

ABSTRACT

The seismic status of a region depends on many factors such as the presence of active faults in the region, attenuation characteristics of the seismic waves through the earth crust, amplifying nature of the local soil structure, and vulnerability of the facilities at the local site.

The current analysis basically focuses on evaluating the characteristics of local site response against different levels of seismic action. This include a series of investigations involving the exploration of the geotechnical structure of the study area, determination of the dynamic parameters of the local soil profiles, designing of hypothetical earthquakes to stimulate the seismic action, surface response analysis, and structural evaluation of existing building stocks against earthquake loading.

The information on the local soil stratigraphy has been determined based on the borehole log information representing soil profiles distributed throughout the study area. The corresponding soil dynamic parameters have been determined from their correlations with the Standard Penetration Test (SPT) values. Possibility of up to twenty times variation in the level of ground shaking at two distinct locations for a particular magnitude of earthquake is demonstrated. The locations susceptible to potential soil liquefaction have been identified using an approximate method based on the SPT value. This is an indication of the degree of exposure to the structural failures of foundation.

A structural evaluation of buildings in the area confirmed that un-reinforced masonry buildings that were built before 1960 are vulnerable against seismic loading.
