

Evaluation of Seismic Capacity of Existing Buildings with IT Kyoshin seismometer

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The evaluation of structural strength, torsional strength, sway-rocking behavior and fundamental period are important to evaluate the seismic capacity of existing buildings. The seismic capacity of buildings can be assumed by pushover or dynamic response analyses; however, a real seismic response of existing building cannot be assumed because of precisions of construction or composition of materials. Although the seismic capacity is designed by allowable design method, the seismic capacity is being degraded by earthquakes or aged deterioration of materials such as steel bars and concrete. A seismic evaluation method to evaluate the seismic capacity of existing building is provided; nevertheless accurate estimation of the seismic capacity of building is also difficult. Recently, evaluations of the response of building are studied by measuring the acceleration on floors in buildings. The on-time evaluation system can become an index for seismic evaluation of buildings to help escaping hazard and the safety of people.

This paper presented an evaluation method of seismic capacity of existing RC building with accelerometers called IT Kyoshin seismometer. The target of measurement is four-story RC existing building which was built in 1943 on Nagoya University. The seismometers were located on the building at each floor. The locations of seismometer which is important for estimation and the efficiency of measurement were examined by comparing between records and results of dynamic response analyses. Then, vibration characteristic, torsional vibration mode and sway-rocking resistant and fundamental period of the building were obtained. This paper showed that the availability of the evaluation of seismic capacity of existing building with real-time measurement.