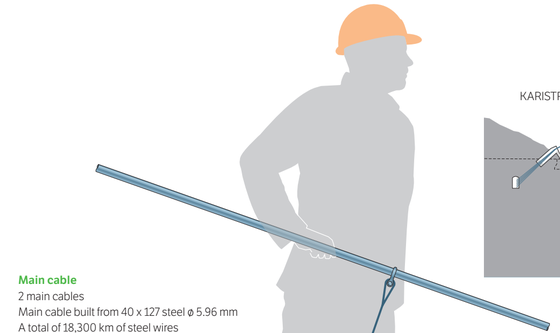
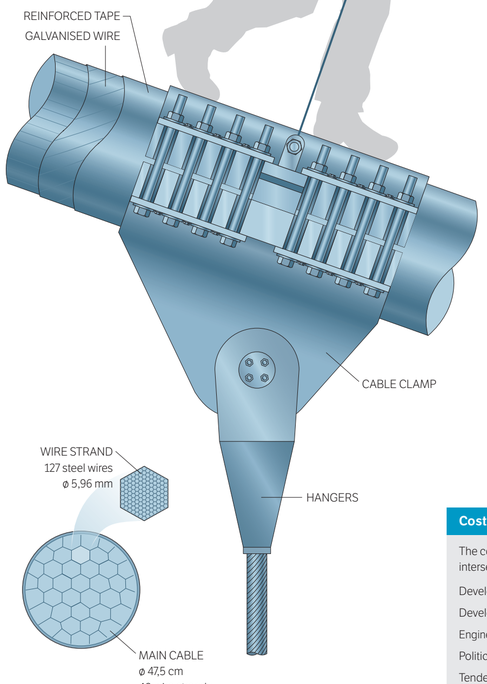
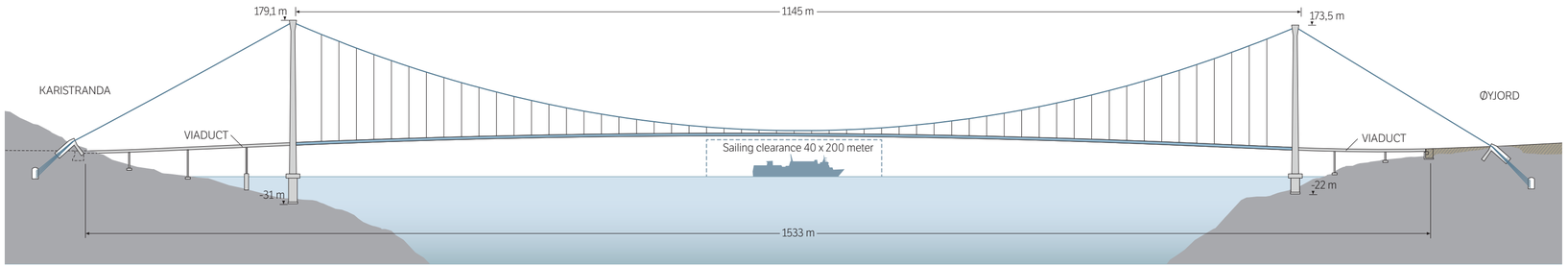


Main cable
2 main cables
Main cable built from 40 x 127 steel ø 5.96 mm
A total of 18,300 km of steel wires
Diameter = 0.475 metres – compacted and wrapped
Each main cable weighs 2000 tonnes





Suspension cables and hangers FACTS

The suspension cables are made up of 40 wire strands, each consisting of 127 wires that are 5.96 millimetres thick. The wire strands are prefabricated with a socket at each end, and come cut-to-length on reels. The cables are pulled by tackles and pulleys from Øyjord across to Karistrand. From tower to anchorage there are two additional cables per suspension cable at Karistrand, and four additional cables per suspension cable at Øyjord.

When all cable strands are in place, the strands will be compacted into a circular shape by the use of a hydraulic press. Then the cable bundle is wrapped with a soft galvanised wire to maintain its shape. On the outside of the wrapping wire, a reinforced tape is applied to protect against the elements. Even though the strands are tightly compressed, the cable still contains around 20 % air. The cables are dehumidified by the injection of dry air.

