SAFER Cities Update

In 1999, the Government of Armenia proposed an enhanced national program of seismic risk reduction in the urban environment. One of the most important tasks of this program is to reduce the vulnerability of the built environment through reinforcement and upgrading of existing buildings and improvement of earthquake resistant design and construction in urbanized cities with high seismic risk.

To assist this program, the Consortium of Organizations for Strong Motion Observation Systems (COSMOS), in cooperation with the World Seismic Safety Initiative (WSSI) have provided the Armenian Strong Motion Network with 40 SMA-type accelerographs for monitoring the seismic response of buildings and structures located in densely urbanized areas. These instruments, in support of the national program of seismic risk reduction, will allow for the following upgrades to the Armenian Strong Motion Network:

1. Installation of 24 accelerographs at selected sites and buildings in Yerevan, the capital of Armenia and considered to be at the greatest seismic risk (Fig. 4), Installation of 16 accelerographs in the city of Kapan (Fig. 5), an industrial center located in southern Armenia, which was built on the sharp slope of river canyon with slope ascent more than 15 degrees. The selected sites will be represented by various soil conditions and different structural designs typical for these cities and for Armenia in general.
2. To study behavior of different types of buildings in different soil conditions during the earthquakes with different magnitudes, focal mechanisms, and locations;
3. To study soil- structure interaction for different types of buildings in various soil conditions;
4. To allow earthquake ground motion and response spectra analysis for the recorded earthquakes with M>3; and
5. To allow dynamic response analysis of the selected buildings.

Strong-motion instruments will be installed in 5- and 9-story buildings at ground level and upper floors. In 16-story buildings, instruments will be installed at ground level, the 9th floor, and upper floors.

The record processing procedure will include the analog strong-motion time history digitizing, processing in accordance with Safer Cities Program requirements, and archiving in the database of Armenian Association of Seismology and Physics of the Earths (AASPE). The dissemination policy will include recorded data transmission into the COSMOS website in accordance with Safer Cities Program requirements, and the recordings will be posted on AASPE website for free access and use by the scientific community worldwide.