

Zeitschrift: IABSE reports of the working commissions = Rapports des commissions de travail AIPC = IVBH Berichte der Arbeitskommissionen

Band: 23 (1975)

Artikel: Calcul et comportement des poteaux encastres sollicités en flexion biaxiale

Autor: Vinnakota, S.

DOI: <https://doi.org/10.5169/seals-19811>

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>

CALCUL ET COMPORTEMENT DES POTEAUX ENCASTRES
SOLLICITES EN FLEXION BIAXIALE

Dr. S. Vinnakota
Ecole Polytechnique Fédérale
Lausanne
Suisse

ABSTRACT

Analytical procedures are developed for the determination of the load-deformation characteristics of elastically restrained, inelastic beam-columns under biaxial bending and torsion (Fig. 1).

The equilibrium equations are written with respect to an arbitrary system of axes. The resulting fourth order coupled nonlinear differential equations are solved using the method of finite differences.

The method is programmed for the CDC 6500 Computer at Federal Institute of Technology, Lausanne. This Computer program is utilized for the solution of various numerical examples.

Some of the salient features of the theory are given below :

- i) The member is primastic, originally straight and untwisted.
- ii) The open cross-section considered in the theory is arbitrary in shape. However, the computer program is limited at present to H-shaped sections only.
- iii) Two rotational restraints are provided at each end to simulate the effect of minor and major axis beams on the behaviour of column.
- iv) Two directional restraints are considered at each end to simulate the effect of relative deflection of the ends (Sway or P- Δ effect) on the behaviour of column.
- v) At each end a rotational spring against rotation is also included.
- vi) The bar is subjected to end loads only. At each end, they may consist of : axial load, moments, transverse loads, torsional moment and bi-moment.

THIS PAPER HAS BEEN PUBLISHED IN THE JOURNAL:

CONSTRUCTION METALLIQUE, Vol. 2/1973,

published by the CENTRE TECHNIQUE INDUSTRIEL DE LA CONSTRUCTION METALLIQUE,

Puteaux, France.