

Zeitschrift: IABSE reports = Rapports AIPC = IVBH Berichte
Band: 82 (1999)

Artikel: Comfort criteria for high speed trains on the Øresund Bridge
Autor: Gimsing, Jørgen / Thomsen, Anders
DOI: <https://doi.org/10.5169/seals-62151>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 05.08.2025

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>



Comfort Criteria for High Speed Trains on the Øresund Bridge

Jørgen GIMSING
 Civil Engineer MSc
 Gimsing & Madsen A/S
 Horsens, Denmark

Jørgen Gimsing received his degree from the Technical University of Denmark in 1967. He is Managing Director of Gimsing & Madsen A/S and Technical Manager of the ASO Group.

Anders THOMSEN
 Civil Engineer MSc
 ISC
 Copenhagen, Denmark

Anders Thomsen received his degree from the Technical University of Denmark in 1994. He has worked as design engineer for the ASO Group on the Øresund Bridge design for 3 years and joined ISC in 1998.

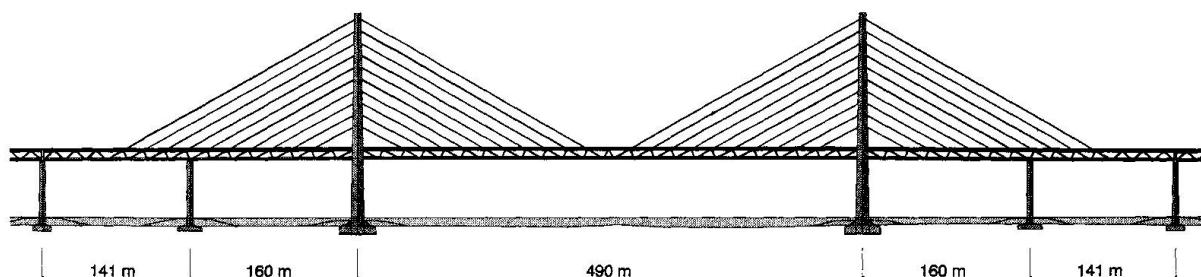
Abstract

The comfort criteria for the Øresund Bridge are based on the ORE reports, which specify rules for limitation of:

- vertical accelerations
- torsional deformations
- deformations at expansion joints

The Danish and Swedish Railway Authorities had furthermore specified that the wheel pressure shall be at least 75% of the static wheel pressure for all train types:

During the pre-tender phase ASO Group carried out a comprehensive study of the effects of these requirements on the design of the two-level bridge.



The 490m main span is the longest cable-stayed span in the world carrying both road and rail

Four types of passenger trains were specified to travel at a design speed of 200 km/hour, they were:



- the Swedish X 2000 train
- the Danish IC 3 train
- the Danish IR 4 train
- the Euro City train

Furthermore a heavy freight train travelling at 120 km/hour was investigated. Due to poor spring characteristics of the wagons in this train it was found that the wheel relief requirement mentioned above could not be fulfilled, when an empty wagon of this train passed an expansion joint. It was finally decided to waive this requirement as being unrealistic.

The analyses aimed at simplifying the requirements for the number of investigations to be carried out by the Contractor's designer in the detailed design. This would be possible if it was demonstrated that some of the trains would always experience smaller accelerations than other trains, or if the requirements for vertical accelerations were more onerous than the requirements for deformations at expansion joints or vice versa. It was, however, found that no such simplification could be made.