

## of Site Amplification, Structural Dynamic Characteristics, and Structural Vulnerability Rating of the City of Aqaba

In this study, recordings of free oscillation were made directly on 18 structures in Aqaba, which represent the structural culture of the city. Ground ambient vibration records were conducted at 18 nearby location of each structure. Records were conducted during the cultural activities using three-component seismometer of 2 Hz. Analytical results of structural records, has given the following equation:  $f = 18/N$ , where  $f$ , is the fundamental mode of structure and  $N$ , is the number of stories. All structural records were conducted at the top level of each structure except a few. Analysis of obtained records on structures in Aqaba show that most of them are of short periodic structures except a few tall buildings. Most of the results on structures refer to damping factors that range between 0.05 - 0.208.

Ground records indicate to the westward and north-westward decrease of dominant frequency relative to the eastern and southeastern part of the city, where the granite bedrock is much shallower. Striking that the H/V amplification was relatively higher in the scope of areas where the thicknesses of surface deposits in the eastern and southeastern part are much shallower relative to the western and northwestern part of the study area.

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