Zeitschrift:	IABSE reports = Rapports AIPC = IVBH Berichte
Band:	83 (1999)
Artikel:	Investigation of Highwall carrier made of wood
Autor:	Takac, Stjepan / Bogicevic, Predrag
DOI:	https://doi.org/10.5169/seals-62958

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. <u>En savoir plus</u>

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. <u>Find out more</u>

Download PDF: 22.07.2025

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



Investigation of Highwall Carrier Made of Wood

Stjepan TAKAC Professor Faculty of Civil Engineering Osijek, Croatia

Stjepan Takac born 1941, recived his civil engineering degree from Univ. of. Sarajevo, BiH in 1967 and Phd in 1992 from Univ. of. Zagreb, Croatia.

Predrag BOGICEVIC

Civil Engineering Faculty of Civil Engineering Osijek, Croatia

Predrag Bogicevic, born 1970, received his civil engineering degree in 1998 from Univ. of J.J. Strossmayer in Osijek

1. Summary

Experimental research of bearing power and deformity of highwall carrier made of wood has been displayed in this paper. These structures are often found in wood constructions but their bearing power is mostly not used. This understanding motivated research of surface highwall carriers at the Faculty of Civil engineering, University of JJ Strossmayer in Osijek. Experimental and theoretical researches were done within the scientific project "Investigation of surface highwall carrier". The research of relation H/L=1/2 carrier was accepted as a starting point at which highwall carrier effect begins at isotropic material.

2. Introduction

Wood is not homogenous material. It is mechanically anisotropic-orthotropic. These characteristics, are making difficulties in mathematical description of respond material and construction on outside forces. Mathematical modelling of surface problems in wood constructions requires hard work and powerful computer support. Theoretical results of researching don't make sense without experimental confirmation. Modern powerful computers, by using final elements program, make possible access to problem of surface wood constructions.

Highwall carriers in wood constructions are made in two levels. One is made of grillage member elements, on which lining is made of panels based on wood. Connection of those two systems is made by nailing or gluing, what is technologically possible only in a factory.

Highwall carrier constructions are mostly visible in forming vertical boulders at high building constructions, at floor and roof constructions. We find lining made of wood panels, as primary construction for overtaking outside forces, perpendicular on its planar structure. Cognition of stiffness of highwall carriers in plane can make using for overtaking of actions on its planar surface possible. Most of actions come from mail carrier's stabilisation, wind force, earthquakes etc.

There is a practical question: can the stiffness of highwall carriers be used for overtaking of actions, which are mentioned, while bracing for room's stability could be left out? Positive answer to this question is making building more economical.



Fig. 2 Model of highwall carrier

3. The Process of Model Testing

The experimental research is done on four models:

- model I : the main grillage wooden beam (Fig. 3)
- model II : truss carrier formed on model II (Fig. 3)
- model IIIA: surface carrier, panels obesity 20 cm, nails on interval 20 cm
- model IIIB: surface carrier, panels obesity 28 cm, nails on interval 10 cm

Loading of the model was made by the system of hydraulic press, placed on connection with secondary beams.

Intensity of loading is directed to the value of mid-span displacement and is defined in norms HRN.U.C9.220 and also in DIN 1052 part 1.