Ralph B. Peck
1912 – 2008

Ralph B. Peck, Professor Emeritus of Foundation Engineering at the University of Illinois at Urbana-Champaign died of congestive heart failure on February 18, 2008, at his home in Albuquerque, New Mexico. He was born in Winnipeg, Canada, to his American parents, Orwin K and Ethel Huyck Peck on June 23, 1912.

Ralph Peck earned a Civil Engineering Degree in 1934 and Doctor of Civil Engineering Degree in 1937, both from Rensselaer Polytechnic Institute in Troy, New York. In 1938-39 he attended the Soil Mechanics course at Harvard University and was a laboratory assistant to Arthur Casagrande. From 1939 to 1942 Peck was an assistant subway engineer for the City of Chicago, representing Karl Terzaghi who was a consultant on the Chicago Subway Project. He joined the University of Illinois in 1942, and was a Professor of Foundation Engineering from 1948 to 1974. Since 1974, Professor Peck was a Professor Emeritus at the University of Illinois, and a consultant in geotechnical engineering.

In 1948, together with Karl Terzaghi, Ralph Peck co-authored the most influential text book in geotechnical engineering, *Soil Mechanics in Engineering Practice*. In 1953 with Walt Hanson and Tom Thornburn, Ralph Peck co-authored the widely used text book *Foundation Engineering.*

In 1942, Dr. Peck joined the Civil Engineering Department of the University of Illinois, where he remained as a teacher and mentor until his retirement as Professor Emeritus in 1974. After moving to Albuquerque, Dr. Peck continued his active consulting practice which included jobs in forty-four states in the USA and twenty-eight countries on five continents. His more than one thousand consulting projects include: the rapid transit systems in Chicago, San Francisco, and Washington; the Alaskan Pipeline System; the James Bay Project in Quebec; and the Dead Sea dikes. He authored over 250 technical publications, and served as the President of the International Society of Soil Mechanics and Foundation Engineering from 1969 to 1973. In 1974, he was awarded the National Medal of Science by President Ford. A few of his many honors include the Norman Medal, The Wellington Prize, and the Outstanding Lifetime Achievement Award in Education from the American Society of Engineers. His last project was the Rion-Antirion Bridge in Greece. It received the ASCE's OPAL Outstanding Civil Engineering Award for 2005, and is the only project outside the United States to be so honored.

Ralph Peck married Marjorie E. Truby on June 14, 1937. He is survived by his daughter and son-in-law, Nancy Peck (Allen) Young, and son and daughter-in-law, James (Laurie) Peck, and grandchildren, Michael Young and Maia Peck.

In lieu of flowers, contributions can be made to:

Ralph B. Peck Geotechnical Engineering Fund
Univ. of Illinois Foundation
1305 West Green Street, MC-386
Urbana, Illinois, 61801.

