

Corridor Vc: High-performing wagon for high speed

In the future, travelling between Budapest and Southern Dalmatia will take less time thanks to the Pan-European Corridor Vc. Numerous tunnels and bridges are erected along the 397 km route through Bosnia owing to the difficult topography. Doka's contribution to the infrastructure initiative is a formwork solution including a total of ten Cantilever forming travellers for the Studenčica and Trebižat bridges crossing the valleys.

Altogether the European route 73 is about 702 km long. A1 is an important section of this route in Bosnia-Herzegovina connecting the northern border to the Adriatic by way of Zenica – Sarajevo – Mostar. The two bridges, Studenčica and Trebižat, are intended to connect the valleys near the municipality of Čapljina. Hering, subcontractor of OHL, the Spanish construction company, will benefit primarily from the extended pouring sections of the Doka-Cantilever forming traveller that will reduce construction time by about eight weeks. Decisive factors for awarding the contract to Doka Croatia were many joint projects, high-performing systems as well as the ability to rent the formwork materials.

With a stretch of 555 m in length from one abutment to the other and maximum height of 81 m above the valley, Studenčica is the longer and higher of the two bridges. Four superstructures, each 12.4 m wide and placed at a distance of 120 m from the other, are established on a total of five piers. At a total length of 365 m and 59.5 m maximum height, Trebižat, the smaller pendant requires only three piers. Doka developed a safe and fast formwork solution consisting of Cantilever forming travellers. A total of ten



Fig. 1. High-performing at lofty heights: Ten Doka-Cantilever forming travellers allow for rapid and safe construction of both bridges along the Corridor Vc.

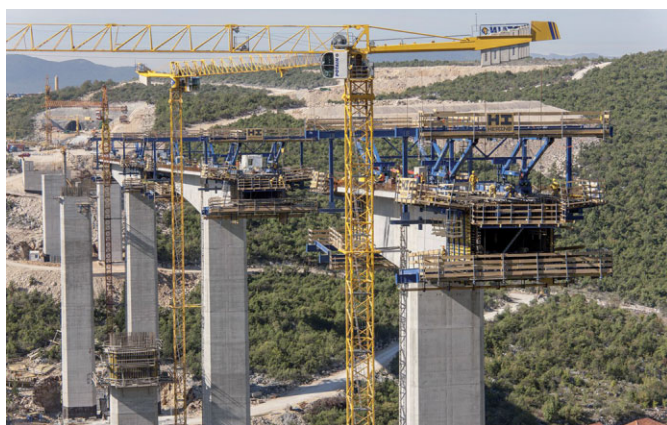


Fig. 2. For construction of the bridges spanning 555 m and 365 m in length, Doka developed a formwork solution consisting of Cantilever forming travellers that save time and resources thanks to extended pouring sections.



Fig. 3. The total number of ten Doka-Cantilever forming travellers were placed into their correct starting positions with the help of gantry crane parts. (© Doka)

rentable Cantilever forming travellers, eight of them on the Studenčica Bridge and two on the Trebižat Bridge, are making for smooth and rapid progress at lofty heights.

First upward, then straight ahead

High-performing Cantilever forming travellers allow for pouring of 5 m segments in a weekly cycle. In the Corridor Vc project, completely identical Forming wagons designed for 250 t carry maximum loads of 196.5 t. "These extended 5 m pouring segments reduce the number of segments and coupling joints and therefore save time and money", says Project Manager Mario Jurisic. The suggestion by both, the Business Development and Bridge Competence Centers, to extend the pouring segment to 5 m facilitates completion with eight fewer segments thanks to the high-performing Cantilever forming travellers. In the case of a weekly cycle, this means the project is completed eight weeks ahead of time.

By changing the cross slope and tapering the walls of the superstructures each segment was planned individually, thereby eliminating the need to adapt the formwork. Special installation of pieces made-to-measure and a custom solution with reusable removable elements in the interior formwork prevent loss of large quantities of materials. This system facilitates a height adjustment of the Cantilever forming traveller's interior formwork especially for the cross slope change.

Tough as nails at the limit

Doka materials came into play for the piers as well. Columns were constructed with the help of the crane-lifted Climbing formwork MF240 and Framed formwork Framax Xlife. With hammerheads high-performing Supporting construction frames were used horizontally. Doka Croatia in cooperation with the Bridge Competence Center demonstrated planning precision as well as creativity in order to get the Forming wagons into position at a height of 81 m. Parts of a gantry crane placed on the formwork lifted the Cantilever forming traveller's floor grate a bit at a time. The floor piece usually raised by its own winches at the Cantilever forming traveller can only be connected to the formwork once it is on the hammerhead. A Doka Formwork instructor on site ensures correct set-up and optimised use of the materials.

Limited workspace on the hammerheads with dimensions of 8 m in length called for a special solution. Whereas the forming wagons weighing approximately 80 t start moving symmetrically in two directions with the cantilever forming principle, Doka's structural engineers figured out a fine-grained custom solution for this project. Thanks to the exact calculations, one of the Cantilever forming travellers will first start off from the hammerhead. Then enough space is available for hitching the second traveller to it and offset the balancing act. In order to get around the lifting pro-

cedure, the Cantilever forming travellers will return once the width of a span has been completed; they are then repositioned and used again for the next pier.

Cross-border cooperation

The Forming wagon is fully equipped with secured platforms, safe Access systems and access to all places on the Forming wagon where work is done. This allows for safe progress even at lofty heights. In addition to fine-grained Formwork planning carried out by the teams at the Bridge and Business Development Competence Centers ahead of time, local engineers aid in smooth construction progress on site.

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2. Edition 2014. 760 pages.
€ 115,-*
ISBN 978-1-4051-0614-6
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