

EXHIBITION AND CONFERENCE CENTRE EXPO ZARAGOZA 2008



Pepe Castellano

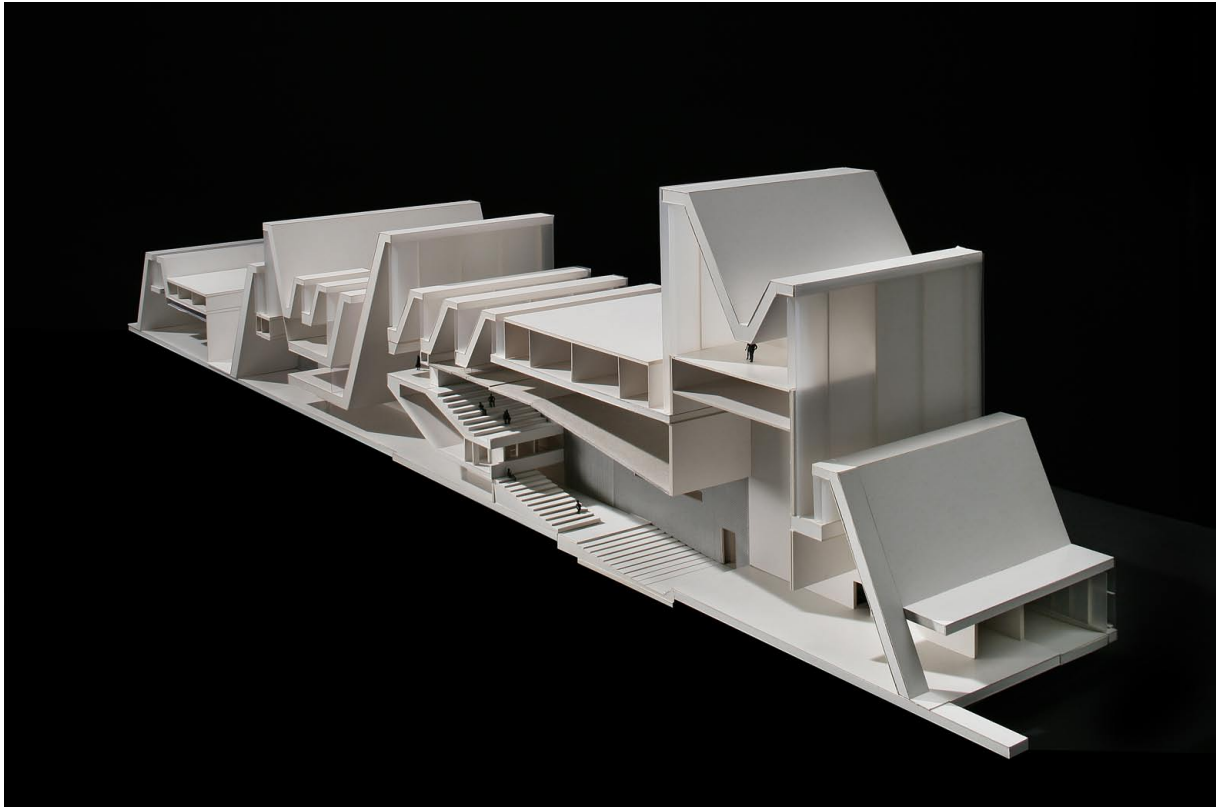


Figure 1.

Fuensanta Nieto and Enrique Sobejano are the architects of this building. They earned their degrees from the Higher Technical School of Architecture in Madrid and from Columbia University in New York, USA. Both are founders of the architecture studio NIETO-SOBEJANO, S.L. in Madrid, Spain.



Figure 2. Fuensanta Nieto and Enrique Sobejano.

In order to generate the architectural design of the Conference Centre, Nieto and Sobejano took into account the structure, space, and light that the roof and skylights, as the most important features in the development of this building, could give this design. Thus the skylights were changed to different heights as if they were paper folds that could be raised and lowered in height and be compressed or expanded on the storey, depending on the needs of the different domains in this Conference Centre.



Figure 3. Iron structure of the roof without GRC panels.

The building is made up of three main parts:

An auditorium that can hold 1500 people, multipurpose pavilion, and modular rooms; all these parts are connected by a large lobby, which is the most important centre space.

The building consists of a total of nine storeys and occupies a surface area of 22,850 m².



