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Engineering Disasters: Root Causes, and the Ethical and Funding Challenges Facing Engineers

By

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Abstract

Two recent engineering disasters in the U.S., one associated with levee failures in New Orleans and the other with a bridge collapse in Minnesota that killed 13 people, point to one of the most important challenges facing engineers working on public infrastructure. That challenge is that funding agencies never seem willing to provide sufficient funds to build or maintain the infrastructure that the engineers recommend. The problem occurs when safety of structures is compromised or placed as a secondary priority. The levee failures in New Orleans provide a prime example, on multiple levels, of choices and decisions driven more by cost, convenience, and politics than safety. The bridge collapse in Minnesota seems to exhibit similar issues, though the failure is still under investigation and cause not yet determined. These catastrophic failures are contrasted with the Citicorp building in New York, which was constructed in 1977. Soon after construction, the structural engineer discovered major deficiencies in the building that could prove catastrophic, even though building construction fully complied with building code requirements. Corrective action was taken that placed the reputation and career of the structural engineer at risk, and yet safety (not cost or legal liability) was the motivator for decisions. A proper and safe result was ultimately achieved. So the question becomes, how do engineers deal with agencies that refuse to provide adequate funds for projects? Where does the engineer draw the line and refuse to design a project that is inadequately funded to assure safety? How can engineers make use of rational methods, such as risk-based methods, in promoting a constructive conversation about tradeoffs between funding and risks? The speaker will use these examples to stimulate a dialogue about these questions.

Date : 27 September 2007, Thursday
Time : 10:30 a.m. to 11:30 a.m.
Venue : Leung Yat Sing Lecture Theatre (LTF)
Chia-Wei Woo Academic Concourse
The Hong Kong University of Science and Technology
Clearwater Bay, Kowloon

Biography

David E. Daniel earned his bachelors, masters, and Ph.D. degrees in civil engineering from the University of Texas at Austin, and served on the faculty at UT-Austin from 1980 to 1996. In 1996, he moved to the University of Illinois, finishing his service there as Dean of Engineering before joining the University of Texas at Dallas as its president in 2005. Dr. Daniel's professional work has focused on environmental controls for contaminated land and groundwater. He has published over 100 technical articles and authored or edited five books. His work has been recognized by the American Society of Civil Engineers, which honored him its highest award for papers published in its journals (the Norman Medal) and on two separate occasions awarded him its second highest award, the Croes Medal. He has taught more than 125 continuing education and training courses on environmental controls, which have been attended by more than 15,000 engineers and scientists. In 2000, he was elected to the National Academy of Engineering. In 2005 and 2006, he served as Chair of the External Review Panel of the American Society of Civil Engineers, which reviewed the facts surrounding the performance of New Orleans' levees during Hurricane Katrina and advised on the causes of failure and the adequacy of the levees to resist flooding from future hurricanes.

*** * * ALL ARE WELCOME * * ***

Registration & Enquiries

This seminar is free of charge. For Registration, please complete and return the Standard Reply Form to Ms Rebecca Yau by Fax: 2358 1534 or Email:cerebeca@ust.hk. The number of participants is limited to 134 and the seats will be allocated on a first-come-first-served basis. For enquiries, please contact Ms Rebecca Yau at Tel: 2358 7164.