Sustainable Bridge Constructions -Elegant arches - filigree structures - cost effective design

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St. Kilian viaduct: Superior lightness

Behind the bureaucratic-sounding title –Verkehrsprojekt deutsche Einheit Nr. 16", which refers to the upgrade of the A 73 federal autobahn in Thuringia, is one of the most exceptional bridges in the German landscape. The St. Kilian viaduct at kilometre 14.2 of the A 73 is one of the few autobahn viaducts to be constructed as a composite steel tube truss structure. The result gives reason to hope – and not simply from an aesthetic point of view – that this may mark the start of a trend towards high-quality bridges with visible structural hollow steel sections.

Luitpold Bridge: Bamberg's new bridge arch

In just 22 months the most important bridge in the city of Bamberg was demolished and replaced by an imposing new one. The view of the new Luitpold Bridge is dominated by a harmonic, rounded steel structure, consisting of three-dimensional truss arches. The harmonious visual aspect of the arch design was achieved by using MSH sections of constant diameter and different wall thicknesses.

Pedestrian bridge Weil am Rhein: Top quality filigree – elevated high-tech

World record span with symbolic overtones

With a free span of 230 metres, the pedestrian bridge at Weil am Rhein is the longest of its type. Linking the French town of Huningue and the German town of Weil am Rhein, it is also of huge symbolic significance, emphasizing the strong bonds between these two European countries. And last but not least, the bridge symbolises the togetherness of those who live on the right and left banks of the Rhine. In the words of the speech by Mayor Wolfgang Dietz at the official opening of the bridge on 30 June 2007, –If we want to build human bridges, we have to build physical bridges too."

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The bridge over Bayerstrasse, Munich

With light steps to the Wiesn

Sometimes, the easier it seems, the harder it gets - technically and in practice. This certainly applies to the pedestrian and bicycle bridge over Bayerstrasse, Munich. The supporting structure employs high-strength fine-grain structural steel – a material hitherto chiefly used in cranes, offshore installations, shipbuilding, and other high-performance steel structures. For this project, tests and expert evaluations came up with new ways to use fine-grain structural steel in civil engineering. The result: architects and civil engineers can now design lighter, more delicate structures**.**

Dättwil Bridge (CH) - Easing pressure on tunnel traffic

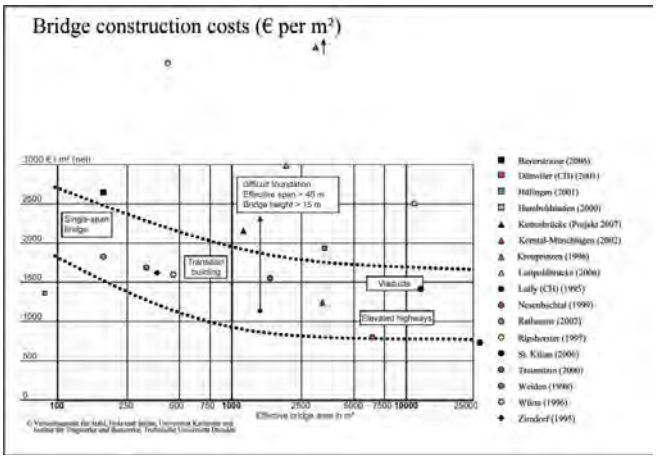
Not only expanding suburbs but also tunnel bottlenecks produce traffic chaos on Europe's roads. Construction measures aimed at easing the stress are consequently under heightened deadline pressure, as the traffic situation becomes drastically more critical during the actual building period. Here the composite bridge, with its speedy assembly engineering, is a structural type which is both economically and aesthetically attractive. Switzerland already has several such bridges.

Bridge over Nesenbach Valley - Lightness is Key

An architecturally remarkable bridge, which exploits the structural and creative advantages of a lattice of structural hollow steel sections (MSH), has been constructed in Stuttgart.

What price aesthetics?

Aesthetic impact and harmonious integration in the landscape are important criteria in any assessment of bridge structures. Alongside such considerations, however, the costs must not be forgotten – especially when money is in short supply.



Viewed purely in terms of absolute cost, a conventional reinforced concrete or composite steel bridge is less expensive than a bridge constructed using cast steel joints and hollow sections. However, the difference in costs is not excessively disproportionate, as the diagram shows. The diagram is taken from the reprint –Entwurf und Gestaltung von Ingenieurbauwerken – Brückenbau – Großer Beleg" of the Institut für Tragwerke und Baustoffe of the Technische Universität Dresden, and expanded using examples of tube structures. The diagram shows the manufacturing costs (3/m²) as a function of the effective bridge area (m²).