Sincerely,

Nancy Peck Young
Wednesday, February 20, 2008 12:28 AM

Register

timesonline.co.uk/register

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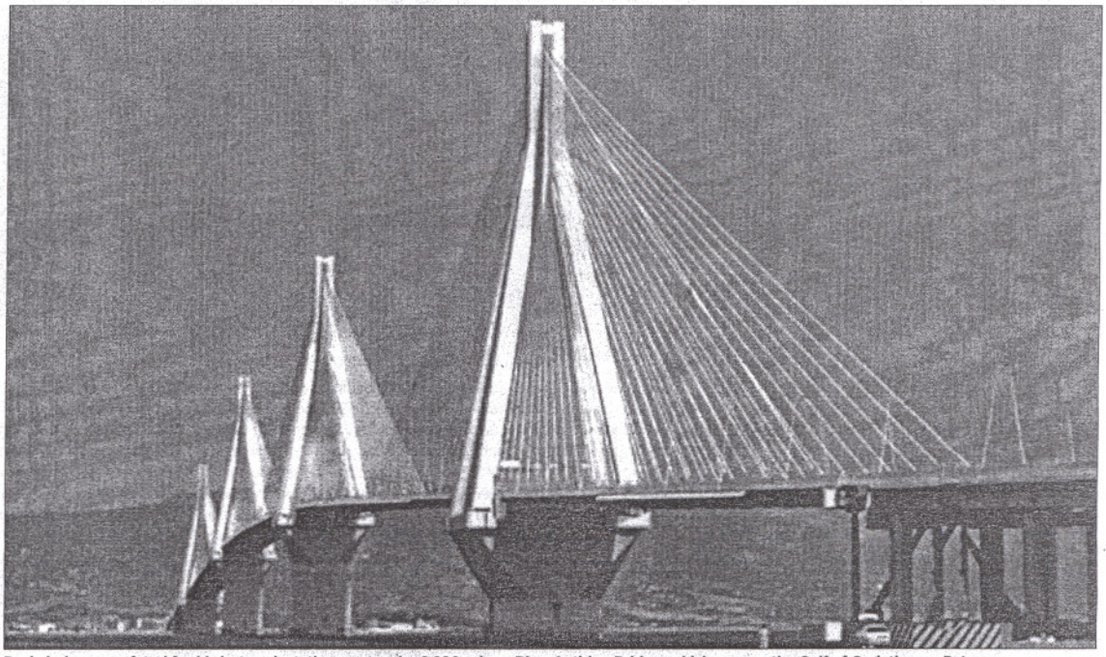
Obituaries

Ralph Peck

Engineer whose revolutionary building technique was used on the Channel Tunnel and his own Gulf of Corinth bridge



Peck, below, was feted for his last project, the spectacular 2,880m-long Rion-Antirion Bridge, which crosses the Gulf of Corinth near Patras

Ralph B. Peck was an American civil engineer who invented a controversial construction technique that would be used on some of the modern engineering wonders of the world, including the Channel Tunnel. Known as "the godfather of soil mechanics", he was directly responsible for a succession of celebrated tunnelling and earth dam projects that pushed the boundaries of what was believed to be possible.

Under Peck's Observational Method (OM), tunnels and dams were designed as the project progressed rather than before the start of construction. By closely monitoring the behaviour of the soil during construction, the structure could be designed to the limit of what was possible without collapsing.

The OM required robust "fallback positions" that could be implemented if at any time safety was in danger of being compromised. The technique reflected Peck's belief in sound engineering judgment and testing of how soil behaved, as opposed to the emerging science of numerical analysis and modelling — a belief that made him some enemies in academic circles.

Peck first used the technique when working with Karl Terzaghi, the founder of modern soil mechanics, on the Chicago subway project in 1939-42. He eventually formalised his ideas in his seminal Rankin Lecture at the Institution of Civil Engineers in Britain in 1969.

He described it as "allowing nature to speak for herself". "Nothing," he said, "is better practice than predicting and verifying how the subsurface materials will behave, and adjusting the design and construction procedures on the basis of the observations as a project proceeds."

Peck's method was championed by his profession, but many project clients and insurers remained suspicious of the OM because of its uncertainty and were reluctant to sanction it. The method was famously used on the Heathrow Express rail project, which suffered a serious tunnel collapse in November 1994. Arguments still rage as to whether misuse of the OM was partly responsible for the crash.

In the UK it was most commonly used as a "best way out" to rescue projects that had spiralled out of control, months behind schedule and millions of pounds over budget. Despairing clients would finally succumb to their project engineers who had been calling for the OM to be used from day one.

Peck spoke out against a misuse of his method through overreliance on modern theory and computer analysis. Modern theory, he argued, did not take proper account of the variability of ground conditions which required dedication to observing how soils behave to ensure the structure was not overstressed and overloaded.

"Theory and calculations are not a substitute for judgment, but only the basis for sounder judgment," he said.