The cables are then fitted with clamps, to which the hangers are attached. The hangers are also made from steel wires. On the outside of the hangers there are three layers of z-shaped galvanised wire which in turn are protected by a coat of paint. In both ends of the hanger there is a cast socket. The upper socket is attached to the cable clamp and the lower one is attached to the bridge deck.

Costs, progress and construction time FACTS

The cost of the Hålogaland bridge with adjoining roads, tunnels and intersections has been estimated at NOK 2.9 billion (2014 currency).

Development of municipal sector plan	2003 – 2006
Development of zoning plan	2006 – 2008
Engineering design and technical pre-tender approval	2007 – 2012
Political decision on financing	12 June 2012
Tender phase	2012 – 2013
Construction time	2013 – 2017

Schematic diagram of the cable system from above

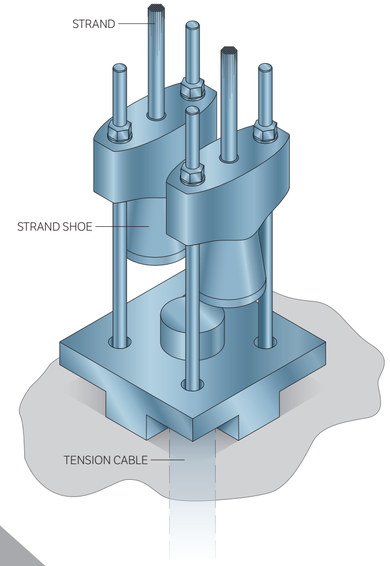
The Hålogaland Bridge FACTS

Construction began in the autumn of 2013 and completion is planned for 2017. The viaduct up to the towers, and and the towers themselves, are being built in concrete. Estimated time of construction is 2 years. This also includes concrete constructions for anchorage of main cables.

Steel construction work began in late 2014, with the manufacturing of steel components such as cable wires, hangers, saddles and box girders. Steelwork assembly will begin in the autumn of 2015.

Rigging and assembly of suspension cables is estimated to take approximately 1 year.

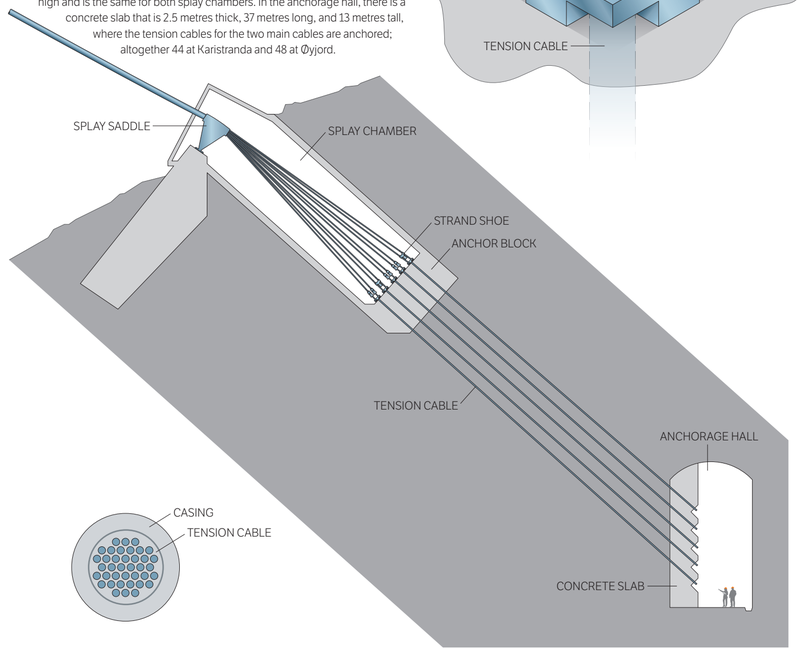
After this, assembly of steel box and completive work is estimated to take approximately 1 year.
The bridge is constructed using 35,000 m3 of concrete. The E6 highway will be 18 km shorter.

