Metropol Parasol

New architectural landmark based on four permeable, continuously interwoven levels, revitalizes neighboring old city center
Seville, Spain, is a highlight in terms of European places of cultural interest, competing for international cultural tourism dollars. Recently, the city felt this global competition demanded a thorough renewal of the city’s infrastructure, leading to a radical modernization of the city’s institutions.

The results were the subject of many sometimes-controversial public discussions.

The fact that Metropol Parasol is situated directly in the geometric center of the old city is part of this controversy because it does not mimic the surrounding historical context but instead is a contemporary reflection of the architectural assignment.

The location has a rich history. In the middle ages, a monastery could be found on the grounds. In the last century, the area was used as a market hall but degenerated into a virtual wasteland until 1982 when political pressure initiated a commercial project on the site. The unexpected discovery of 2000-year-old archeological remains brought a sudden end to the developers’ project and turned the area into an excavation site.

Then, an open international competition in 2004 invited firms to create an architectural landmark in the city center in order to revitalize the neighboring old town. The project had to include an archeological museum and a market hall.

The Metropol Parasol design is based on four permeable, continuously interwoven levels: the lowest level hosting the excavation site and the viewing platforms; the market hall at street level with the Plaza de la Encarnación adjacent; a five-meter (16.4 ft) high elevated level for events such as Flamenco festivals; and finally the parasols themselves which provide both urban viewing platforms and a towering architectural element that adds an unmistakable recognition value to the city of Seville.
The Metropol Parasol expresses a design language used for the entire public urban landscape. To reflect the archeological excavations under the plaza’s surface, a pixel design, the embodiment of contemporary communication, was adopted to shape the plaza’s landscape on top. The pixels can expand, shrink, connect and bend to create a new structure.

The design is a symbol of the city’s process of renewal. The project can be perceived as an elastic formation of the city’s surface or as a parametric landscape. The surface forms various different elevations and depressions without losing its continuity.

The parasol offers the viewer multiple ways of interpreting it. It could resemble parasols, mushrooms, a landscape or clouds, but the design can also easily evoke traditional Sevillian elements in the old city center or the vaults of the cathedral. Above, the urban landscape continues in falling and rising circular paths with viewing platforms providing the visitor with vast and impressive views over the city.

Development and construction of the parasol required a complex iterative coordination. Using 3D architectural modeling, the stresses in the wood’s profiles could be determined, hence, all joints and structural profiles were optimized corresponding to test results. The model data was also used in the production of the wooden elements, incorporating special milled-out notches for the various different connections of the parasol’s structure.

The special challenge for the engineers was to develop a complex 3D wooden structure in a scale, 150 m x 70 m x 30 m (492 ft x 229 ft x 98 ft) never seen before. The visible supporting structure is based on a 1.5 m x 1.5 m (4.9 ft x 4.9 ft) grid, with the materials thickness varying between 70 mm – 220 mm (2.75 in – 8.6 in) according to the occurring loads.

The constructive wooden elements (up to 16 m or 52.49 ft) were manufactured in Germany and transported by truck to Seville. The pieces were spray-coated and assembled on-site. The breathable polyurethane coating will protect the wood’s surface, particularly the edges, and seal the connections.

The connectors were based on a totally new constructive principle. By gluing threaded steel rods into the wood profiles at connection points, the loads are equally passed into the wood, decreasing the occurring stresses within the elements. The development of this technique required numerous experiments.

The result is an unforgettable, functional structure in the old city center. 

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