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The Øresund Bridge: The Tender Project

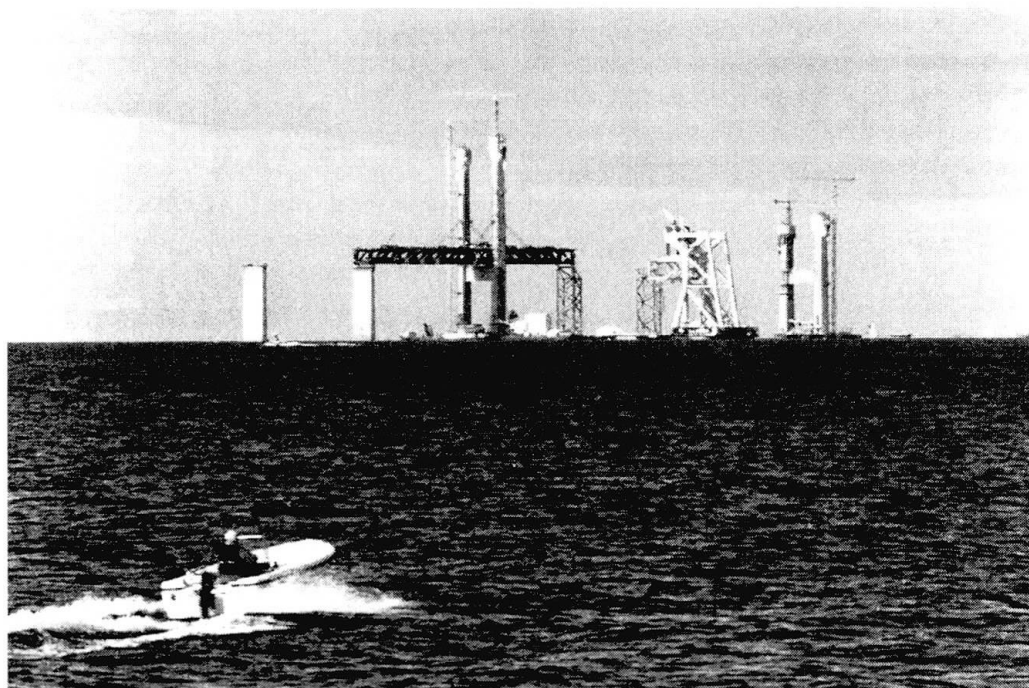
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Abstract

ASO Group was formed in December 1992 in order to prequalify for the design/consultant competition for the Øresund Link. The outcome of the competition was that ASO Group was retained by Øresundskonsortiet to develop their two-level bridge design further in order to make it suitable for tendering.

Tender documents were issued to prequalified contractor consortia for two separate 'design and construct' contracts: one for the 1.1km cable-stayed High Bridge and one for the 6.7km Approach Bridges. Due to Owner's preferences and due to the possibility of having two different contractors along the bridge, the detailed geometry of the bridge was contractually defined in the tender documents by so-called Definition Drawings.

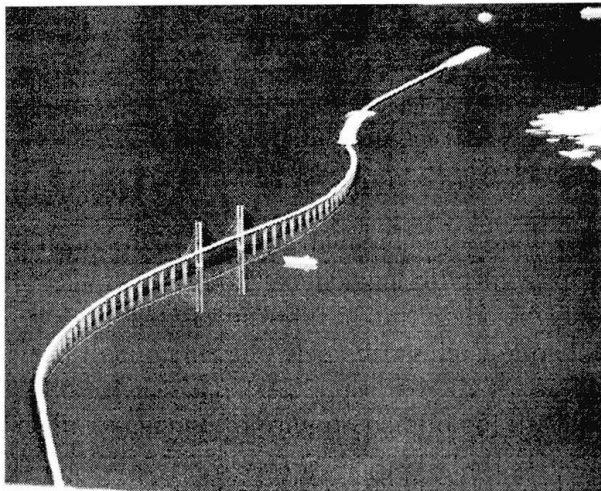


The Cable-Stayed High Bridge during Construction

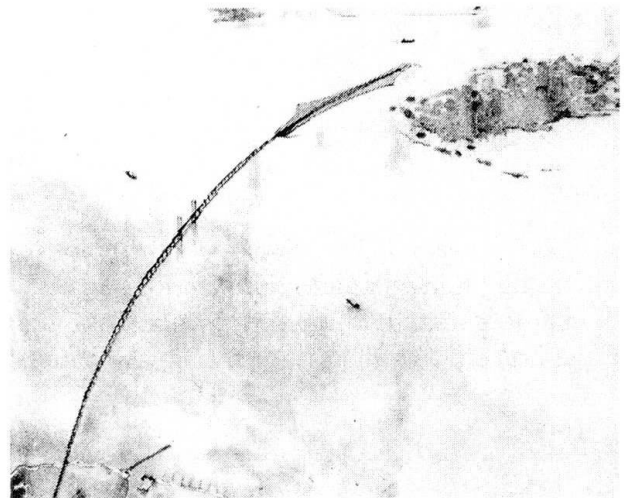
The paper will describe the tender design, issued to the bidders in December 1994, and will demonstrate the consistency and robustness of ASO Group's competition design by highlighting the very few changes introduced during the development of the design during the preparation of the tender documents and also during the contractor's detailed design and construction of the bridge.

The main changes during preparation of the tender design were:

- a revised horizontal alignment when an S-curve was superseded by a gentle C-curve,
- the pylon cross section was modified from being hexagonal to being pentagonal and
- the cross section of the lower railway deck was modified - a flat concrete slab acting compositely with a longitudinal trapezoidal steel stringer was changed to double concrete troughs spanning between transverse steel box beams.



S-curve alignment

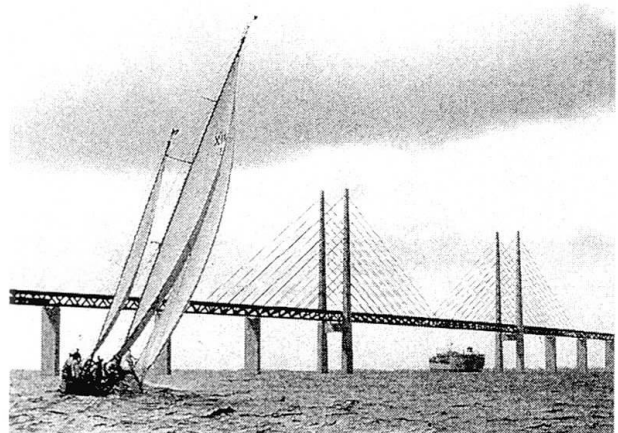


C-curve alignment

A further slight modification introduced in the 'Definition Drawings' was that the contractors were given a certain freedom in choosing the span length of the approach spans. The competition design had assumed 120m spans but the contractors were given the choice of 100m, 120m or 140m. If several span lengths were chosen the shorter span should be positioned closest to the shore.

During the construction of the bridge very few changes have been necessary, the most important being a modified pier top detail to provide space for the larger bearings required due to the successful contractor's choice of 140m spans. A service walkway below the emergency walkway at the railway deck has been incorporated and small modifications have been made to the two abutments.

The design as-built has followed the Definition Drawings and the finished bridge will have the appearance the Owner envisaged when he signed the construction contract.



The Øresund Bridge in the year 2000