

## Stadsbrug Nijmegen: a beauty with waves and curves

### First wave joints in Holland and 3 m high Edge Structures.

Munich, Nijmegen. Nijmegen in Holland made a gift to itself: „De Stadsbrug“ (city bridge) over the Waal river is, with its arches and curves, undoubtedly a beauty – also technically it displays its characteristics: there, the first wave joints of Holland were installed, and the watertight edge structures contribute decisively to the total impression. Responsible unit for the expansion joints, edge structures and bridge bearings was the Lünen subsidiary of MAURER AG.

Nijmegen reinvents itself, motto: „Nijmegen embraces the Waal“. The Waal is he mightiest of the 3 Rhine estuaries. Nijmegen lies directly at the bend of the river, correspondingly high is the danger of floods. The comprehensive reconstruction comprise therefore a new island which splits the Waal river and this structure shall act as a huge protection unit against floods, encompassing far reaching flood areas. At the new Waal side, new housing and commercial units shall be constructed as well as new recreation areas. The new Stadsbrug with a length of 285 m over the Waal connects the city with the island and these new areas.

The main bridge hangs at a 60 m high impressive steel arch, which in spite of its mightiness seems to be an architectonically light and elegant structure. The shape of the arch is also adopted by the approach bridges. They consist of arch bridges which from their look are shaped like an old bridge. The look like a masonry structure, but are in fact made of concrete.

### 1st XW1 in the Netherlands

„Arches“ are offered by the bridge also in its detail, at the expansion joints. For the first time in the Netherlands, at the Stadsbrug a wave shaped XW1 type expansion joint was installed. It is located at the abutment at the southern end of the bridge. The wave shaped expansion joint displays of a length of 30 m and stretches over all the four carriageways including the two lane bicycle lane that is so typical in the Netherlands, and which is also used for farming purposes. Advantages of the wave joint are in particular the low noise emission and the wider gap that still can be bridged with a single seal.



The new Stadsbrug in Nijmegen: Arch bridges in the approach and a combined steel arch suspension bridge for the main spacing.

*Photo: MAURER*



3 m high and at their end being executed watertight: the edge structures of the Stadsbrug at the manufacturing site in Munich.

*Photo: MAURER*

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### 3 m high, watertight Edge Structures

Where the bridge facilitates longitudinal displacements, a MAURER XLS 800 facilitates the movement requirements. This expansion joint displays of 3 m high watertight edge structures which posed a particular challenge to design and execution, caused by its size, its geometry, and its manufacturing. For example, during manufacturing stage a hole had to be dug into the ground such that it was possible to carry out manufacturing.

The background of this structure which is skew on two sides is its optic, while it is fully unassuming when looking at the bridge – but this was desired. Seamlessly the bridge transforms into the edge structures and thus forms an optical unity.

Moreover, the high edge structures are watertight, such that the wind cannot press the water inside.

Installation of these expansion joints was in summer 2014.

### Spherical bearings made of non-corrosive MSA®

Also the bridge bearings of the Stadsbrug were – early 2014 – provided and installed by MAURER. The six spherical bearings can accommodate vertical loads of up to 52,000 kN and by default display the non-corrosive MSA®.

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The first wave joints in the Netherlands at the Stadsbrug in Nijmegen.

*Photo: MAURER*

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**Quick facts about MAURER AG**

The MAURER Group is a leading specialist in mechanical engineering and steel construction with over 1,000 employees worldwide. The company is the market leader in the areas of structural protection systems, (bridge bearings, expansion joints, seismic devices). It also develops and produces professional roller coasters and Ferris wheels as well as special structures in steelwork.

Among the most notable large projects are the entire technological bridging equipment for the Russky Bridge in Wladiwostok, the world's largest cable-stayed bridge. When it comes to steelwork, our showpieces include the BMW World and Munich's Airport Terminal II. Spectacular amusement rides include for example the Rip Ride Rockit Roller Coaster in Universal Studios Orlando, 10 Skyloops worldwide and the Fiorano GT Challenge in Abu Dhabi.

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