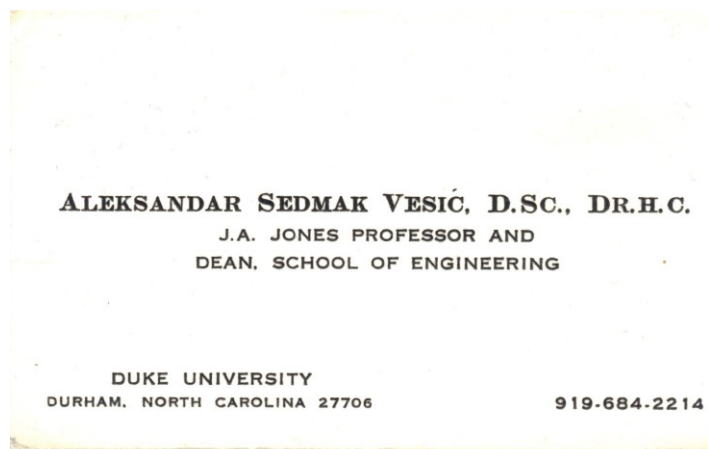


**In memory of Dr Aleksandar S. Vesic (1924-1982),
J.A. Jones Professor and Dean of School of Engineering, Duke University, Durham, NC, USA**

If I ever knew a professor and gentleman, that was my late uncle, Dr Aleksandar Sedmak Vesic. Just to mention, only a real gentleman adds his wife's last name to his full name! He was born in Belgrade in 1924 to become the best student (probably ever) at the Faculty of Civil Engineering – University of Belgrade, in the class with Prof. Nikola Hajdin, president of Serbian Academy of Sciences and Art (SANU) from 2005-2014. He was my hero when I was a teenager and an unachievable role model in my carrier. His untimely death in 1982 came as a shock for all of us who loved and respected him, and was a big loss not only for Duke University, where he served as the Dean of the School of Engineering, but also for the whole community in Durham. As his biggest achievement, let me emphasize the *Vesic Student Learning Center* at the Library of the School of Engineering, where his portrait proudly stands. Finally, before I 'give word' to Gordon P. Boutwell, let me also mention his legacy, both as donor (250,000 USD – Milena and Aleksandar Sedmak Vesic endowment) and as the professorship '*Aleksandar S. Vesic Professor of Civil Engineering*', holding by Dr Henry Petrovski, his close collaborator.



Portrait... and memorial plaque

EXTRACT FROM THE 2002 ALEKSANDAR VESIC MEMORIAL LECTURE PRESENTED TO NORTH CAROLINA SECTION AMERICAN SOCIETY OF CIVIL ENGINEERS BY DR. GORDON P. BOUTWELL

Let's go back almost 40 years, to the early spring of 1965. I was working in Baton Rouge, had a house, 2 cars, and an interesting job in geotechnical engineering. Then - I got a call from Dr. Vesic, under whom I had studied at Georgia Tech. He wanted me to leave this good life and come back to school: back to the life of a penniless student! I hesitated about a nanosecond, and asked him when the semester started. So, that fall, I arrived at Duke University. One of my new classmates was a Yankee from Philadelphia, who had also been out in the world of practice: Bob Koerner. At Duke, both Bob and I worked in the field of particulate matter strength parameters. Together, we built Duke's triaxial testing laboratory, which served them for 35 years.' The rest is the history, so let us present it.

Dr. Vesic was born in Yugoslavia (1924), and received his PhD from Belgrade. He finished first in his class, and second was a lovely blond who decided '*if you can't beat him, join him*' and married him.

They moved to Ghent, where he taught at the Belgian Geotechnical Institute. There he developed his groundbreaking work in bearing capacity and in beams on fully-elastic subgrades. He came to Georgia Tech in 1958, and soon revolutionized pile capacity analysis. In 1963, he accepted a full professorship at Duke University; some of his work at Duke made analysis of excavation by explosive means a reliable science. In the classes Bob and I attended, Dr. Vesic would often fill the blackboard with equations and concepts. Then, he'd say '*This is what we thought before. But last night I found out that...*' and fill the blackboard again!

