

Obituary

Dr. Leonardo Zeevaert Wiechers His life and achievements

The international geotechnical engineering community is deeply saddened that Dr Leonard Zeevaert passed away in Mexico City on February 16th, 2010. He was born in Veracruz, Mexico, on November 27th, 1914.

He obtained a Civil Engineer degree from the National University of Mexico in 1939, a Master degree in Civil Engineering at Massachusetts Institute of Technology in 1940 and was bestowed the title of Doctor in Philosophy (Ph. D.) at University of Illinois in 1949, where he worked with Dr. Karl Terzaghi in different soil mechanics assignments.



Prof. Zeevaert at his office, ca. 2000

Professional practice. As a consulting engineer, he carried out Soil Mechanics surveys and performed analysis and design of structures and foundations for as many as 692 projects, during more than 50 years. He developed several foundation systems for highly compressible soils such as those encountered in Mexico City. He brought forward the basic theory of compensated foundations combined with friction piles and proposed a new method to estimate negative skin friction on point bearing piles.

One of the most important projects in which he had a leading participation was the *Latinoamericana Tower*, a 43-stories high building for which he performed Soil Mechanics studies, designing the foundation and acting as consulting engineer in the design of the steel structure, where the concept of controlled flexibility was applied for the first time (1947-1948). He developed a new procedure for the construction of buildings, eliminating columns in the facade to provide more architectural flexibility in the ground floor of such constructions. These ideas were introduced for the first time at international level in the design of the headquarters of “*Compañía de Seguros Monterrey*” (1960) and “*Celanese Mexicana, S.A.*”, both built in Mexico City.

He was also active in the field of Coastal Engineering studying wave action on the coastline and hydraulics of marginal lagoons. He designed harbors and marinas for small boats for various sites in the Mexican Republic.

He performed the analysis and design of foundations for turbogenerators at several industrial plants and provided advice for the foundation design of an atomic energy plant in San Jose, California, U.S.A.

Research. One of the most important facets of Dr. Zeevaert work corresponds to research carried out with the purpose of developing the most appropriate analysis methods for different particular foundation systems and to forecast the seismic behavior of foundations and structures. He developed innovative methods to assess interaction between soil and structure that have become classical and are still used world wide.

From 1954 onwards he devoted time to study the problems of earthquakes and their effects on foundations and, for this purpose, he designed the "*free vibrating torsion pendulum*" with which it is possible to determine the dynamical properties of the soil. In addition, he recorded for the first time in the history of Mexico City the earthquakes of May 11 and 19, 1962, from which the response spectra of the subsoil in the downtown area of the city could be defined; these data have been used in the preparation of the building code for seismic design in the Federal District.

He developed a method to find out the resonance periods of the subsoil to be introduced in the design of tall buildings subjected to seismic forces.

He also performed important research aimed at solving problems in Coastal Engineering and in dewatering systems, as well as on the design of marinas in the Pacific Ocean.

Academic duties and publications. He was the first professor of Soil Mechanics and Foundation Engineering at School of Engineering of the National University of Mexico (UNAM) where he taught from 1941 to 2000. He was elected Emeritus Professor in 1986.

He wrote more than 200 papers on different topics of Soil Mechanics, Foundation Engineering and Earthquake Engineering. He is author of the books: "*Foundation Engineering for Difficult Subsoil Conditions*", edited by Van Nostrand-Reinhold, "*Interacción Suelo-Estructura de Cimentaciones Superficiales y Profundas Sujetas a Cargas Estáticas y Sísmicas*", from Editorial LIMUSA, and "*Seismo-Geodynamics of the Ground Surface*", a private publication.

Honors. Dr. Zeevaert was invited to deliver lectures and courses on Soil Mechanics and Earthquake Engineering in several universities of U.S.A., Europe, Central America, West Indies, South America, Democratic Republic of China, and People's Republic of China and was also invited, in 1964, to supply information on the advances of Civil Engineering which was buried in the *Time Capsule*, during the World Fair of New York. He was appointed as official delegate to a number of international conferences and presented contributions in different forums.

The American Institute for Steel Construction honored him with a special prize for the good behavior of the Latinoamericana Tower during the strong earthquake of 1957 in Mexico City. This prize was the first one awarded to the tallest building outside the U.S.A. subjected to a strong earthquake and founded upon difficult subsoil.

He was a member of the following societies: Asociación de Ingenieros y Arquitectos de México; Colegio de Ingenieros Civiles de México; American Concrete Institute; American Society of Civil Engineers; The Geological Society of America; The Seismological Society of America; Earthquake Engineering Research Institute; and Sociedad Mexicana de Mecánica de Suelos (now Sociedad Mexicana de Ingeniería Geotécnica) from which he was a founding member and President since its establishment in 1954 till 1968. He was Vice-President for North America of the International Society for Soil Mechanics and Foundation Engineering during the period 1961-1965.

In 1965 he was honored by the American Institute of Architects who bestowed upon him the gold medal "Allied Professions Medal". He also received many other professional honors, at both international and local levels which are too many (85) to mention; among them he was an honorary member of the Belgium Royal Academy of Arts and Sciences and of the National Academy of Engineering of the United States of America.

In October 27, 1987, the American Society of Civil Engineers honored him with an invitation to deliver the "*Terzaghi Lecture*" during the Convention held in Anaheim, CA., U.S.A.

Letter from the President of ISSMGE

I am very sorry to hear the sad news about Professor Zeevaert's passing. There is no doubt in my mind that he was one of the giants of our profession. I recall attending his Terzaghi Lecture in 1987 as a young professor where he talked about the Mexico City earthquake. I really enjoyed it and learned quite a bit. The clarity of the lessons learned he shared with the audience was impressive. Like Peck he was of the generation that did not need many slides but enjoyed telling stories and kept his audience captivated. I also cherish the few moments I spent with him when Walter Paniagua (President of the Mexican National Society) invited me in the early 90s to give a short course on in situ testing and foundation design in Mexico City. We really are hitting a bad period where we are losing a number of high profile people in geotechnical engineering: Peck, De Mello, Reese, and now Zeevaert.

The 18000 plus members of ISSMGE mourn the loss of Professor Zeevaert and we extend our sincere condolences and deep sympathy to his family and his close friends across the world in general and in the Mexican National Society in particular. While he is no longer with us, his work will continue to help many generations of young engineers.

Jean-Louis Briaud
February 2010