LAWRENCE G. GRIFFIS

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.

LEHIGH UNIVERSITY

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ATLSS

Spring 2017 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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LAWRENCE G. GRIFFIS

Senior Principal and Senior Consultant, Walter P. Moore and Associates, Inc., Austin, TX

"Design and Construction of Cowboys Stadium"

Friday, March 31, 2017 – 4:30 pm

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

http://www.lehigh.edu/frkseries

Larry Griffis, P.E., is a Senior Principal and Senior Consultant with Walter P Moore and Associates, Inc. He has combined his 42 years of practical design and management experience with ongoing involvement in numerous technical committees, exploring and documenting specialized structural issues of design, construction, and delivery. Mr. Griffis has developed particular expertise in the design of long span roof structures (stadiums, ballparks, arenas and convention centers), high-rise buildings, composite steel and concrete systems, and analysis of large buildings under wind and seismic forces. He is considered one of the top specialists in wind engineering in the US and author and contributor to the development of the ASCE 7 wind standard used by all US building codes.

Among the many awards received, Mr. Griffis was recently named to the National Academy of Engineering, the highest praise bestowed to an engineer by peers in the industry. In addition, he received the coveted Kimbrough Award presented by ASCE as the highest award presented for design innovation in structural steel.

Design and Construction of Cowboys Stadium. If its hole-in-the-roof design defined the old Texas Stadium, the twin monumental steel arches have emerged as the signature element of the new Cowboys Stadium. The arches soar through the interior space of the stadium reaching an apex almost 300 feet above the field and spanning nearly a quarter of a mile – longer than any other roof span in the world. Each end of each arch is secured with a true pin into a concrete abutment foundation that experiences a thrust force of up to 19 million pounds. To the casual observer, the concrete abutment consists of a 25-ft by 11-ft solid concrete thrust block column that launches out of the ground at a 32 degree angle from the horizontal. The real enormity, however, lies hidden below ground as the thrust block column is anchored to a slurry wall box that transfers the thrust into the surrounding soil. The concrete slurry wall box consists of a series of subterranean 36-in thick, concrete-filled trenches creating a rectangular box measuring up to 18-ft wide, 176-ft long, and 71-ft deep.

This presentation will feature some the design and construction details that went into the project as seen from the perspective of the structural engineer.

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."**

SEI ASCE STRUCTURAL ENGINEERING INSTITUTE Lehigh Valley Chapter

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.