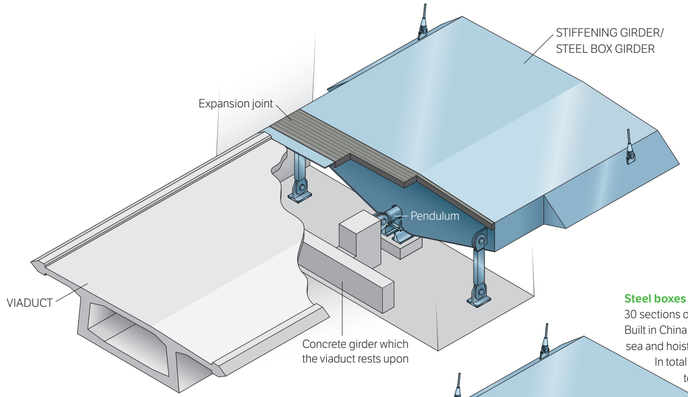


Cable anchorage FACTS

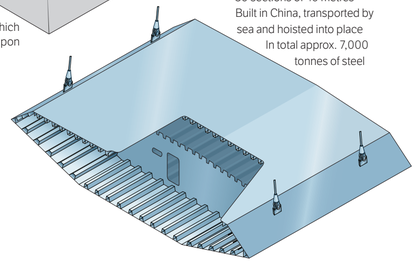
The cable anchorage consists of splay chamber and anchorage hall. The main cables pass over a splay saddle and are attached to an anchor block which in turn is attached to a tension cable. There are 20 tension cables that are grouted to a casing which is bored 30 metres through rock to the anchorage hall.

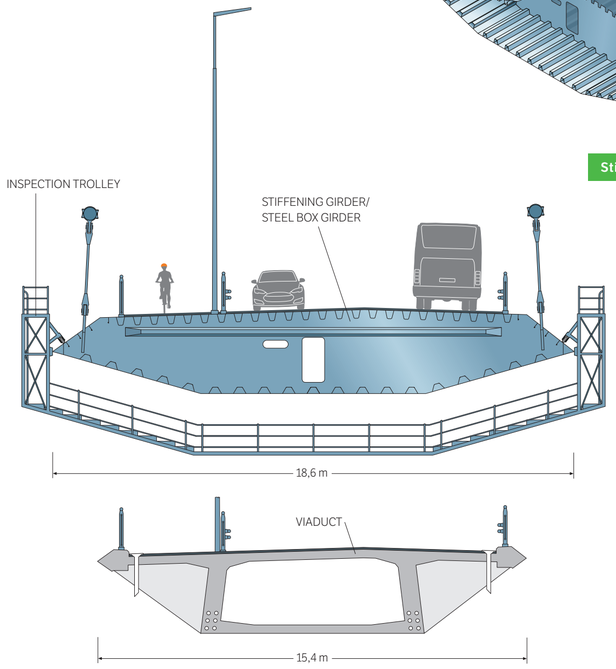
The anchorage hall is a mountain hall that is 40 metres long and 15 metres high and is the same for both splay chambers. In the anchorage hall, there is a concrete slab that is 2.5 metres thick, 37 metres long, and 13 metres tall, where the tension cables for the two main cables are anchored; altogether 44 at Karistranda and 48 at Øyjord.





Steel boxes
30 sections of 40 metres
Built in China, transported by sea and hoisted into place
In total approx. 7,000 tonnes of steel



