Professorship for 1983-84. Under his mentorship, more than one hundred master’s and thirty-four doctoral students worked successfully towards advanced degrees in engineering. One of those students, Dr. Adnan Abou-Ayyash, endowed the professorship that Dr. McCullough held from its inception in 1984 until his retirement in September 2004, at which time he became the Adnan Abou-Ayyash Centennial Professor Emeritus.
Dr. McCullough also taught special short courses and continuing education courses over the years for UT Austin, the University of Minnesota, the Australian Road Research Board, the South African Road Research Board, the Asociacion Mexicana de Caminos, the Federal Highway Administration, the National Highway Institute, the U.S. Forest Service, and the American Association of State Highway and Transportation Officials (AASHTO).

Dr. McCullough supervised more than fifty research projects and forty interagency agreements concerning a broad range of topics related to Portland cement concrete pavements, asphalt concrete pavements, gravel and low-volume roads, highways, airports, high-speed guide ways, and commercial building slabs.

Dr. McCullough’s research addressed planning, design, construction, rehabilitation, and maintenance of pavements. He developed pavement design methods for TxDOT, the National Cooperative Highway Research Program (NCHRP), the Federal Highway Administration, Arkansas DOT, the U.S. Air Force, AASHTO, and others. And he was an early pioneer in developing pavement management systems at both the project and network level for TxDOT, the U.S. Forest Service, and NCHRP.

As a research expert, he was consulted in studies on airport runway, taxiway, and apron pavement design at Chicago O’Hare, Washington Dulles, Dallas-Fort Worth, Tulsa, Salt Lake, Indianapolis, and St. Louis airports, as well as Palmdale Air Force Base, and Randolph Air Force Base. Additionally, he worked on the Hefddah, Riyadh, and Dhahran airports in Saudi Arabia. He designed the guideways for the 150-mph air-cushion vehicle in Pueblo, Colorado, and the Airtrans people mover at the Dallas-Fort Worth airport.

In 1980, when the original mission—to represent the interests of the University in all matters related to highway research—of the officially-designated (1963) administrative unit in the College of Engineering called the Center for Highway Research was changed to encompass transportation research, the name of the administrative unit was also changed to Center for Transportation Research (CTR). Dr. McCullough was appointed director of CTR, the faculty position from which he provided outstanding, innovative administrative and technical leadership for the next nineteen years.

Under Dr. McCullough’s direction, the annual budget of the Center for Transportation Research grew from $3 million per year to approximately $10 million per year. In fiscal year 1999, his final year as director, the center was engaged in more than sixty research projects and twenty-one interagency agreements and employed eighty-eight graduate students, forty-two undergraduate students, forty-four faculty researchers, sixty-two professional researchers and technical staff, and twenty support staff.

As a design-research engineer at the Texas Highway Department in the late 1950s and early 1960s, he gained some of his first pavement engineering experience. He pioneered the use of pavement grooving techniques (for improving pavement skid characteristics) and the “turned-down-end guard rail” for safety. He was an early pioneer in the development of project- and network-level pavement management systems for TxDOT, the U.S. Forest Service, and NCHRP, as well as in the development of mechanistic overlay design concepts. He was involved with the development and characterization of the properties of various construction materials, which led to the development of performance-based specifications. He was instrumental in the development of a guide, Design of Pavement Structures, which was used as a primary tool for pavement design around the world for more than twenty years.

Dr. McCullough was a co-founder of the consulting firm Austin Research Engineers, which specialized in highway and airport engineering. This company eventually expanded to three sites in the U.S. and satellite offices in Brazil and Nigeria. He also advised his son in forming the consulting firm Transtec and served as a consultant to the firm.

Dr. McCullough authored many research publications. He is listed as author or co-author on one hundred and fifty-nine research and technical reports based on studies funded by TxDOT and published by CTR. He is listed as author or co-author on an additional ninety documents in the CTR library online catalog of transportation research materials.
Dr. McCullough was an active member in many professional societies, including the American Concrete Institute, the American Concrete Pavement Association, the American Society of Civil Engineers, the Association of Asphalt Paving Technologists, the National Stone Association, and the Transportation Research Board.

His professional awards were numerous; but among the awards he treasured most was the UT Austin College of Engineering’s Joe J. King Professional Achievement Award in 1983. He also received the American Concrete Pavement Association’s Outstanding Educator Award in 2000 and a TxDOT Innovation Award in 2003. His renown is such that awards are given in his name by concrete professional groups, such as the B. Frank McCullough Awards given by the International Society for Concrete Pavements.

Dr. McCullough was just as proud of his affiliations that were not focused on transportation research, but on community. He served as Boy Scout master and chairman of a committee for a Boy Scout troop, coached for a junior basketball team and for the South Austin Optimist’s Club little league baseball teams and basketball teams, served as president of an Latter-day Saints Young Men’s Mutual Improvement Association, and volunteered as counselor for “Education to Inmates” at the Travis County Jail, among a host of volunteer activities throughout his life.

Faith and family were the driving forces in Dr. McCullough’s life. He was a father and grandfather who loved to attend sporting events, concerts, and other activities with his children and grandchildren. A member of the Latter-day Saints church, Dr. McCullough served for more than forty-five years in leadership positions in his church as bishopric, bishop, stake president, and high councilor.

This memorial resolution was prepared by a special committee consisting of Professors C. Michael Walton (chair), Clyde E. Lee, Randy B. Machemehl, David W. Fowler, and Zhanmin Zhang.

Distributed to the dean of the School of Engineering on March 5, 2013, and posted under “Memorials” at http://www.utexas.edu/faculty/council/.