

Engineering Seminar

Eduardo Miranda, Ph.D.

Associate Professor, Stanford University

“Recent Advances in Earthquake Loss Estimation in Buildings”

Recent advances in building-specific loss estimation will be presented. Current building-specific loss estimation methodologies typically estimate economic losses based only on peak response quantities such as peak inter-story drift ratios or peak floor accelerations. A new approach to incorporate residual inter-story drifts is presented. The new approach explicitly accounts for the probability of having to demolish a building as a function of residual inter-story drifts. The proposed approach is illustrated by estimating direct economic seismic losses in four reinforced concrete moment resisting frame buildings in Los Angeles, California. Two buildings have non-ductile detailing representative of pre-70’s building codes while the other two buildings have ductile requirements satisfying current seismic building codes in the U.S. Results from this study indicate that economic losses at intermediate levels of ground motion intensity are often dominated by losses due to residual inter-story drifts. This is particularly true in the case of ductile buildings which have a larger deformation capacity and therefore smaller probability of collapse at during intense ground motions, but have a considerable probability of experiencing residual displacement. It is concluded that neglecting losses from residual drifts can lead to significant underestimation of economic losses.

DATE: Wednesday, June 20, 2012

TIME: 12:00 P.M.

LOCATION: 140 KETTER HALL, NORTH CAMPUS, UNIVERSITY AT BUFFALO

WEBCAST URL: [HTTP://CIVIL.ENG.BUFFALO.EDU/WEBCAST/](http://civil.eng.buffalo.edu/webcast/)

TECHNICAL DIFFICULTIES: SEESLWEBCAST@BUFFALO.EDU

ORGANIZED BY: Student Chapter of EERI at UB, CSEE-GSA, MCEER and Dept. of CSEE

Refreshments will be served!

Eduardo Miranda, Ph.D.
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Prof. Eduardo Miranda obtained his Civil Engineering degree from the National Autonomous University of Mexico. He then came to the U.S. to the University of California at Berkeley where he obtained his Master's and PhD degrees. From 1993 to 1999 he worked at the National Center for Disaster Prevention in Mexico City and was a lecturer at the graduate school of Engineering at the National Autonomous University of Mexico. Since 2000 he is a professor at the Department of Civil and Environmental Engineering at Stanford University where he specializes in Performance Based Earthquake Engineering.