



The Gestesa Chamartín Tower

Madrid, Spain / 2009

Structural type
Characteristics
Owner
Client
Scope
Architect

reinforced, post-stressed solid slab
building height of 83.60 m, with forged postesados
Grupo Gestesa y Caixa Catalunya
Fomento de Construcciones y Contratas
detailed design and construction support
Bunch Arquitectura y Proyectos SLP



The Gestesa Chamartín Tower is a high-rise structure which is one of a group of 4 residential tower blocks situated in the Isla Chamartín development, which itself is strategically located between the junction of the A1 and M11 motorways.

The building has 23 storeys above grade, ground floor and three basement storeys with a constructed surface area totaling 26,555m². The floors above grade each have a surface area of 665m² and the basement floors 3,095m².

The excavations have been fulfilled employing piled walling embedded in competent soil. The building has two distinguishable foundation types: in the areas external to the building, where the loads are low, isolated footings shall be employed whilst in the area of the building itself, where the loads are necessarily high, floating foundations have been projected employing a 2.50m thick reinforced slab.

The horizontal forces due to wind action are counteracted by a 0.30m thick reinforced concrete central core which offers considerable stiffness to the structure. The core has integrated perfectly with the architectural solution as it houses the lifts and installations in its interior.

Relatively small reinforced concrete columns have been placed on the external perimeter as they are only subject to gravitational loads.

The horizontal structure is solved employing two differing typologies depending on the problems and usage. On the floors below grade and ground floor, with the loads from the car park and urbanization, the main problem faced is that they be fire-resistant, economical and have the resistant capacity to absorb the settlement of the foundations derived from the different loads and typologies employed. 0.28m thick reinforced concrete slabs have been projected for the basements and 0.32m for the ground floor.

In the floors above grade the problem has been to find a strict depth solution to reduce the vertical loading and therefore reduce the vertical structure and the necessary foundations. The solution finally executed consisted in a 0.22m thick single-strand post-stressed slab with highly optimized quantities of active and passive reinforcement.



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