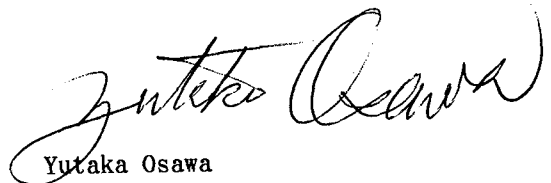


FORWARD

There has been great progress in the aseismic design of structures during the last decade. This progress has been based on various research on seismic observation and on experimental and theoretical response analyses of structures. The level of work in strong ground motion observations, which started in the 1930's in the United States and in the 1950's in Japan, has greatly increased the density of installed seismographs since the International Strong Motion Array Council (ISMAC) adopted its resolution on high density array observations in 1978 in Hawaii. There exist two phases of observational studies: 1) observation of all phenomena with arbitrarily installed seismographs, 2) observation for some specific purpose, e.g., clarification of soil-building interaction effects. Undoubtedly, we are now in the latter phase.

As has been pointed out by senior researchers, the earthquake response of a building for a great earthquake can be predicted reasonably well by measuring its behavior during smaller earthquakes with the JMA intensity scale of III, IV or lower case of V (equivalent to 5 - 8 in the MM scale). The Chiba Prefecture earthquake of December 1987 was a good example of such a small earthquake. On this occasion, the ERS (Earthquake Resistant Structure) Research Group succeeded in obtaining valuable information including several hundred earthquake records in and around the 'Weak Structural Models,' which suffered considerable damage from this earthquake, in the Chiba Test Field. In contrast to the former situation in which a very few people with a limited budget measured strong ground motions that occurred only once in a very long period of time, it is now possible, through recent progress in instrumentation, to obtain records that can be analyzed using electric computers at least a few times a year. The success of the ERS Group should encourage further this type of work on observational studies in the future.



Yutaka Osawa

Professor Emeritus

Earthquake Research Institute

University of Tokyo