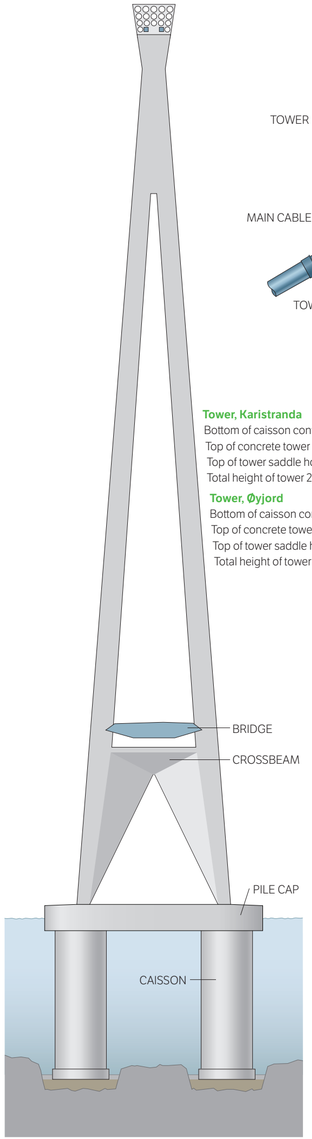


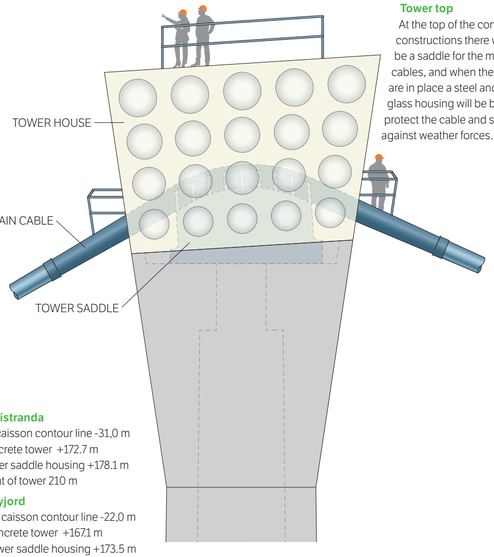
Stiffening girder FACTS

The stiffening girder is a steel box and constitutes the actual bridge deck in the suspension span. This is constructed as a closed steel box with trapeze-shaped stiffening trusses and transverse bulkheads in 30 sections. Every section is lifted into place and attached to the suspension hangers, which are attached to the main cable at 20-metre intervals. The middle section is installed first, and further installations are made symmetrically from the middle.

The steel boxes are dehumidified inside by dry air being blown through them.

A transport vehicle with room for two people is installed inside the steel box, for future inspections and maintenance.

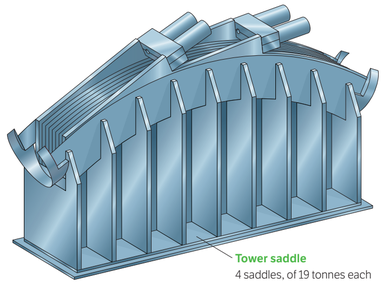




Tower top
At the top of the concrete constructions there will be a saddle for the main cables, and when the cables are in place a steel and glass housing will be built to protect the cable and saddle against weather forces.

Tower, Karistranda
Bottom of caisson contour line -31,0 m
Top of concrete tower +172.7 m
Top of tower saddle housing +178.1 m
Total height of tower 210 m

Tower, Øyjord
Bottom of caisson contour line -22,0 m
Top of concrete tower +167.1 m
Top of tower saddle housing +173.5 m
Total height of tower 195.5 m



Tower saddle
4 saddles, of 19 tonnes each

Bridge towers FACTS

The bridge towers are built in concrete and are A-shaped. The towers are founded on rock at -31 and -32 metres below sea level. In the tidal zone the two caissons are linked by a pile cap that is up to 5 meters thick, a little more than 42 metres long and almost 16 metres wide.

The caissons are produced by slip-form casting and are sunk to the sea floor. After the pile cap has been cast and hardened, a climbing formwork is rigged and the bottom part of the tower columns is cast in five stages. Immediately below the roadway the tower columns are connected by a crossbeam. When the crossbeam is finished, further casting is done by slip-form casting up to the connection at the top of the tower. The tower top is cast using conventional formwork. Inside the bridge towers, there is a lift in the one tower column and stairs in the other.

13-0157 grafisk.senter@vegvesen.no Illustrations: Jon Opseth Print: Spectra Offset AS

Statens vegvesen

Technical brochure

The Hålogaland bridge

Illustration: Architects DISSING+WEITLING