



SOIL AMPLIFICATION EFFECTS ON BUILDING DAMAGE DURING THE 1988 ARMENIA EARTHQUAKE

by
Dr. Vahe G. Ghahraman

Abstract

On December 7, 1988 an earthquake of magnitude $M_s=6.8$ shook northern Armenia inflicting heavy human casualty and massive devastation. The city of Leninakan (Gumri), located 25 km from the surface breakout of the ruptured fault, suffered heavier damage than the city of Kirovakan (Vanadzor), only 10 km from the fault. In this seminar, building damage statistics from the 1988 Armenia earthquake are presented and discussed. These statistics are correlated to the local soil profiles in these two major cities. The soil amplification effects on building damage during this earthquake are investigated. One-dimensional site response analysis results and valley effects are presented to explain the extent and pattern of damage in the two cities.

About speaker

Vahe G. Ghahraman is an internationally known geotechnical earthquake engineer. He has attended Northeastern University in Boston, U.S.A., where he received his Ph.D. in earthquake engineering with emphasis in soil dynamics. He is a member of several professional societies such as ASCE, EERI, SSA and ISMFE. His area of research includes seismic risk analysis for earth dams and embankments, settlement of buildings during liquefaction, seismic analysis of bridge foundations, liquefaction case histories and base-isolation using geosynthetics. After the 1988 Spitak Earthquake, Dr. Ghahraman and his colleague from Northeastern University, Dr. Mishac Yegian, travelled to Armenia to study the geotechnical aspect of the earthquake. They have also surveyed the 1990 Manjil, Iran, 1992 Erzincan, Turkey, and 1994 Northridge, California earthquakes. Their research results has been published in several professional journals and conference proceedings. Currently, Dr. Ghahraman is the laboratory director in the Department of Civil and Environmental Engineering, and is responsible for the operations of the recently established seismic recording station at Northeastern University.

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Time: 4:00 - 6:00 PM
Place: Auditorium, 5th floor, AUA, 40 Marshal Bagramian Avenue