

Seismic Microzoning and Resonant Map for Urban Planning

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Abstract : The cities are coping with permanent demands to extend their residential and economical capacity. The new urban zones are sometimes induced to be developed in more vulnerable environments. This study is aimed to identify and mitigate the seismic hazards in the stage of urban planning for new settlements, including the existing urban environments which initially have not considered the seismic hazard. Seismic microzoning shall study the amplification/attenuation of seismic excitations from the bedrock to the ground surface. Modification of the seismic excitation is governed from the site specific ground conditions, presented on ground surface as mean values of the ratio of maximum accelerations at the surface versus acceleration of subsoil media - presented with dynamic amplification factors (DAF). The values shall be used to create the maps with isolines of DAF and then seismic microzoning with expected maximum mean surface acceleration as a product of DAF with maximum accelerations at bedrock. Development of resonant map shall conglomerate the information's obtained from seismic microzoning in regard to expected predominant ground periods of seismic excitation and periods of vibrations of designed/built structures. These information's shall be used as indispensable tool in early stages of urban planning to determine the most optimal zones for construction, the constructive materials, structural systems, range of buildings height, etc. so the resonance of soil media with built structures is avoided. The information's could be used also for assessment of seismic risk and vulnerability-damageability of existing urban environments.

Keywords : vulnerable environment, mitigation, seismic microzoning, resonant map, urban planning

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