Figure 4. Side view of the skylights.

The roof is the essential element of this architectural work, not just as a structure that modulates the entire building, but as a white skin that surrounds and protects the whole building.

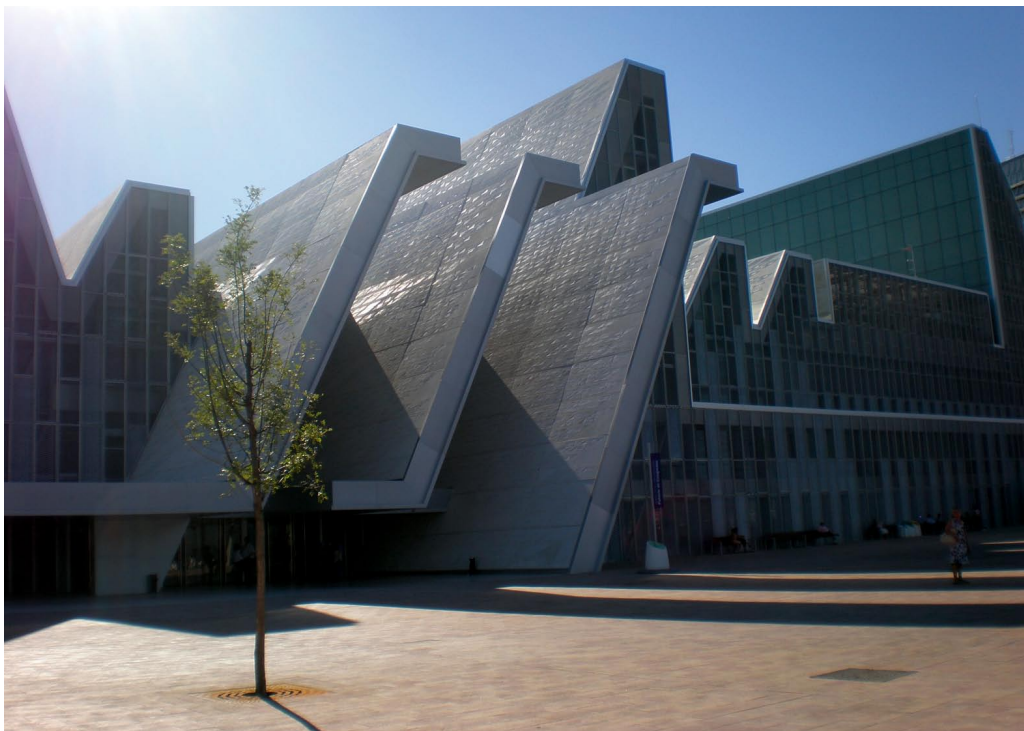


Figure 5. Building roof with the GRC panels and ceramics.

The entire roof is modulated with the following measurements: 1.80 ml, 3.60 ml, 5.40 ml, and 7.20 ml, since as Nieto y Sobejano say 'God helps the person that modulates'. The module layout provides the building with an essential geometry, simplicity, and clarity, as conceived in the design idea.

