FRITZ LEONHARDT

1909–1999

BY BEN GERWICK

FRITZ LEONHARDT, professor and former rector (president) of Stuttgart University, Germany, died on December 30, 1999. He was born in Stuttgart and received his university education at Stuttgart University. He carried on graduate studies at Purdue University in 1932 and 1933, returning to Stuttgart University to obtain his doctorate of engineering in 1938.

In 1939, after his collaboration with Wolfhart Andra, in the successful design of Europe's largest suspension bridge across the Rhine at Cologne, he formed the partnership of Leonhardt Andra and Partners, which became one of the world's best-known designers of major bridges.

Fritz Leonhardt was an active supporter of the major professional structural and concrete engineering organizations in Europe and later, internationally, including the Federation Internationale de la Precontrainte and the International Association for Bridges and Structural Engineering.

He and his firm were always at the forefront of pioneering developments in bridges; from development of a new system for prestressed concrete in 1949 to aerodynamically stabilized suspension bridges as early as 1953, orthotropic steel decks, composite steel and concrete high-speed railroad bridges, and cable-stayed bridges. Although his first love was bridges, he also pioneered the family of prestressed concrete television towers, beginning in 1953 with the famous Stuttgart Tower, which became

a symbol for the city. He developed new methods of analyses and design for large tentlike structures with steel cable-supported roofs, and designed the German Pavilion at the Olympic Games in Montreal (1967) and Munich (1972).

Fritz Leonhardt is best known for his design of major bridges, not only in Germany but also in South America (Venezuela and Argentina) and in the United States. The first cable-stayed bridge in the United States, designed in conjunction with Arvid Grant Associates, was built across the Columbia River between Pasco and Kennewick, Washington.

Successful implementation of new structural concepts required extensive research and development in materials, structural performance, and construction methods. Appointed professor of concrete structures at Stuttgart University in 1958, he carried out fundamental developments in the shear and torsional resistance of concrete at the Otto Graf Institute. This work resulted in not only advanced understanding and methods of analysis but also new systems, especially those for transferring shear in composite structures and resisting punching shear.

He pioneered the development of the incremental launching system for prestressed concrete bridges by which the bridge is fabricated at the abutment and shoved by hydraulic jacks across the valley, a system of special application in the harsh seasonal conditions of Europe.

Professor Leonhardt was elected a foreign associate of the National Academy of Engineering of the United States in 1983. He has received a great many awards from national and international bodies worldwide. From the United States, he has received an honorary membership from the American Concrete Institute (1972), the Distinguished Service Award of Oregon State University (1974), the Honor Award of the Washington Roadside Council (1979), the Award for Engineering Excellence of the American Consulting Engineers Council, and the Honorary Distinguished Citizen from the State of Washington (1984).

Fritz Leonhardt loved bridges, not only as an engineer but also for their aesthetic and symbolic qualities. In his later years, he increasingly wrote and lectured on bridge aesthetics, accompanying these lectures with a voluminous collection of personal

photos illustrating the beautiful and ugly aspects that are under the control of the bridge designer.

He felt strongly that the basic bridge design was the province and responsibility of the design engineer, and that a good basic design would also be beautiful.

He published extensively, both in journal articles and books, of which his books on *Bridges* and on *Towers* are known worldwide.

One of his outstanding traits, unusual in a highly active and innovative designer, was his personal interest in younger colleagues and students. He always had time to talk and explain, kindling in his listeners much of the quiet fire that drove him.

Contributing to the heritage of enthusiasm and dedication were his associates in his firm, who now carry on his work, and especially his wife, Lisalotte, who "forgave him his love affair with bridges."