

**Zeitschrift:** IABSE congress report = Rapport du congrès AIPC = IVBH  
Kongressbericht

**Band:** 5 (1956)

**Artikel:** The safety of prestressed concrete as affected by creep and fatigue:  
discussion

**Autor:** Harris, A.J.

**DOI:** <https://doi.org/10.5169/seals-6132>

### **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:** 21.02.2026

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

## V 8

### **The safety of prestressed concrete as affected by creep and fatigue**

*Discussion*

### **Die Sicherheit beim vorgespannten Beton unter Berücksichtigung des Kriechens und der Materialermüdung**

*Diskussion*

### **Efeito da fluência e da fadiga sobre a segurança das estruturas de betão preesforçado**

*Discussão*

### **Influence du fluage et de la fatigue sur la sécurité du béton précontraint**

*Discussion*

A. J. HARRIS

*B. Sc (Eng.) M. I. C. E.*

*Consulting Engineer*

London

Professor Freudenthal's remarks on the safety of prestressed concrete as affected by creep and fatigue are of a speculative nature.

Now speculation is of value in inverse proportion to the number of facts available.

It so happens that there is a large body of experimental facts concerning creep of concrete, cracking load and fatigue strength of concrete beams in existence; these facts have been built up continuously over the last 30 years and more. Speculation on these subjects which takes no account of these facts is impermissible.

In particular, Professor Freudenthal suggests that a prestress of more than 0.25 fc will result in loss of security against cracking. It is common practice to prestress to much higher stress values than this; if Professor Freudenthal believes that such stress values are harmful to security against cracking he must prove it, either by quoting tests which have already been carried out (and we have noted that there are many such) or by arranging tests himself.

The divergence between fact and speculation is even more startling when we consider Professor Freudenthal's remarks on fatigue. An appre-

ciable number of fatigue tests have been carried out, very few have caused fatigue failure and their general import seems to be that the fatigue strength of prestressed concrete relative to its static rupture strength is higher than that of any other structural material. It may be noted in passing that it is rare that there is any appreciable variation in stress in the anchorage zones of prestressing tendons.

#### S U M M A R Y

Professor Freudenthal's statement on the safety of prestressed concrete as affected by creep and fatigue is indefensible.

His remarks on rupture and working loads are particularly startling and are contrary to all experimental results obtained so far.

#### ZUSAMMENFASSUNG

Die von Professor Freudenthal vertretene Auffassung betreffend der Sicherheit von vorgespanntem Beton im Zusammenhang mit dem Kriechen und oft wiederholter Beanspruchung ist nicht haltbar.

Im Besonderen sind die Bemerkungen über die Bruchsicherheit und die Arbeitsfestigkeit erstaunlich und widersprechen jeden bisherigen Versuchsergebnissen.

#### R E S U M O

A comunicação do Professor Freudenthal acerca do efeito da fluência e da fadiga sobre a segurança das estruturas de betão preesforçado não é defensável.

As observações apresentadas acerca das cargas de rotura e das cargas de serviço são particularmente surpreendentes e contradizem todos os resultados experimentais obtidos até hoje.

#### R É S U M É

La communication du Professeur Freudenthal concernant l'influence du fluage et de la fatigue sur la sécurité du béton précontraint n'est pas défendable.

Les observations présentées sur les charges de rupture et de service sont particulièrement surprenantes et contredisent tous les résultats expérimentaux obtenus jusqu'à présent.