Seismic Isolation System of the Djamaâ El Djazïr Mosque in Algiers

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Summary

The construction of the third biggest mosque in the world - Djamaâ El Djazaïr - began in Algiers in early 2013. Due to the high specified PGA of 6.5m/s² the building, extending over an area of 145 x 145m and up to 65m height, has been isolated with 246 curved surface sliders and 80 hydraulic dampers to provide an overall 8% damping and limit the maximum seismic displacement to 500mm. The dampers display a soft response with a damping exponent of 0.4 for velocities up to 1000mm/s, whereas an integrated force limiter working between 1000 and 1200mm/s was installed in order not to overload the whole system for the maximum credible earthquake.

European Community CE marking and testing according to EN15129 [4] was performed at the University of California in San Diego and at the Eucentre in Pavia. A theoretical service life span of 500 years was proven by wear and fatigue testing.

Keywords: curved surface sliders, isolators, hydraulic dampers

1. INTRODUCTION

Northern Algeria is located in a seismic zone. For this reason a prestigious and important project like the new Grand Mosque of Algeria had to be suitably protected against earthquakes, particularly the prayer hall.

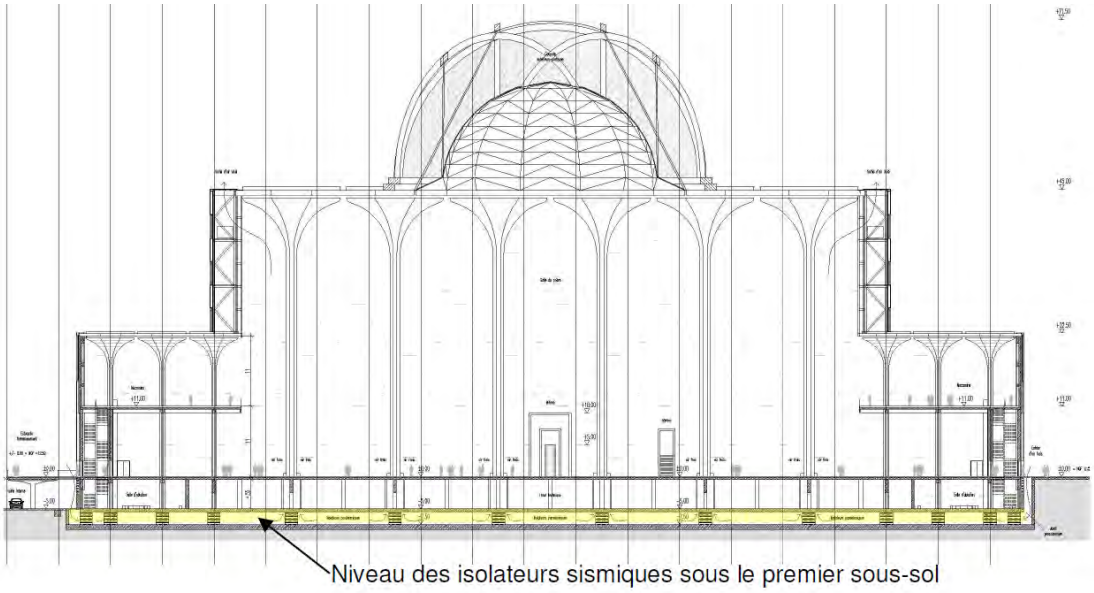

Figure 1 - Grand Mosque of Algier - Djamaâ El Djazïr Mosque

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