

عنوان مقاله:

Structural Health Monitoring: Lessons Learned

محل انتشار:

دومین همایش تخصصی توانمندسازی میراث معماری و شهری در برابر زلزله (سال: 1397)

تعداد صفحات اصل مقاله: 22

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خلاصه مقاله:

Department of Earthquake Engineering of Kandilli Observatory and Earthquake Research Institute of Bogazici University (DEE-KOERI) has designed and been operating a significant number of structural monitoring networks in Istanbul. They are installed in a large number of historical structures (i.e. mosques, minarets, museums), lifeline structures across the Bosphorus (i.e. suspension bridges and tunnels), several high-rise buildings including the Sapphire building, currently the tallest building in Europe, and industrial facilities. The structural monitoring networks record the dynamic motions of the structures continuously, and the data are transmitted in real time to the monitoring center at the DEE-KOERI. The majority of the systems use accelerometers for monitoring. Some structures are also instrumented with tilt meters and GPS sensors. An in-house real-time modal analysis software is used to process and analyze the data. The software includes data processing, spectral identification and animation modules. The results are displayed in real time, showing the time variations of modal properties and the structure's configuration. This chapter provides an overview of these monitoring systems in Istanbul. Moreover it presents major findings related to the dynamic response properties of monitored buildings particularly focusing on structural response to long-distance, long-period earthquakes; on the sensitivity of dynamic modal parameters to variations in atmospheric conditions; on structural response characteristics due to explosions; and on damping in tall buildings.

کلمات کلیدی:

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