



The Great Mosque of Algeria – Seismic Design of a Monument

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Summary

In Algiers the world's third largest mosque, whose minaret will be the highest in the world, is presently under construction. The complex, containing also a convention centre, a library and a university, will form a new urban focus. As Algiers is located in a strong-motion earthquake area, the structural design of the buildings follows latest construction methods. The prayer hall will be totally decoupled from the seismic ground by isolators and dampers. The minaret will be a high rise building with a composite structure of RC cores and integrated dissipation steel stiffeners. Its design was made with special push-over analyses. The construction started in 2012 and is scheduled to be finished in 2016. The paper presents the outstanding project itself, figures out the main structural design aspects and gives an overview of the state of construction in 2014.

Keywords: seismic design; base isolation; damping; time-history calculation; pushover-analysis; composite structure; high-rise building

1. Introduction

With the project 'Great Mosque of Algeria' the Algerian State started a process of developing a new landmark building. The mosque itself (fig. 1) will be the third largest in the world. For the available gross floor surface of 400.000 m² about 120.000 visitors are expected daily. The complex (fig. 2), in a distance of approximately 500 m from the Mediterranean coast, will also contain a convention centre, a library and a university. Thus a new urban focus will be formed.

In 2008 an international competition was won by the German joint venture of *KSP Jürgen Engel Architekten* and *Krebs und Kiefer International*. The JV was charged with the total general planning and the supervision of the realisation.

As Algiers is located in a strong-motion earthquake area (*VIII-IX at the Modified Mercalli Scale*), the design of the buildings was extensively influenced by seismic effects.



Fig. 1: Visualisation of the mosque