

BRUCE R. ELLINGWOOD

Professor

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Education

Institution	Major/Area	Degree	Year
University of Illinois at Urbana-Champaign	Civil Engineering	B.S.	1968
University of Illinois at Urbana-Champaign	Civil Engineering	M.S.	1969
University of Illinois at Urbana-Champaign	Civil Engineering	Ph.D.	1972

Professional experience

Years	Position, Institution
2013-present	Professor of Civil Engineering, Department of Civil & Environmental Engineering, Colorado State University
2012-present	Distinguished visiting professor, Department of Civil and Hydraulic Engineering, Tsinghua University, Beijing, China
2000-2013	College of Engineering Distinguished Professor, School of Civil & Environmental Engineering, Georgia Institute of Technology; School Chair, 2000-2002; Raymond Allen Jones Endowed Chair in Civil Engineering, 2007 – 2013.
1986-2000	Professor of Civil Engineering, Johns Hopkins University; Department Chairman (1990-1997); Willard and Lillian Hackerman Endowed Chair, 1996 – 2000.
1975-1986	Research Structural Engineer, Center for Building Technology, National Bureau of Standards; Leader, Structural Engineering Group, 1982-1986
1972-1975	Research Structural Engineer, Naval Ship Research and Development Center

Biographical sketch

Dr. Ellingwood's main research and professional interests involve applications of probability and statistics to structural engineering; reliability analysis; structural load modeling and analysis of combinations of loads; development of safety and serviceability criteria for structural design; random vibration; response of structures exposed to fires and other abnormal loads; probabilistic risk assessment of engineered facilities; and performance-based engineering.

Dr. Ellingwood has been the central academic figure in the development and implementation of risk-informed methods in structural design practice in the US for nearly four decades and is internationally recognized as a leading authority on structural load modeling, reliability and risk analysis of engineered facilities, and the technical development and implementation of probability-based codified design standards for building structures. He directed the development of the general probability-based load criteria for limit states design that have appeared in successive editions of the ASCE/ANSI Standard on Minimum Design Loads for Buildings and Other Structures since 1982 (most recently, ASCE Standard 7-10), which are the basis for strength design in the United States. He has authored or co-authored over 400 papers and reports, and has chaired doctoral committees for approximately 35 students during the past 30 years. He serves as Editor-in-Chief, *Structural Safety*, and on four other Editorial Boards. He has held numerous leadership positions in professional societies, and his research and professional service have garnered numerous awards from the American Society of Civil Engineers (including the prestigious Norman Medal, which he has received twice), the American Institute of Steel Construction, the International Association for Structural Safety and Reliability, and other professional organizations. He has served as a consultant or advisor to numerous companies, organizations and national laboratories on specialized problems related to structural reliability analysis and load combination analysis, probabilistic risk assessment, fragility assessment, and performance-based procedures for design against natural and anthropogenic hazards.

Dr. Ellingwood is a member of the National Academy of Engineering, a Distinguished Member of ASCE, and an Inaugural Fellow of ASCE's Structural Engineering Institute.

Certifications and Professional Registrations

Professional Engineer, District of Columbia, PE 9337.

Current Membership in Professional Organizations

American Society of Civil Engineers

American Institute of Steel Construction

International Association for Structural Safety and Reliability, Chair of Board 2013-2017

National Academy of Engineering

Selected Honors and Awards

College of Engineering Alumni Award for Distinguished Service, University of Illinois, 2013

Elected Inaugural Fellow of the Structural Engineering Institute of ASCE, 2012

Elected a Distinguished (Honorary) member of ASCE, 2010

IASSAR Senior Research Prize, International Association for Structural Safety and Reliability, 2009

Nathan M. Newmark Medal, American Society of Civil Engineers, 2006

Lifetime Achievement Award, American Institute of Steel Construction, 2006

Charles E. Schmidt Distinguished Visiting Professor, Florida Atlantic University, 2005

Distinguished Alumnus Award, Civil and Environmental Engineering Alumni Association, University of Illinois at Urbana-Champaign, 2002

Elected to the National Academy of Engineering, 2001

Walter P. Moore, Jr. Award, American Society of Civil Engineers, 1999

Norman Medal, ASCE, 1983 and 1998

T. R. Higgins Lectureship Award, American Institute of Steel Construction, 1988

L.J. Markwardt Research Prize, Forest Products Research Society, 1988

Moisseiff Award, American Society of Civil Engineers, 1988

State of the Art of Civil Engineering Award, ASCE, 1983 and 1988

Engineer of the Year of the U.S. Department of Commerce, NSPE, 1986

Engineering Achievement Award, D.C. Joint Council of Engrg. and Arch. Societies, 1980

U. S. Department of Commerce Silver Medal, 1980

Walter L. Huber Engineering Research Prize, ASCE, 1980

Selected Publications and Presentations: 2009-2014:

Wang, N. and Ellingwood, B.R. (2014). "Estimating nominal strength of built-up CFRP laminates from standardized specimen tests." *Struct. Safety* 47:24-28.

Cha, E.J. and Ellingwood, B.R. (2013). "The role of risk aversion in nuclear plant safety decisions." *Structural Safety* 44:28-36

Cha, E.J. and Ellingwood, B.R. (2013). "Seismic risk mitigation of building structures: the role of risk aversion." *Structural Safety* 40(1):11-19

Cha, E.J. and Ellingwood, B.R. (2013). "Attitudes toward acceptance of risk to buildings from extreme wind storms." *Struct. and Infrastruct. Engrg.* 10(6):697-707.

