PROJEKTBERICHT

Harpefoss, Innlandet

Harpe – the first extradosed bridge in Norway

Daten und Fakten

Unternehmen	Joint Venture Harpe Bru ANS: PORR Norge Infrastructure and JV Partner - Implenia Construction GmbH
Projektart	Brückenbau
Bauzeit	03.2014 - 12.2016
Auftraggeber	AF Gruppen for Statens Vegvesen Region Øst

Projektbericht Online

www.porr-group.com

PROJEKTBERICHT

Harpe – the first extradosed bridge in Norway

PORR was awarded with this project due to its experience in construction of such structures and well-conceived technological solutions. The Harpe bru structure is the first extradosed type bridge in Norway. This bridge combines elements of a beam and a cable-stayed bridge. Extradosed bridges are characterised by relatively low pylons and cables inclined towards the slab at a small angle. The construction was very demanding and entailed numerous challenges, such as for instance using (uncommon) type of lean concrete to construct load-bearing structures, or complying with restrictive environmental requirements.

An additional complication, which the bridge constructors had to face was meeting the imposed deadlines for completion of construction works around the river due to salmon spawning season. Moreover, there was an additional aspect of flood threat in the spring, which implied that it was necessary to complete works in the river before the 1st of May. The area where the works were performed is one of the roughest terrains when it comes to winter conditions. For instance, in 1994 (the year of the Winter Olympics in Lillehammer) temperatures of -50°C were recorded in this area. Even though the temperatures were not that low for two consecutive winters which the construction workers from PORR spent on site, they still experienced temperatures reaching nearly -30°C.

At the very beginning, when the PORR Company noticed all these threats, it came out with an initiative and proposed change of technology in which the structure should be constructed, which aimed at reducing the impact of all these factors on the works to a minimum, and hence to deliver the structure on time. The Employer consented to the proposed changes. At the time when works were most intensive, almost 100 people involved in the project were working on-site. The changes, approved by the Employer, allowed to maintain the original look of the bridge almost in 100 percent. A balanced cantilever method was used to construct the load-bearing structures. The so-called cantilever forming travellers were used simultaneously on two piers. This allowed for speedy construction of the load-bearing structure. The first concreting was performed in August 2015 and completed in February 2016.

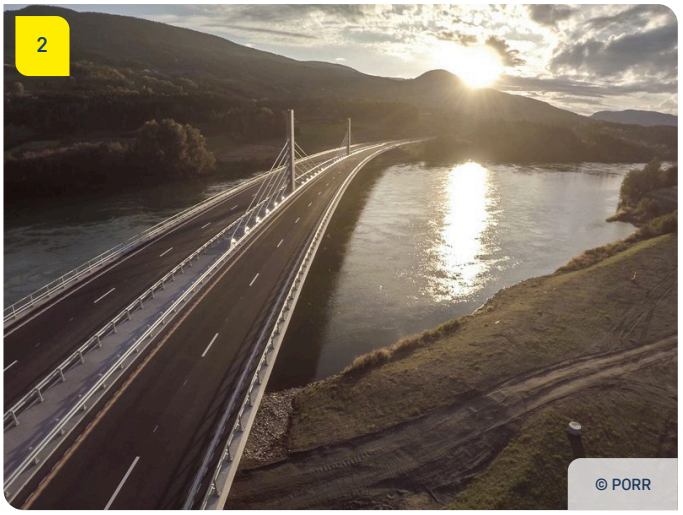
28 segments and locking sections, the so-called keystones were to be constructed out of two bridge piers. An additional technical challenge, when compared with the traditional balanced cantilever method, was the installation of external pre-stressing cables on 24 segments and complicated geometry of the load-bearing structure, that requires well-conceived solutions in promoting equipment.

Basic structures data:

1. Harpe bru – the main bridge structure, 330m long, designed as the so-called “extradosed” bridge. The main bridge span length of 100m. Pylon height of 16,0m. Setting: direct/indirect on core and bored foundation piles Ø711
2. Solhaug bru – Three-span 26+28+26m reinforced concrete bridge with pre-compressed reinforced concrete 1.20m thick slabs. Setting directly on a rock.
3. Vinstersletta bru – five-span 23+25+30+25+23 reinforced concrete bridge with pre-compressed reinforced concrete 1.20m thick slab. Direct setting.

Quantity:
Reinforcement to 2700
Ordinary concrete m³ 9850
Lean concrete m³ 3355
Pre-stressing mMN 41300
Railings m 2184

Impressionen



Bildhinweise

1 Harpe Bridge

2 NO Harpe bru 7

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Harpe Bridge

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Harpe Bridge

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Harpe Bridge

A balanced cantilever method was used to construct the load-bearing structures. The so-called cantilever forming travellers were used simultaneously on two piers. This allowed for speedy construction of the load-bearing structure.

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Sie haben Fragen zum Projekt oder würden gerne mehr erfahren? Kontaktieren Sie uns gerne für weitere Informationen.

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