

Kömürhan Bridge

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How Doka is literally putting the 'Y' in Turkey

Constructed over the Karakaya Dam Lake, the Kömürhan Bridge will soon forge part of the Malatya-Elazığ State highway in Eastern Turkey. Measuring 600 metres in length, the bridge features a cable-stayed design with a single pylon, which stands at 165 m in height. This special type of bridge, which is the fourth single pylon cable-stayed bridge in the world, will also serve an important regional role as a logistics corridor, not only connecting Malatya and Elazığ, but also serving as a strategic crossing for the 16 provinces of Eastern Anatolia.

Located approximately 700 kilometres east of the Turkish capital of Ankara and 400 kilometres north of the Syrian border lies the province of Malatya, a region famed for its apricots and now the tallest pylon in the country. Standing at a height of 168.5 metres, the 'Y' shaped reinforced concrete tower is the centrepiece of the new Kömürhan Bridge, a suspension structure traversing the Fırat River and the Malatya-Elazığ regional borders. Stretching just over half a kilometre at 660 metres the bridge has an edge opening of 180 metres, a middle opening of 380 metres and a width of 24 metres. The deck cross-section will be orthotropic steel, while the superstructure of the bridge will be connected to the pylon with 42 tensioned cables. In context of the wider project, it is part of a 5,225 metres four-lane highway that includes a 120-metre viaduct and a 2,400 metres tunnel, providing passage to the Karakaya Dam a few kilometres to the south. The existing old bridge and crookedly connected roads will be preserved. The new bridge and the tunnel will be developed next to the existing route. It is planned that the Kömürhan Bridge will be completed in July 2020.

Working under the joint venture of Doğuş and Gülsan, Doka Turkey was awarded the contract to design and supervise the execution of formwork, which commenced in August 2017. With the bridge scheduled to open in 2020, we spoke with project manager, Mr. Taha Özdilek, who commented on his experience with Doka Turkey.

"Safety was our main priority on this project and Doka has maintained an excellent track record where this is concerned. Most of my team were accustomed with Doka's products and systems and knew that the solution presented, and the site support received would add much value. Our team was also familiar with Doka's solution for a similar project (Nissibi Bridge), which was delivered in 2015 and therefore knew they would be

well suited for the job.”

In terms of the practical formwork solution, the major challenge was focused on the pylon, specifically its unusual shape. Doka’s Automatic Climbing Formwork SKE 50 was used on the upper single core column of the pylon, while a specially adapted double set was used on the lower half with bespoke solutions created at junction points to maintain the highest standards of quality and safety. Large-area formwork Top 50 was used for the pylon with Doka D2/D3 and Load-bearing Towers Staxo 100 shoring systems for the approaching viaduct. While a tower and mobile crane were used for the pylon and viaduct respectively, the formwork solution was otherwise self-sufficient and delivered its portion of the project safely, on time and on budget.

Source: Doka GmbH