



New Terminal of Barajas Airport: Terminal Building

Structural Type	Frames of pre-stressed concrete beams with pre-cast hollow core slabs.
Location	Madrid.
Opening date	2006.
Property	AENA.
Architect	Richard Rogers Partnership and Estudio Lamela.
Contractor	UTE BARAJAS FCC Ferrovial Agroman NECSO ACS Sacyr.
Professional Services	Construction Project and Technical Assistance.

The 125,000 m² occupied by the Terminal Building of the new terminal of Barajas Airport are distributed between a central zone of 360,00 x 216,00 m on plan and two lateral dike-like constructions of 396,00 x 54,00 m. Depending on the area, these dike-like constructions have up to three underground levels and two over ground ones.

Mainly, a grid of columns of 9,00 x 18,00 m has been used to build an alignment of frames of 18,00 m span and 72,00 length. The circular cross section columns of the frames are of 0,80 to 1,20 m diameter and the post-tensioned girders of 1,80 m width and 0,80 or 0,90 m depths, with two tendons with 15 strands of 0,6" each . To supply the frames of 72,00 m with enough continuity in order to reach almost 1,000 m in the area of the dike-like constructions, joints are located at 1/5 of the span and dowels of great load-bearing capacity and horizontal displacement were used which had been especially tested for this purpose.

Taking into account the more than 40 km of pre-stressed post-tensioned girders that had to be built, the construction system has been the following: concrete casting of the beam on moveable scaffolding, removal of scaffolding and translation of the formwork with the beam, not yet pre-stressed, acting as a normal reinforced element, threading of the strands and pre-stressing, mounting of the hollow core slabs and concrete casting of the upper deck on them.