



New Mexico City International Airport - Control Tower

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Abstract

The New International Airport in Mexico City is being built on some of poorest ground conditions that exist in Mexico City, or indeed anywhere. The ground is extremely soft, rapidly sinking and exposed to a major and unique seismic site hazard. This paper discusses the performance-based engineering design of the 90 m tall Control Tower. The tower is base isolated to significantly reduce the seismic accelerations which would approach 1.0 g with a fixed-base design. The airport site is predicted to settle by 5 m over the 75-year design life due to regional subsidence. A practical, efficient and elegant solution was developed using a shallow pile-enhanced and compensated raft, and a transfer truss which supports the lightweight braced steel tower on seismic base isolator bearings, allowing the building to be founded on the soft soils while accommodating regional subsidence by moving down with it. The design accommodated seismic joint movements of 1.4 m.

Keywords: seismic hazard; base isolation; braced tube; tower; regional subsidence; soft soils.

1 Introduction

The New Mexico City International Airport (NAICM, Nuevo Aeropuerto Internacional de la Ciudad de México) is being constructed on the Lake Texcoco site in Mexico City. (Figures 1 and 2).

Arup was appointed by FP-FREE – formed as a Joint Venture of architects Foster + Partners and Fernando Romero Enterprise – to perform multidisciplinary engineering design and consulting services for the new airport.

The new airport is located in what is known as the “lakebed zone” of Mexico City. The famously poor soils in the Texcoco lakebed present some of the most challenging ground conditions that exist in Mexico City, or indeed anywhere, including:

- very soft soil
- rapid regional subsidence

- extreme and unique seismic hazard

This paper discusses the performance-based engineering design of the 90m tall Air Traffic Control Tower (ATCT), which is situated to the north of the passenger terminal building. Figure 3 shows the elegant and functional architectural form developed by the FP-FREE architectural team.



Figure 1. NAICM site location (Google)