

Various tunnel cross-sections constructed using the first fully hydraulic formwork carriage with caterpillar drive

Tunnel approach for the A26 Danube Bridge, Linz, Austria

The A26 project is one of the most important infrastructure projects in the Austrian city of Linz and the surrounding area with the goal to ease congestion on its urban transport network. The key to success during the project implementation stage was a PERI engineering solution that was innovative, safe and efficient in equal measure, coupled with comprehensive project support. The highlight: The first fully hydraulic tunnel formwork carriage with a caterpillar drive in Austria.

Tunnel construction work to the north and south of the Danube for the access and exit routes for the new Danube bridge has been in progress since May 2020. A large section of the tunnel runs underground so that the noise and pollution in the urban area are reduced to an even greater extent. Five different tunnel cross-sections, profile transitions, tight radii of between 50 m and 750 m in the bends, and varying gradients: these were just some of the challenges that had to be overcome when constructing the 1,600-m-long access tunnels for the new suspension bridge over the Danube.

Solution-oriented, special-purpose formwork carriage with caterpillar drive

The construction company's top priority during the project execution phase was solution-oriented and collaborative working methods. In view of this, PERI engineers developed Austria's first customised and fully hydraulic special-purpose steel formwork carriage with caterpillar drive and a weight of 250 t. This alone was enough to produce the different cross-sections in a total of 170 concreting sections. The special feature: Given the fact that the very tight curve radii made it difficult to transport the formwork carriage, an innovative caterpillar system was used to move it. In addition, the formwork carriage impressed with its considerable dimensions of 8.07 m in height and 14.50 m in length as well as 10.70 m in width when ready to move and 11.20 m in width when ready to pour concrete.

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PERI also made their mark when it came to project support. The formwork carriage was assembled in front of the tunnel entrance under the guidance of a PERI supervisor. Only a short time later, the first concreting section was successfully completed, meaning that the formwork could be stripped the very next day and the formwork carriage moved forward to the next concreting section in an efficient and time-saving manner.

Mobile assembly and reinforcement carriages based on VARIOKIT

Before the tunnel formwork carriage was called upon, a mobile 6-m-long assembly carriage with rubber tyres and electric motor was used for the sealing work. This was followed by a reinforcement carriage adapted to the block length of 12 m, the principle of which is similar to the sealing carriage. Both carriages consist of a stable VARIOKIT base frame on which a PERI UP scaffold, adapted to the cross-sections, was erected. This made it possible to convert and relocate the carriages quickly and cost-effectively. What's more, the erected PERI UP scaffold served as a work platform for the site personnel. In the end, the drive was controlled by an integrated hydraulic system.

Comprehensive project support from PERI

Engineers from PERI Austria and the PERI Infrastructure Sales Support Unit worked together to develop a project solution that was tailored to all the customer's needs, combining an innovative and economical solution with outstanding product quality and customer service. Due to the complex geometric circumstances and other challenging boundary conditions, the customer was looking for a concept that would result in as much optimisation as possible. PERI was intensively involved as early as the planning stage, providing solution-oriented input. When it came to the operational implementation stage, there was constant communication between the parties, which meant that the formwork systems could be used in the optimum manner on the construction site and that the project was completed on schedule.

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Image 1

The A26 project stands out on account of its five different tunnel cross-sections. In addition, the bends feature tight radii of 50 m to 750 m and the tunnel gradients vary, making it difficult to implement the new transport network.

(Photo: PERI SE)



Image 2

To construct the 1,600-m-long access tunnel, PERI engineers developed the first customised and fully hydraulic special-purpose formwork carriage. This alone was sufficient to construct the different cross-sections in a total of 170 concreting sections.

(Photo: PERI SE)



Image 3

Given the fact that the very tight curve radii made it difficult to transport the tunnel carriage, an innovative caterpillar system was used to move it.

(Photo: PERI SE)

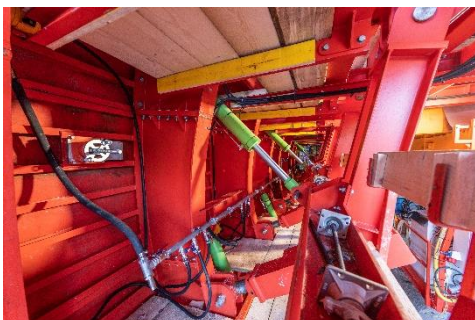


Image 4

The innovative caterpillar system has impressive dimensions of 8.07 m in height and 14.50 m in length, not to mention 10.70 m in width when ready to move and 11.20 m in width when ready to pour concrete.

(Photo: PERI SE)

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Image 5

The first concreting section was successfully completed in mid-November 2021. The formwork was stripped the following day and the formwork carriage moved forward to the second concreting section.

(Photo: PERI SE)



Image 6

Before the tunnel formwork carriage was called upon, a mobile 6-m-long assembly carriage with rubber tyres and electric motor was used for the sealing work. This was followed by a reinforcement carriage adapted to the block length of 12 m, the principle of which is similar to the sealing carriage.

(Photo: PERI SE)



Image 7

Engineers from PERI Austria and the PERI Infrastructure Sales Support Unit worked together to develop a tailored and innovative project solution.

(Photo: PERI SE)

Contractor

ICM construction GmbH, Vienna, Austria

Field service

PERI Austria

PERI Infrastructure Sales Support Unit

About PERI:

With sales of € 1,614 million in 2021, PERI is one of the leading manufacturers and suppliers of formwork and scaffolding systems in the world. The family-owned company, with its headquarters in Weissenhorn (Germany), a workforce of around 9,100 employees, more than 60 subsidiaries and well over 160 warehouse locations, provides its customers with innovative system equipment and comprehensive services relating to all aspects of formwork and scaffolding technology.

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