New Terminal at Barajas Airport: Satellite Building

The 70,000 m2 occupied by the Satellite Building of the new terminal at Barajas Airport are distributed between a central zone of 144.00m x 180.00m on plan and two lateral dike-like constructions of 396.00m x 54.00m. Depending on the area, these dike-like constructions have up to three basement levels and two above ground. A distinctive feature of one of these dike-like constructions is that it rests upon the crown of the M-111motorway tunnel.

Mainly, a 9.0m x 18.0m grid of columns has been used to build an alignment of frames which are 18.00m in span and 72.00m in length. The circular cross section of the columns used in the frames varies between 0.80m to 1.20m in diameter. The girders, which are between 0.6m and 1.8m wide and between 0.8m and 0.9m deep, are pre-stressed with post-stressed reinforcement which is made up of two tendons composed of 15 strands each.

To supply the 72.0m frames with enough continuity in order to reach ,the almost 1,000m, in the area of the dike-like constructions, joints are located at 1/5 of the span and dowels with high load-bearing and horizontal displacement capacity were used, which had been specifically tested for this purpose.

Taking into account that more than 40km of pre-stressed post-tensioned girders had to be built, the construction system was as follows: Casting of the beam on mobile scaffolding, removal of scaffolding and transfer of the formwork along with the beam, not yet pre-stressed, acting as a normal reinforced element, threading of the strands and pre-stressing, assembly of the hollow core slabs and casting of the upper deck upon the slabs.

Spain /2006

Project data

Structural type:
Pre-stressed concrete beams with pre-cast hollow core slab frames
Location:
Madrid
Opening date:
2006
Proprietor:
AENA
Architect:
Richard Rogers Partnership and Estudio Lamela
Contractor:
UTE SATELITE Dragados Obras y Proyectos - OHL
Scope of Works:
Construction Project and Technical Assistance