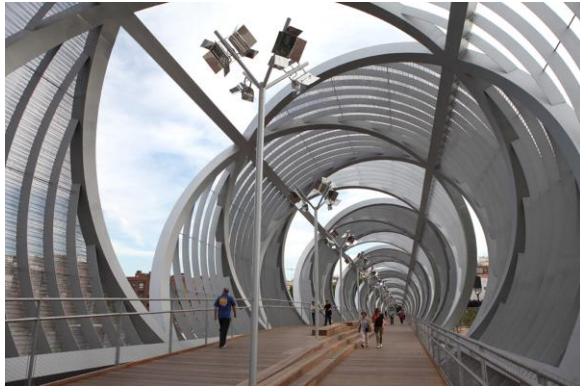


Case Study: The Pasarelas del Arganzuela
Location: Madrid, Spain



Project Description

Free from the noise and smell of the busy city highway, which was completely banished underground, both banks of the Rio Manzanares in Madrid were recently transformed into picturesque parks and promenades. At the heart of this green idyll is the Pasarela del Arganzuela - a footbridge designed by France's star architect Dominique Perrault. The tapering conical forms on both sides of the bridge, wrapped in stainless steel Escale mesh manufactured by the internationally leading technical weaver GKD - Gebr. Kufferath AG create a shimmering helix. The metal mesh surrounds the bridge from end to end in a spiral design like a textile ribbon. This helix, which gleams silver in the sunlight, is a metaphor for the increasingly close association between the two parts of the city separated by the Manzanares. At night, it is transformed by backlighting into a golden spiral, floating mysteriously above the river.

The 820-foot Arganzuela Bridge, creates a crossing for pedestrians and cyclists and an iconic structure for the Manzanares Park. Rather than a single compact structure, Perrault designed a self-supporting steel structure in two sections, tapering to cones at their outer ends. Pillars at the sides underline the impression of a floating link between the two banks. The two spiral-wrapped sections - 492 and 420 feet long - extend well into the park, meeting in the centre on a platform.

MODELLED ON NATURE

The unmistakable character of the bridge is created by the helical form of the envelope. The helix is universally accepted as the symbol of stability and growth, and in its double form the symbol of life itself. The Arganzuela Bridge is a systematic extension of this idea. In this case the unusual design symbolizes the exchange with the natural world around it as well. The realization of the concept is made possible by the decoratively draped skin of semi-transparent metal mesh, which creates different impressions depending on the viewer's perspective. At the same time it permits natural illumination and a sense of airiness on the bridge. The spiral-shaped wrap is designed so that an open section on one side is always opposite a mesh-wrapped section on the other, allowing passers-by a view into the surrounding landscape at all times and preventing gusts of wind.

Perrault selected GKD's metal mesh for the first time almost 20 years ago for the Bibliotheque de France, to implement his concept of wrapping buildings in an envelope. The flexible nature of the stainless steel spirals covers three-dimensional structures seamlessly. The spectacular wrapping for the Arganzuela Bridge used 48,420 square feet of the mesh. The conical form of the structure and the two-dimensional curvature of the mesh determined by the design posed unique challenges for the manufacturing subsidiary.



The solution was 64 individually formed triangular mesh sections, each adjusted to fit the sub-structure - 30 for the northern and 34 for the southern half of the helix. Assembling the finished mesh panels also required high precision work due to its size and triangular shape. Each mesh triangle was mounted by crane from top to bottom with precisely defined bending in vertical and horizontal directions, to achieve the required tension. Because of the complex form of the bridge, a widely proven fixing technique using eye bolts was adapted to the design requirements.

STRIKING FUNCTIONALITY

The finished bridge owes its charm to the special aesthetic of the spiral mesh, which reinforces the impression of a delicately draped material. On the inside of the bridge the softly dappled light creates a pleasant atmosphere. Apart from this iconic aesthetic, the functionality of the Escale mesh was a deciding factor for Perrault in selecting the material. The inherent advantages of stainless steel (which makes the Escale mesh easy to maintain and resistant to severe weather or environmental impacts) results in a virtually unlimited lifespan, giving little burden to the city's budget, already heavily strained by the rerouting of the highways and the design of the parks.