Abstract

Seismic isolation is a construction technique and a technology for mitigating the damaging effects of earthquakes on structures through the introduction of flexibility and energy absorption capability by use of a seismic isolation system. The objective of adding an energy dissipation (or damping) system to new and existing construction is to dissipate much of the earthquake-induced energy in elements not forming part of the gravity framing system. Key to this construction technique is limiting or eliminating damage to the gravity-load-resisting system.

This lecture will introduce the audience to the theory and application of these technologies in an approach that centers on implementation. The presentation will be pictorial, and will emphasize the developmental work in these technologies at the University at Buffalo. Selected applications of these technologies will be discussed, in which some aspects of the analysis and design will be presented. These applications will include the Bolu viaduct and the Ataturk Airport in Turkey, the Woodrow-Wilson Bridge in Washington, DC, applications of the toggle and scissor-jack damping systems, the Sakhalin gas platforms in Russia, and hospitals in California.

Bio

Dr. Constantinou is the Chairman, Department of Civil, Structural and Environmental Engineering at the University at Buffalo. He was also the co-Director of the Structural Engineering and Earthquake Simulation Laboratory, University at Buffalo. Dr. Constantinou joined the University at Buffalo in 1987 as an Assistant Professor and has been a Professor since 1994. He is the recipient of the Presidential Young Investigator Award, President R. Reagan in 1988. In addition he has been awarded the Best Paper Award, 4th World Congress on Joints and Bearings, ACI, 1991; Design Award for Engineering, Technology and Innovation, General Services Administration (for design of US Court of Appeals Building, San Francisco), 1994; Diamond Award, New York Association of Consulting Engineers (for design of Ataturk International Airport Terminal, Turkey), 2002; Grand Award, American Council of Engineering Companies (for design of Ataturk International Airport Terminal, Turkey), 2002; Chancellor’s Award for Excellence in Scholarship and Creative Activity, SUNY, 2004; and the C. Pankow Award for Innovation, Civil Engineering Research Foundation (for design of Torre Mayor Building, Mexico-on behalf of University at Buffalo), 2005.