Abstract: This paper presents the results of a vulnerability assessment of the damaged Al-Askari shrine located in Samarra, Iraq by finite element analysis. Reliable material characteristics are derived using limited experimental data on this historical building in order to be utilized in the numerical models. It is concluded that the cracked piers are not vulnerable under the weight of the newly added dome. However, the cracks in the piers widen under design seismic loads, which results in unbalanced settlements in the piers and torsional cracks in the dome.
The vulnerability of the minarets is more severe, necessitating heavy reinforcement at their bases and adequate anchorage to the masonry building.