

## THE RICHARD J. CARROLL MEMORIAL LECTURESHIP

The Richard J. Carroll Memorial Lectureship in Civil Engineering was established at The Johns Hopkins University to commemorate one of Baltimore's leading structural engineers, Richard J. Carroll, P.E. The lectureship was endowed by the many friends and admirers of Mr. Carroll, who passed away in 1982. The endowment contributes to the ongoing guest seminars in the Department of Civil Engineering and provides for these special lectures.

Richard J. Carroll, P.E. received his bachelor of civil engineering degree from Villanova University in 1955 and studied advanced structural design at The Johns Hopkins University and George Washington University. He was chief structural engineer for the firms of Knoerle, Bender, Stone, and Associates, and Ewell, Bomhardt and Associates and chief field engineer for the Portland Cement Association. In 1964 he founded his own firm, Carroll Engineering, Inc., which grew to 26 employees under his leadership. Mr. Carroll made contributions to the civil engineering profession through his membership in numerous professional societies and he published several papers on concrete use and design with an emphasis on post-tensioned and pre-stressed concrete. He also taught courses in ultimate strength design and plastic design in steel. His untimely death at the age of 49 left a legacy of professionalism, integrity, and vigor.

Donors to the Carroll Memorial Lectureship include:

Carroll Engineering, Inc.  
Leonard J. Dack  
Ralph and Dorothy DeChiaro Foundation  
Stuart Hettleman  
Lester Komaroff  
Amy Swirnow  
David Swirnow  
Richard Swirnow

**Civil  
Engineering**  
at JOHNS HOPKINS UNIVERSITY

**JOHNS HOPKINS**  
UNIVERSITY  
WHITING SCHOOL OF ENGINEERING

[www.civil.jhu.edu](http://www.civil.jhu.edu)

The Johns Hopkins University  
Department of Civil Engineering

2010 Richard J. Carroll  
Memorial Lectureship

## CREATING NEW ARCHITECTURE: STUDIES IN STRUCTURAL TOPOLOGY

**Speaker:**

**William F. Baker**, PE, SE, FASCE, FStructE  
Skidmore, Owings & Merrill LLP

**Wednesday, April 14, 2010**





**WILLIAM F. BAKER, PE, SE, FASCE, FIStructE**  
**Skidmore, Owings & Merrill LLP**



## EVENTS AT ASCE MEETING

**6:00 p.m. Cocktails**

**7:00 p.m. Dinner**

**8:00 p.m. After Dinner Seminar by William Baker**

The Engineers Club

11 West Mount Vernon Place, Baltimore, MD 21201

Register at [sections.asce.org/maryland/meetings.htm](http://sections.asce.org/maryland/meetings.htm)

## THE DESIGN OF THE BURJ KHALIFA

Bill Baker, Structural Engineering Partner at Skidmore, Owings, & Merrill LLP, will describe the evolution of the design of the Burj Khalifa, the world's tallest building. From the project's initial concept through construction, the combination of several important technological innovations results in a building of unprecedented height. This lecture will describe some of the design methods, materials, and construction techniques which enabled the creation of this superstructure.

**WEDNESDAY APRIL 14, 2010**

**1:30-2:30 p.m.**

**The Johns Hopkins University**  
**Homewood Campus**  
**Hodson Hall, 3rd Floor Boardroom**

*Open to the public*

## CREATING NEW ARCHITECTURE: STUDIES IN STRUCTURAL TOPOLOGY

Optimal structural topologies represent a new frontier in architecture and set a new standard to which we can compare the performance of existing and future structures. Inspired by the seminal paper by Michell (1904), structural engineers are using several tools for optimization of structural shapes and systems, so that they may develop efficient structural/architectural topologies. This lecture will explore the ways in which these studies can be applied to create new architecture for projects ranging from small buildings to high-rise towers and long span roofs.

## BIO

William F. Baker is the Structural and Civil Engineering Partner for Skidmore, Owings & Merrill (SOM). Throughout his distinguished career, Bill has dedicated himself to structural innovation—most notably in the design of tall buildings within the urban landscape. His most recent contribution has been to develop the “buttressed core” structural system for the Burj Khalifa, a system which, in conjunction with sophisticated wind engineering, makes it possible to construct skyscrapers of extreme elevation. The Burj Khalifa is the world's tallest manmade structure. Closer to home, he has spearheaded the structural design of Chicago's AT&T Corporate Center and the 92-story Trump International Hotel and Tower. According to the Council on Tall Buildings and Urban Habitat (CTBUH), two of the four tallest buildings to top out in 2009 are credited to Baker: Burj Khalifa and Trump International Hotel and Tower.

In addition to working at SOM, Bill's expertise is frequently solicited by institutions of higher learning, as well as numerous professional organizations. Bill is the 2008 recipient of the Fazlur Rahman Khan medal from CTBUH and the 2009 recipient and first American to receive the Fritz Leonhardt Prize. He is a Fellow of both the American Society of Civil Engineers (ASCE) and the Institution of Structural Engineers (IStructE). Bill is on the Specifications Committee of the American Institute of Steel Construction (AISC) and also frequently lectures on a variety of structural engineering topics within the U.S. and abroad.