



James A. Velazquez

JAN A. VELTROP

1922–2007

Elected in 1998

“For engineering design of concrete arch dams and development of hydroelectric projects.”

BY JOHN J. CASSIDY

JAN ADRIANUS VELTROP, a lifelong innovator and contributor to the design and construction of thin concrete arch dams and hydroelectric projects, passed away March 24, 2007, at the age of 85. He was retired chief engineer and senior vice president of Harza Engineering Company, where he worked from 1954 to 1994.

Jan was born in Coeverden, the Netherlands, on March 9, 1922, and became a naturalized citizen of the United States on January 8, 1957. He contracted polio when he was two years old and walked with a cane. He dealt with the problems of surviving in the Netherlands during occupation by the German army during World War II, but his disability kept him from military service.

He displayed an early propensity for math and science and graduated with a BS degree in mechanical engineering from the Technological University of Delft in 1949. He then immigrated to the United States and entered Rensselaer Polytechnic University, where he graduated with an MS in mechanical engineering in 1951. He was accepted to the graduate engineering program at the Massachusetts Institute of Technology and in 1953 earned his PhD in mechanical engineering.

Upon completion of his doctorate, Jan took an appointment as an assistant professor of engineering mechanics at Louisiana

State University. But he found that he would be happier in the design and construction of projects, and so accepted a position with Harza Engineering Company in Chicago as a senior engineer, performing structural analysis and project design.

At Harza he participated in the analysis and design of an underground powerhouse for the Ambuklao hydroelectric project in the Philippines, concrete and steel superstructures for the power plant at the Brokopondo project in Suriname, penstock and tunnel liners for La Garita Dam in Guatemala, and the Derbendi Khan hydroelectric power project in Iraq. He was also a registered professional engineer in Colorado, Illinois, and Virginia.

He progressed in responsibility and was promoted to head Harza's arch dam section in 1959, structural department in 1962, and civil design branch in 1971, before advancing to deputy chief engineer in 1976, chief staff engineer in 1977, and chief engineer in 1979. He was appointed a vice president in 1981 and senior vice president in 1987.

In 1964 he was invited to be the first dean of the College of Engineering at the University of Nigeria in Nsukka. He had a strong desire to work with underdeveloped countries and so accepted the appointment. One of his responsibilities was to train his Nigerian counterpart to take his position. During his tenure he also oversaw the construction of three new buildings for the college. His time there ended in 1967 when, because of security concerns, he and his family had to be evacuated in the run-up to the Biafran War.

His mathematical and engineering skills were instrumental in the development of new design procedures for Harza. For example, he envisioned that arch dams could be built thinner than gravity-arch dams such as Hoover Dam and, using his analytical skills, developed the technology for designing safe, thin, double-curved concrete arch dams. These required far less concrete and resulted in lower construction costs and a shorter construction time. He promoted modern methods of analysis and design of dams and hydroelectric projects, and published and presented more than 90 technical papers at engineering conferences around the world.

He was active in the US Committee on Large Dams (president, 1981–82) and international Commission on Large Dams (ICOLD; president, 1989–91). In 1992 he was appointed to the International Council on Dams, a study commission appointed by the World Bank to assess the current and future status of planning and design for dams.

His thoughtful and diplomatic approach was evident in an itemized letter to ICOLD president C.V.J. Varma, in response to a critique of a report of the World Commission on Dams (WCD).¹ He began by acknowledging that “Your summary of ICOLD’s initial review of WCD’s Report is at once eloquent, thorough, and moderate in tone.” He then made a point of recognizing the expressed criticisms before putting forth a brief clarification for each. He closed with this observation: “When reviewing alternative solutions to water, food, and energy demands, I am struck by the need to consider two aspects: ‘Need is the mother of invention’ and ‘Do not assume that technology will inevitably solve our problems.’ Are these mutually exclusive?”

Jan was survived by his wife Ruth (née Gaessler), sons Loren and Brian, daughter Wendy, and five grandchildren. Brian died July 12, 2015.

¹ The letter is available through the United Nations Environment Program (UNEP) Dams and Development Project, at <http://staging.unep.org/dams/documents/default.asp?documentid=452>.