



*Jack P. Lomax*

# JACK E. CERMAK

1922–2012

Elected in 1973

*“Development of experimental facilities and research contributions concerning wind forces on structures.”*

BY THOMAS H. VONDER HAAR

JACK EDWARD CERMAK, an esteemed member of the faculty at Colorado State University (CSU) for more than 50 years, died on August 21, 2012, at the age of 89. An active member of the National Academy of Engineering since his election in 1973, he was internationally recognized as “one of the fathers of wind engineering.” In a statement recognizing his contributions, CSU President A.R. Chamberlain said in 1976: “Only on rare occasions do we find that the works of an individual span the evolution of a field of science and technology from conception, through scientific verification, to practical realization and on to direct application for the benefit of mankind. The works of Dr. J.E. Cermak—scientist, teacher, and engineer—are an embodiment of this evolutionary process for the newly recognized field of wind engineering.”

Jack’s pioneering research resulted in the development of unique wind tunnel facilities capable of simulating motion in the atmospheric boundary layer near the surface. With students and private sector colleagues, he applied this achievement to the physical modeling of wind effects on buildings and to the dispersion of air pollutants. He advised or coadvised

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Much of the information in this tribute was provided by the Cermak family for his obituary in the Fort Collins *Coloradoan*, August 28, 2012.

many MS and PhD graduates at CSU. They now work around the world in universities, government laboratories, and large and small private sector businesses.

Jack was born to Joe and Helen Cermak on September 8, 1922, in the small farm town of Hastings, Colorado. His fascination with wind was said to begin with curiosity about wind-induced vortices swirling in the snow as he traveled down farm roads. He was educated in public schools in nearby Penrose (1928–1940) and then in the Civil Engineering Department at Colorado A&M (later CSU) in Fort Collins. He was a joint honor scholar in college (1940–1943) and served as a sound ranging officer in the US Army (1943–1946). He left the Army and continued service in the Army Reserve with the rank of lieutenant colonel. Later in his career, he used his knowledge of Army requirements and challenges to serve the Army Basic Research Committee of the National Research Council (NRC) from 1972 to 1982.

In 1947 Jack met Helen Carlson, who was caring for his father. They married and adopted two sons, Douglas and Jonathan.

After leaving the Army, Jack returned to CSU to obtain his BS in civil engineering (1947) and MS in hydraulic engineering (1949). He remained at CSU as a teaching assistant and instructor in civil engineering, and was appointed an assistant professor in 1951. By 1954 he had designed and built his first large boundary layer wind tunnel. In 1954–1955 he accepted the position of John McMullen Scholar in Engineering Mechanics at Cornell University, where he completed his PhD in 1959. When he returned to CSU as an associate professor, he founded the Fluid Dynamics and Diffusion Laboratory. After a NATO postdoctoral fellowship at Cambridge in 1961, he established the Fluid Mechanics and Wind Engineering Program and served as its director and professor in charge until 1985. And in 1966 he founded the Wind Engineering Research Council (later called the American Association of Wind Engineering) to disseminate technical information.

As a young and innovative professor, Jack was a tireless worker (some marveled at the few days of vacation he used),

a trait that continued throughout his life. His small office in the Civil Engineering wing of the College of Engineering normally saw a line of students and faculty at its door. He advised undergraduate students from his classes, graduate students on their classes, and research and faculty on various matters. He was a firm taskmaster but always fair. Many remarked on his openness and availability for discussion.

During the 1960s and 1970s he flourished at CSU, which was developing from an agriculture-based land-grant college into a major research university. His Department of Civil Engineering was a leader in nationally and internationally recognized research.

Professor Cermak's pioneering research resulted in the development of unique wind tunnel facilities capable of simulating motion in the atmospheric boundary layer. In 1973 this achievement and its application to physical modeling of wind effects on buildings and dispersion of air pollutants were recognized by his election to the NAE. In 1988 the National Society of Professional Engineers selected the CSU Fluid Dynamics and Diffusion Laboratory for its Outstanding Engineering Achievement Award. In 1999 the CSU wind tunnels were selected by the *Engineering News-Record* as one of 125 outstanding engineering innovations between 1874 and 1999. And in 2000 the American Society of Civil Engineers established the Jack E. Cermak Medal for outstanding contributions to wind engineering.

For 50 years Dr. Cermak instructed undergraduate and graduate courses and conducted research on basic and applied problems related to environmental science and fluid mechanics at CSU. He led the development of the engineering science major (an interdepartmental undergraduate program), and served as chairman from 1962 to 1973. As a testament to his ability and effectiveness as a teacher, researcher, and mentor, he was selected as one of six inaugural University Distinguished Professors at CSU in 1986. His love of advising his graduate students continued when he established an endowment for the annual Jack E. Cermak Outstanding Advisor award, which is given annually to one faculty member from each

college and graduate school. In 1997 the CSU Department of Civil Engineering honored his teaching and research by hosting a celebration of his 50 years in education. He retired from CSU in 2006 and became University Distinguished Professor Emeritus.

In addition to his active involvement with CSU, Jack served throughout his career as a consultant and advisor to many groups around the world. In 1981 he cofounded and served as president of Cermak Peterka Petersen (CPP, Inc.), a company doing both consulting and research on wind impact on structures. He also served as a nominator and reference for new NAE members and as a member of NRC advisory and review panels as well as state and national committees.

Some of the first wind engineering tests in the CSU wind tunnels were for the World Trade Center in New York City and Candlestick Park south of San Francisco. After the collapse of the WTC towers on September 11, 2001, investigators looked into whether underestimates of wind forces had led to the use of weaker than necessary exterior columns that proved unable to withstand the terrorist attacks. Dr. Cermak vehemently rejected that view and eventually it was widely agreed that it had been the intense heat from the explosions and fires caused by the planes' impacts that most contributed to the buildings' crumbling (Leslie Kaufman, *New York Times*, September 5, 2012, "Jack Cermak, a Wind Tunnel Innovator, Dies at 89").

Jack's wife Helen died in 2005. In August 2006 he married his longtime friend and CSU assistant, Gloria Garza, who survives him. Gloria is a good source of information on all of Jack's professional activities, networks, and former students. He is also survived by his sons Douglas and Jonathan.

Throughout his very active 50 years at the university, Jack's vision and strong work ethic were an inspiration to his colleagues, dozens of BS and MS students, and nearly 50 PhD students whom he advised. His colleague, business partner, and former student Jon Peterka said, "Jack had an image of where the discipline could go and spent his lifetime nudging us in that direction." Jack himself summarized his vision in the following excerpt from *Who's Who in America* (1997):

My thoughts and actions have been influenced always by a belief and an awareness that man, the near environment, and the far reaches of the universe are influenced by common natural laws. I believe that the order found in natural events, as revealed by scientific investigation, can someday become manifest in the behavior of man. Ultimately, through persistent and directed effort, I am confident that man will integrate religion, science, and technology to achieve harmony of man with man, and man with the environment. For the most part my achievements and contributions to society can be attributed to the motivation and direction stemming from these convictions.