

Neuenkamp Bridge Dismantling

Lindapter Hollo-Bolts provided a solution for connecting reinforcement bracing to the steel box sections of the bridge during dismantling.

Project Background

Location: Duisburg, Germany
Product: Hollo-Bolt by Lindapter
Client: Deutsche Autobahn GmbH
Engineer: IngenieurBüro Grassl
Contractor: Hochtief

The Duisburg-Neuenkamp Rhine bridge was built in 1970 and over 50 years later was reaching the limits of its capacity as originally it was designed to carry 30,000 vehicles per day but now the number has grown to 100,000 per day. The number of vehicles using the bridge by 2030 was estimated at 126,500 per day as it is part of the A40 motorway and a main artery connecting the Ruhr area with the Lower Rhine and the Netherlands. To solve this issue plans were put in place to build two new bridges over the Rhine, the first was completed in 2023 and the second is due for completion in 2028.

Client Requirement

Following successful construction of the first new bridge in 2023 work began on the dismantling of the old bridge. This was the first time a cable-stayed bridge of this size had been dismantled in Germany so every small detail was considered for safety purposes. The plan was for the contractor to dismantle the bridge from above, one of the stages in this process would involve cutting the bridge in half and then cutting the huge steel box girders into 2.5m segments so that they could be lifted out using a crane and placed onto trucks to be taken away for recycling.

↑ HIGH
CLAMPING
FORCE ↓



Steel bracing struts connected to the base of the box sections with Hollo-Bolt

Neuenkamp Bridge Dismantling

Design Solution

Before the huge steel box sections of the bridge could be lifted out they had to be reinforced internally with cross bracing to prevent them from collapsing during the lift.

Steel bracing struts with L shaped flanges with two pre-drilled holes in each flange were designed and Lindapter's technical support team were happy to recommend Hollo-Bolt, an expansion bolt that only requires access from one side, to connect the bracing struts to the base of the box sections. Hollo-Bolt size M16 with hexagonal head was specified due to its high strength capacity.



Installation

Contractors gained access to the steel box sections of the bridge and brought in over 600 prefabricated bracing struts. Each one was positioned and drill locations through the L-shaped flanges marked, in total 8 per bracing strut. Holes were drilled in the base of the steel box sections to allow the Hollo-Bolts to be installed.

Installation of the Hollo-Bolts was quick and easy as each bolt was simply inserted into the predrilled holes of the flanges and into the holes of the box section base and then tightened with a wrench to the recommended tightening torque to provide the necessary clamping force.

Result

In total over 4,950 Hollo-Bolts were installed which provided a high strength connection that was quick and easy to install. Crucially all the reinforcement work and installation of the bracing struts could be done internally within the box sections avoiding the need to go outside or under the bridge which would have been costly and dangerous.

All of the bridges box sections were successfully and safely removed and taken away for recycling. The remaining parts of the bridge structure were also successfully dismantled and the project was completed on time.



Steel bracing struts installed inside and along the length of one steel box section

Benefits

- ✓ Safe connection solution
- ✓ Did not require external access
- ✓ High strength capacity
- ✓ Quick and easy to install



Click here to watch the installation video >>>

