



ROBERT SINN



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Spring 2018 Khan Distinguished Lecture Series

The Fazlur Rahman Khan Distinguished Lecture Series honors Dr. Fazlur Rahman Khan's legacy of excellence in structural engineering and architecture

Initiated and Organized by **PROFESSOR DAN M. FRANGOPOL**

The Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture
Department of Civil and Environmental Engineering, ATLSS Engineering Research Center,
Lehigh University

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Principal, Thornton Tomasetti, Chicago, IL

“From Bilbao to Jeddah: An Engineer’s Journey in the Computer Age”

Friday, March 23, 2018 – 4:30 pm

Location: Whitaker Lab 303, Lehigh University, 5 E. Packer Avenue, Bethlehem, PA

In step with the abounding vitality of the time, structural engineer **Fazlur Rahman Khan** (1929-1982) ushered in a renaissance in skyscraper construction during the second half of the 20th century. Fazlur Khan was a pragmatic visionary: the series of progressive ideas that he brought forth for efficient high-rise construction in the 1960s and '70s were validated in his own work, notably his efficient designs for Chicago's 100-story John Hancock Center and 110-story Sears Tower -- the tallest building in the United States since its completion in 1974.



Fazlur Rahman Khan

Lehigh endowed a chair in structural engineering and architecture and has established this lecture series in Khan's honor. It is organized by **Professor Dan M. Frangopol**, the university's first holder of the Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture, and sponsored by the Departments of Civil & Environmental Engineering, and Art, Architecture & Design.

Robert Sinn, P.E., S.E. is a principal in Thornton Tomasetti's Chicago office. His 30-plus years of experience in structural engineering include 23 years at Skidmore, Owings & Merrill, where he worked on the design of the Guggenheim Museum in Bilbao, Spain. His portfolio with Thornton Tomasetti includes mixed-use towers in North America, Europe, Asia and the Middle East – where the one kilometer-tall Jeddah Tower, for which he is the structural principal in charge, is under construction in Saudi Arabia.

Bob is recognized within the industry for innovative engineering of tall and supertall buildings. The American Society of Civil Engineers (ASCE) recognized him with the 1999 Innovations in Civil Engineering Award for his work on the Guggenheim Museum Bilbao, and he won a 2008 State-of-the-Art of Civil Engineering Award for his co-authorship of the paper, *Validating Wind-Induced Response of Tall Buildings: Synopsis of the Chicago Full-Scale Monitoring Program*. Bob is a Fellow of the American Concrete Institute, the ASCE and the International Association of Bridge and Structural Engineering. He holds an MSCE from the Massachusetts Institute of Technology and a BSCE from Northwestern University. He is a licensed professional engineer in several states, and a licensed structural engineer in Illinois.

From Bilbao to Jeddah: An Engineer’s Journey in the Computer Age. Two projects conceived twenty years apart. One, a three-story museum in the capital city of Spain's Basque country, changed the face of architecture upon opening in 1997 and was labeled "the greatest building of our time" by architect Philip Johnson. The other, an audacious 240-story tower in the Red Sea port of Jeddah, is planned to be the first manmade structure to reach one kilometer in height – a milestone comparable to those achieved by Neil Armstrong and Roger Bannister for structural engineers and architects. The engineering logic and structural systems development for these landmark projects are important chapters in the ongoing story of computer-based geometric and structural engineering analysis within the building industry. The presentation will compare the two projects, focusing on the key technical challenges and the analytical tools available to realize these groundbreaking designs.

FAZLUR RAHMAN KHAN (1929 - 1982) One of the foremost structural engineers of the 20th century, Fazlur Khan epitomized both structural engineering achievement and creative collaborative effort between architect and engineer. Only when architectural design is grounded in structural realities, he believed — thus celebrating architecture's nature as a constructive art, rooted in the earth — can "the resulting aesthetics ... have a transcendental value and quality." His ideas for these sky-scraping towers offered more than economic construction and iconic architectural images; they gave people the opportunity to work and live "in the sky." Hancock Center residents thrive on the wide expanse of sky and lake before them, the stunning quiet in the heart of the city, and the intimacy with nature at such heights: the rising sun, the moon and stars, the migrating flocks of birds. Fazlur Khan was always clear about the purpose of architecture. His characteristic statement to an editor in 1971, having just been selected Construction's Man of the Year by *Engineering News-Record*, is commemorated in a plaque in Onterie Center (446 E. Ontario, Chicago): **“The technical man must not be lost in his own technology. He must be able to appreciate life; and life is art, drama, music, and most importantly, people.”**



1 PDH will be awarded to eligible attendees for each lecture

Please contact the Khan Chair office at 610-758-6123 or Email: infrk@lehigh.edu with any questions.