

Odin's Bridge

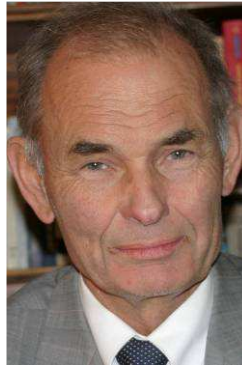
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Kjeld Thomsen born 1936, grad. 1960 from Copenhagen Technical University. Founder of ISC Consulting Engineers A/S in 1967. Specialist in bridge design and steel structures. Honoured with ECCS steel design award 5 times and IABSE bridge design award 2001.



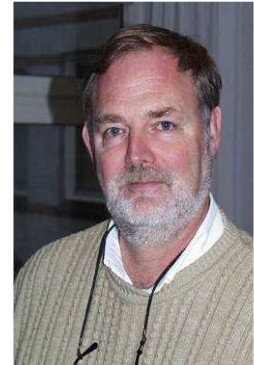
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Summary

The new bridge crossing the Odense Canal on the island Funen Denmark is named Odin's Bridge. Odin was a god in Nordic mythology and was the name giver to the city Odense. The bridge has closed a long missed gap in the infrastructure of the road system surrounding Odense which is the third largest city in Denmark.

An international competition was opened in December 2008 according to the EU's service directive and 6 groups were pre-qualified to compete for being successful in obtaining the contract for design of the bridge.

ISC Consulting Engineers A/S and their sub-consultants were finally in September 2009 selected as winners of the international design competition for a 900 m long bridge connection comprising a bridge crossing the 80 m wide Odense navigation canal and on the western side of the canal an approximately 540 m approach bridge and dam joining the main circular road.

On the eastern side an approach span and a short dam have been included in the total contract. The key part of this connection is the 194 m long swing bridge -the longest yet in northern Europe with several outstanding features in the design. The main structure is designed in steel as a twin box girder bridge with a 3 m clearance between the box girders. The centre span of the bridge is 120 m and the side spans are 37 m each. The bridge shall be constructed in an environmental sensitive area which requires as little impact on the surrounding nature as possible. Another prime requirement for the bridge solution crossing the canal was to choose a solution providing the maximum navigational width opening.



Fig. 1 Swing Bridge - Visualization

The present twin swing bridge with the centre supports pulled back from the quay side full-filled these requirements. The bridge should also have an esthetical link with a new administration building for Odense Harbour in which also the operating centre for the bridge should be located.

The prime goal for the solution proposed by the consulting group was to minimize damage to the surrounding nature, which was achieved by letting the canal pass untouched under the bridge as well as letting the surrounding roads on the canal sides pass under the bridge.

A parameter study of alternative bridge concepts for instance hydraulic operated bridges was cored out to prove that the selected bascule swing bridge was the utmost feasible.

Keywords: Swing Bridge; Rotating support; Slide bearings; Monoplane structure; Box section; Pile foundation; Dowel joint; Abutment; Mechanical system; Hydraulic system