MCE

VIADUCT ST. KILIAN

HABAU GROUP

Lifting structure

Bottom chord truss joint

In February 2004, MCE GmbH was awarded within a joint venture the contract for the viaduct St. Kilian. The supporting structure consists of a three-chord truss system below each carriageway with one bottom chord and steel tube diagonals being combined with the carriageway slab into a composite section. To carry the weight of the steel construction and the fresh concrete during construction it was necessary to provide for steel top chords with horizontal wind brazing. The visible bottom chords and diagonals were produced from hot-finished seamless tubes (material S355 J2H Ø 610 mm or Ø 298.5 mm), the top steel chords encased in concrete (material S355 J2G3) consist of welded constructions. The bottom chord truss joints are cast joints (material GS 20Mn5v). Truss geometry required production of 210 cast joints, which comprised eight basic types of joints and the corresponding subtypes. The carriageway slab (concrete quality C45/55) was prestressed longitudinally in accordance with the stress conditions prevailing. The individual components were pre-assembled into transportable units by our workshops MCE Slany and MCE Nyiregyháza. In two nearly identical prefabrication buildings on site that had been designed especially for this purpose and that provided for workshop conditions, the supplied modules were combined into large elements.

To be able to move the field segments on site, which have a weight of up to 95 t, a special transport section was installed between the piers.

Assembly was carried out in the following order:

- Assembly of the required auxiliary constructions and scaffoldings
- Assembly of the pier segments consisting of the pier substructure and the strut head elements.
- Hoisting the field segments in place

The composite carriageway slab was constructed using two conventional formwork carriages moving on the top chords of the three-chord system. The length of each concreting section was 12.80 m. The carriageway slabs for both superstructures were constructed in parallel.

The bridge was opened to traffic in December 2006, following a construction period of about 2 1/2 years. Due to its light and transparent steel structure, viaduct St. Kilian blends harmoniously into the landscape of the low mountains of the Thuringian Forest.

Facts & Figures:			
Steel weight:	2,890 t	Construction:	Composite steel truss bridge
Length:	448.95 m	Customer:	DEGES, Germany
Width:	29.00 m	Construction period:	2004- 2006
Steel quality:	S 355J2, GS 20, Mn 5V		

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