

BRIDGE OVER THE URUMEA RIVER



This year's theme of the Structural Engineering Design Competition was to design a proposal for the fifth bridge over the River Urumea in San Sebastian. Beside the usual technical requirements photographs of the four other bridges which span the river Urumea have been provided. These photographs shows that all the bridges are built with a structural system underneath the bridge deck. This shows that a structural system above the deck would break with the existing circumstances and possibly be not the most satisfactory solution. Therefore such a design was not further considered.



In an other comparison with the old bridges, it shows that almost all of them are built with an arch, sometimes over the full span and sometimes intermittent by piers. It's in the nature of things to consider finding the best solution with an arched form. Because it is not in the sense of things disorienting an aesthetic working surrounding. Based on this point of view you can start to develop your structural system.



With our present knowledge about materials it should be no problem to span a width of nearly 80m. But versus this there is just an effective, useable rise of an arch of about 3m. This is surely not enough to develop a real arch effect. So what can be done about this problem? Looking at bridges with long spans you can often see the effect of haunches which helps to bridge over. To reach a consensus you can come to a design the Swiss civil engineer Robert Maillart found at the beginning of the 20th century.



To be geared to this you can develop a system with a separate casting haunch- method. So you achieve a slender structure. The special feature of the bridge is not only its slender appearance but also its illumination at night. The gap between arch and slab can be used for special illumination effects, such as light shows or the like. Beside this there should be a day-to-day night-light effect, which can, for example, change with the seasons. So the bridge blends not only very well with the townscape, but it can also become a new sight of San Sebastian.

