



# Manuel Rojas Congress Center

Badajoz, Spain / 2006

Structural type  
Characteristics  
Owner  
Client  
Scope  
Architect

monolithic concrete structure and steel roof  
reinforced concrete stands over the entrance area  
Ayuntamiento de Badajoz  
Junta de Extremadura  
detailed design and construction support  
Jose Selgas & Lucia Cano



The structure constitutes one of the essential elements in any architectural Project, whereby without this often hidden system of resistance, no building would be possible. Unique buildings, such as the Badajoz Congress Center, always stage a challenge for the structural engineer to stretch their knowledge and knowhow to the limit. This type of building is fundamental in the search for structural solutions which fulfill the imposed resistant conditions as well as adapting to the functional and architectural conditions which arise from especially complex constructions of this magnitude.

The work of the structural engineer in cases like this consists in the global appreciation of the problem in hand and the placing of their experience and innovation to solve, along with the architect, the multitude of problems which may arise during the course of the project.

So that this work may be efficient, the work of the structural engineer should start at the beginning of the Project, adopting, alongside the architect, the basic decisions which allow the configuration of the structural typology of the building, which is more commonly known as the structural conception of the construction.

In the case of the Badajoz Congress Centre, the first decision to be considered was that of a monolithic structure free of expansion joints. This was not a trivial fact, due to the forces which appear as a consequence

of the volumetric variations in the materials produced by temperature changes and by the inherent properties of concrete. The elimination of the expansion joints in the building translates into a saving in the posterior maintenance of the aforementioned, and at the same time offering greater strength to the structure itself. Therefore, the structure of the Congress Centre is to employ reinforced concrete slabs in its floor construction. These slabs rest upon the perimeter walls which adapt to the plan configuration of the bastion into which the structure is inserted and also on slender steel columns which form concentric rings so following the edges of the slabs which they support.

One of the outstanding aspects of the Project from a structural point of view is the support of the Concert Hall in the Auditorium which is fulfilled without the need for intermediate columns thanks to the curved reinforced concrete perimeter walls which encircle it laterally and to the reinforced concrete curved beams, which are a prolongation of the aforementioned walls, which allow the freeing of space situated below the galleries. This supposes an important improvement from a functional and formal point of view.

Another of the outstanding structural features is the building's main roof which has been constructed in steel and has been placed centrally on plan with an approximate diameter of around 50.0m with a 12.60m diameter oculus in its centre.



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