He also created a major symposium on foundation engineering at Duke in 1965. Although he had only been in the US for seven years, '*everybody who was anybody*' in soil mechanics presented or attended. I recently saw Dr. Ralph Peck at an ASCE conference and he remembered the Duke Symposium. Dr. Vesic served on many national boards and committees, including the Highway Research Board. His international honors included lecturing at Cambridge University and receiving an honorary doctorate from his old school at Ghent.



Milena Sedmak Vesic



Dr. Aleksandar S. Vesic from younger days and at his Laboratory



Dr. Vesic rose to Chairman of Duke's Civil Engineering Department, then to Dean of its School of Engineering in 1974. He held that position until his untimely death in 1982. A good measure of a man's greatness is his effect on the lives and careers of others. Some of Dr. Vesic's students included:

Dr. G. Wayne Clough, P.E. - President of Georgia Tech

Dr. J. Michael Duncan, P.E. - 'Mr. Slope Stability,' University Distinguished Professor at Virginia Tech

Dr. Robert M. Koerner, P.E. - 'Mr. Geosynthetics,' Director of the Geosynthetic Institute at Drexel

The late Dr. Surendra K. Saxena - Then Chairman of Civil Engineering, Illinois Tech

Vesic made many contributions to the field of soil mechanics, writing numerous papers and books on pile foundations and deep foundations, shallow foundation loads, soil cohesion, and ocean floor studies. Many professionals have cited his research and writings in their own studies relating to these fields.

His research found that many of the calculations used to determine the relationship between bearing capacity of a soil and the friction angle of the soil were inaccurate at higher friction angles. Through his research, he found that the actual angle of failure is smaller than the existing models predicted. This makes these models overly-conservative and can either limit maximum design envelopes or add unnecessary costs to a project.

Much of his research was also aimed more toward the application of engineering to actual construction materials. Vesic continually researched rigid road material surfaces (concrete) as well as flexible pavements (asphalt). This research was mainly focused on how well these loads transferred from the road surface through the various base layers and into the ground. From there he developed ideas of how these loads might be carried by the existing soils. Much of his work was used in the construction and maintenance techniques employed by the designers of the American Interstate Highway System.

Among his most interesting research was his research into the use of explosives for various excavation purposes. He developed theories and essentially created the science for determining how explosive charges would behave if certain parameters of the soil were already known. He later expanded his work to include devices with as much explosive potential as atomic devices. This work allowed for more controlled blasts, increasing their accuracy and reducing their size. From this research blasting could occur in areas where it was impossible before.

Another large portion of his research focused on the behavior of soils in the ocean floor. These soils tend to have a plastic or liquid consistency, making it difficult to predict their behaviors. Early models underestimated the breakout force of objects embedded in these types of soils. Vesic focused much of his effort into understanding how the suction of dense soils and soil adhesion around embedded objects can be attributed to known qualities of the soil. He was the first chair of the deep foundations committee of the American Society of Civil Engineers.

Dr. Aleksandar S. Vesic, 1924-1982, the most important publications:

- Design of Pile Foundations, Transportation Research Board, 1977
- A Study of Bearing Capacity of Deep Foundations, Georgia Institute of Technology, 1967.
- Analysis of Structural Behavior of AASHO Road Test Rigid Pavements, Highway Research Board, 1970.
- Theoretical Analysis of Structural Behavior of Road Test Flexible Pavements, Highway Research Board, 1964.
- Breakout Resistance of Objects Embedded in Ocean Bottom, 1969.
- Quarrying with Nuclear Explosives, 1970.
- Analysis of Ultimate Loads of Shallow Foundations, 1973.
- Engineering Properties of Nuclear Craters, Report 6, 1967.
- Mechanics of Pile-Soil Interaction in Cohesionless Soils, 1975.

Vesic, Aleksandar (March 1972). *Journal of Soil Mechanics and Foundations Division* 98: 265-290.

Vesic, Alexandar (December 1972). 'Bearing Capacity Theory from Experimental Results'. *Journal of the Soil Mechanics and Foundations Division* 98: 1311-1324.

Vesic, Aleksandar (September 1971). *Journal of Soil Mechanics and Foundations Division* 98: 1183-1205.

Vesic, Aleksandar (1977), *Design of Pile Foundations*, New York: Duke University Press.