Peck spoke from long experience of consulting on more than 1,000 projects during a long career. It was a career that echoed the spirit of adventure of his grandfather, a horseback missionary who did much to establish Sunday schools in 19th-century South Dakota. Peck took on his own crusade to establish his methods all over the world, in the process designing ground-breaking projects in 28 countries and five continents.

Most of these projects were scrutinised in the lecture hall during Peck's long academic career as Professor of Foundation Engineering at Illinois University from 1948 to 1974. He was famous for making his students put away their calculators and slide rules and instead think more laterally about how to solve complex engineering challenges on real-life case studies.

Students would not be allowed to leave until they had distilled the essence of the problem and come up with potential solutions on one sheet of paper — "If you can't reduce a difficult engineering problem to just one 8.5 x 11in sheet of paper you will probably never understand it," he said.

Britain's leading light on soil mechanics, Professor John Burland of Imperial College, said of Peck: "He was a brilliant educator who brought the profession into the classroom. His great strength was that he taught from case histories to distil the essence of a problem. It was a terrific discipline and many people who went through this are still grateful to him."

Ralph Brazleton Peck was an only child born in Winnipeg, Canada, to American parents, Orwin and Ethel Peck. His father was a civil engineer who was designing bridges for the Northern Pacific Railway in Canada when his son was born. The family eventually settled in Denver, Colorado, where his father worked on the Rio Grande Western Railroad.

Ralph Peck was a sickly child whose formative years were blighted by influenza, diphtheria and scarlet fever. He was often housebound, and an early passion for reading emerged.

His father's passion for bridge engineering was also catching, and Peck developed an early ambition to be an engineer.

"My father really liked his work and discussed it every night at the dinner table," said Peck. "Once I got over the stage of wanting to be a street-car conductor I never had any idea of a profession other than engineering."

Peck graduated in civil engineering from Rensselaer Polytechnic Institute in Troy, New York, in 1934 and, after completing a doctorate, he started working as a bridge engineer in the state but was quickly laid off because there was not enough work for him.

This early professional misfortune proved the turning point of his life. Unemployed, Peck applied, and was accepted, to study a course at Harvard in the new subject of soil mechanics.

His big break followed soon after when he was appointed to the Chicago subway project as an assistant to Karl Terzaghi, the celebrated Austrian engineer with whom he co-authored in 1948 *Soil Mechanics in Engineering Practice*, which is still regarded as the industry bible today.

For the next three years Peck worked with the tireless Terzaghi on the Chicago subway, often day and night and to exhaustion. Working so closely with the leading exponent of soil mechanics would prove invaluable to Peck in his later work on subway systems in Washington and San Francisco, the Trans-Alaskan Pipeline system, the James Bay Dam in Quebec, the stabilisation of the Dead Sea dykes and the strengthening of the subsiding ground beneath the Leaning Tower of Pisa.

In 1974 his services to engineering were recognised when he was awarded a National Medal of Science by President Gerald Ford. By then retired to Albuquerque, New Mexico, he continued to be much in demand as a consultant. His final project, the Rion-Antirion Bridge across the Gulf of Corinth in Greece, received the American Society of Civil Engineers' Outstanding Civil Engineering Award in 2005.

Peck was a colourful personality who actively encouraged his fellow engineers to defy the dull and diffident image afflicting their profession.

"The intense technical nature of engineering can lead to a deficiency in an engineer's social, spiritual and cultural life and an inability to communicate effectively," he said. "A deliberate effort to broaden interests and read widely is needed."

Most of the engineers he came into contact with could not help but respond positively to his human touch.

"He was an amazing communicator with a lively sense of humour but he was also a very gentle, self-effacing person who was always interested in what you were doing," said Professor Burland. "He was a really much-loved figure."

Peck's wife, Marjorie, died in 1996. He is survived by his daughter and son.

Ralph B. Peck, civil engineer and teacher, was born on June 23, 1912. He died on February 18, 2008, aged 95