ENGINEERING LARGE INFRASTRUCTURE FOR NATURAL HAZARDS

Session Organizers: Annie Kammerer, U.S. Nuclear Regulatory Commission, and C.S. Manohar, Indian Institute of Science

Recent events have once again reminded us of the importance of assuring that our built environment can withstand the natural hazards that it faces. This is particularly true of large and critical infrastructure and structures. Assuring seismic safety requires that we can understand and quantify the hazards, and also that we can understand and accurately model the response of structures and infrastructure in order to assure appropriate seismic design. Over the last few decades, significant progress has been made in approaches to both hazard assessment and hazard-resistant design. At the same time, advances have been made in means for understanding and assessing the related risks.

This session will describe how earthquake professionals work to assure seismic safety of large and critical infrastructure and structures. Christine Goulet will start the session by describing what hazards facilities face and by explaining the (deterministic and probabilistic) approaches used in modern hazard assessments. Next Nicolas Luco of the USGS will present modern performance- and risk-based engineering approaches, focusing on how these approaches address seismic safety and risk. This will be followed by a talk by Baidurya Bhattacharya who will describe the broad philosophy of risk and reliability engineering bringing a perspective on challenges that engineers face. Lastly, A.D. Roshan will speak on issues specific to nuclear power plant structures in India.