Hart, G. C., Conte, J.P., Park, K., Ellingwood, B.R. and Wong, K.K.F. (2013). "Performance-based evaluation and strengthening of tall buildings in the Los Angeles region using Bayesian structural reliability." *Struct.Des. for Tall and Special Bldgs.*, John Wiley, Ltd. (DOI: 10.1002/tal.1083)

Zhang, H., Rasmussen, K.J.R. and Ellingwood, B. R. (2012). "Reliability assessment of steel scaffold shoring systems for concrete formwork." *Engrg. Struct.* 36(1):81-89.

Shafieezadeh, A. and Ellingwood, B.R. (2012). "Confidence intervals for reliability indices using likelihood ratio statistics." *Structural Safety* 38:48-55.

Cha, E.J. and Ellingwood, B.R. (2012). "Risk-averse decision-making for civil infrastructure exposed to low-probability, high-consequence events." *Reliability Engrg. & System Safety* 104(1): 27-35.

Stewart, M.G., Ellingwood, B.R., and Mueller, J. (2011). "Homeland security: a case study in risk aversion for public decision-making." *Int. J. Risk Assessment and Mgt.* 15(5/6):367-386.

Xu, G. and Ellingwood, B. (2011). "An Energy-based Partial Pushdown Analysis Procedure for Assessment of Disproportionate Collapse Potential." *J. Constr. Steel Res.* 67(3):547-555.

- Wang, N., O'Malley, C., Ellingwood, B. and Zureick, A. (2011). "Bridge rating using system reliability assessment I: Assessment and verification by load testing." *J. Bridge Engrg. ASCE* 16(6):854-862.
- Wang, N., Ellingwood, B. and Zureick, A. (2011). Bridge rating using system reliability assessment II: Improvements to bridge rating practices." *J. Bridge Engrg. ASCE* 16(6):863-871.
- Xu, G. and Ellingwood, B. (2011). "Probabilistic robustness assessment of pre-Northridge moment-resisting frames." *J. Struct. Engrg. ASCE* 137(9): 925-934. (Special issue commemorating 9/11).
- Xu, G. and Ellingwood, B. (2011). "Disproportionate collapse performance of partially restrained steel frames with bolted T-stub connections." *Engrg. Struct.* 33(1):32-43.
- Celik, O.C. and Ellingwood, B.R. (2010). "Seismic fragilities for non-ductile reinforced concrete frames – role of aleatoric and epistemic uncertainties." *J. Struct. Safety* 32(1):1-12.
- Adachi, T. and B. R. Ellingwood (2010). "Comparative assessment of civil infrastructure network performance under probabilistic and scenario earthquakes" *J. Infrastructure Systems ASCE* 16(1):1-10.
- Li, Y., Yin, Y.-J., Ellingwood, B.R. and W. M. Bulleit, W.M. (2010). "Uniform hazard vs. uniform risk bases for performance-based earthquake engineering of light-frame wood construction." *Earthquake Engrg. & Struct. Dyn.* 39:1199-1217.
- DesRoches, R., Taftali, B. and Ellingwood, B. R. (2010). "Seismic Performance Assessment of Steel Frames with Shape Memory Alloy Connections. Part I — Analysis and seismic demands." *J. Earthquake Engrg* 14(4):471-486.
- Ellingwood, B.R., Taftali, B. and DesRoches, R. (2010). "Seismic Performance Assessment of Steel Frames with Shape Memory Alloy Connections. Part II – Probabilistic seismic demand assessment." *J. Earthquake Engrg* 14(5):631-645.
- Wang, N., Ellingwood, B.R. and Zureick, A-H. (2010). "Reliability-based evaluation of flexural members strengthened with fiber-reinforced polymer composites." *J. Struct. Engrg. ASCE* 136(9):1151-1160.
- Ellingwood, B.R. and Y. Li (2009). "Counteracting structural loads: treatment in ASCE Standard 7-05." *J. Struct. Engrg. ASCE* 135(1):94-97.
- Ellingwood, B.R. and K. Kinali (2009). "Quantifying and communicating uncertainty in seismic risk assessment." *Struct. Safety* 31(2):179-187.
- Adachi, T. and B. R. Ellingwood (2009). "Serviceability of an electrical power transmission system under probabilistically stated seismic hazards: case study for Shelby County, TN." *Struct. and Infrastruct. Engrg.* 5(5):343-354.
- Adachi, T. and B. R. Ellingwood (2009). "Serviceability assessment of a municipal water system under spatially correlated seismic intensities." *Computer-Aided Civil and Infrastruct. Engrg.* 24(4):237-248
- Li, Y. and B. R. Ellingwood (2009), "Framework for multi-hazard risk assessment and mitigation for wood-frame residential construction." *J. Struct. Engrg. ASCE* 135(2):159-168.
- Pang, W., D.V. Rosowsky, B.R. Ellingwood and W. Yue (2009), "Seismic fragility analysis and retrofit of conventional one and two-story structures in the Memphis area," *J. Struct. Engrg. ASCE* 135(4):262-271.
- Ellingwood, B.R. (2009). "Assessment and mitigation of risk from competing low-probability, high-consequence hazards." *Australian Journal of Structural Engineering* 9(1):1-8.
- Li, Y. and Ellingwood, B.R. (2009). "Risk-based decision-making for multi-hazard mitigation for wood-frame residential construction." *Australian Journal of Structural Engineering* 9(1):17-26.
- Celik, O.C. and Ellingwood, B.R. (2009). "Seismic Risk Assessment of Gravity Load Designed Reinforced Concrete Frames Subjected to Mid-America Ground Motions." *J. Struct. Engrg. ASCE* 135(4):414-424.