Diagnosis and Seismic Analysis of a Historical Monument in Tlemcen

Abstract

This work constitutes a contribution to the understanding and to seismic analysis of an historical monument in Tlemcen, Algeria, using the three-dimensional computer code SAP2000, based on the finite element method.

The present study consists to elaborate a numerical model of the minaret of Mansourah under static and seismic loads that are simulated by using the method proposed by Sabetta and Pugliese.
This research includes a presentation of the main concepts of the seismicity, An overview of the Algerian seismic codes RPA 99, A brief review on the seismic activity of Algeria and some cultural heritage and historical monuments of the country located in the Tlemcen city are described, and a geological study of the Tlemcen region is presented.
Because of the cultural value of the minaret of Mansourah and their touristic importance and the desire to preserve it in the future, we became interested in the dynamic behavior of the minaret subjected to a strong seismic load.

The results obtained show that the stiffening or rehabilitation intervention must be done in the selected part of the minaret where a concentration of stress was seen.

Key words: Minaret, Mansourah, Historical Monument, Dynamic behavior, Seismic, FEM, Acceleration, Tlemcen.