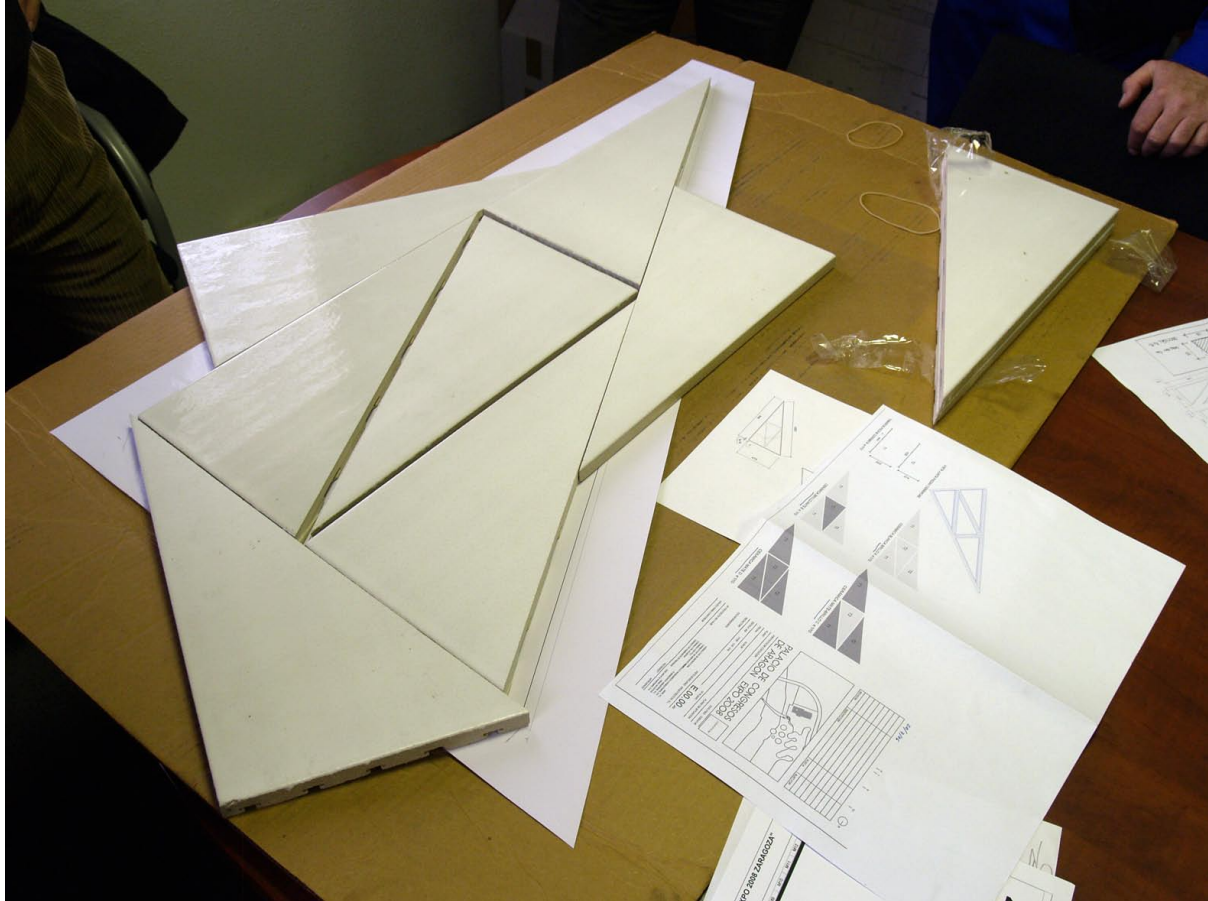


Figure 6. Verification of the ceramic triangles in relation to the plan.

This module layout was transferred to the roof in order to be able to produce, on an industrial scale, the over one thousand GRC panels clad with ceramics, measuring 1.80x3.60 ml, needed to enclose the iron structure making up the roof.

The companies DRACE, Decorativa, Cerámica Cumella, and Grupo Entorno participated in the development and execution of these panels. The installation was performed by SACYR-VALLEHERMOSO.

In order to produce these panels, various ceramics bonding systems to the GRC, the development of flexible rubber joints for the ceramic modules, and their appropriate joint sealing had to be researched.

The moulds for spraying the GRC in large sheets of 1.80x3.60 ml were developed by Drace with their great experience.



Figure 7. Mould for the fabrication of the GRC panels.



Figure 8. Installation of ceramics in the mould.



Figure 9. Spraying of cement in the panels.



Figure 10. Finished panel.

Finally the ceramics were installed and the GRC was sprayed, to which a 10-cm layer of insulation was added to enhance the building heat screen with these roof panels. This idea to make the building more climatically sustainable was developed by Grupo Entorno.

The ceramics used in this project were 25x50 cm stoneware triangles made at high temperature (1250°C) by Cerámica Cumella, in two shades of white, glossy white and white matt. Together with the white colour of the GRC cement, these ceramic triangles provided the entire roof with a white skin in three shades of white, which changed according to the light that they received at every moment of the day. The ceramics with their glosses reflected the sunlight and offered the play sought by mixing matt and glossy triangles, according to the combinations developed by Nieto Sobejano.



Figure 11. Photograph of the installed roof.



Figure 12. Transport of the panels for their installation.

The use of ceramics, together with the GRC and the 10-cm insulation inside the panels, provides this construction system with great insulation and ease of construction, in addition to saving energy and labour. The white ceramics help reflect the sunlight and therefore reduce roof heating, while providing protection from adverse weather, which makes the panels very appropriate for sustainable building construction.



Figure 13. View of the Conference Centre on opening day.