Analysis of the elastic stability of cylindrical caissons.

- - A Simplified Method of Elastic

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Stability Analysis of the Caisson Breakwater Founded on Multi

A simplified method of elastic-stability analysis for thin cylindrical shells I : Donnell's equation The equation for the equilibrium of cylindrical shells introduced by Donnell in NACA Technical Report no. Cylinders with low axial restraint are shown to be imperfection insensitive, with collapse loads above, or close to, the bifurcation load.

A Simplified Method of Elastic

Also, the effect of values and distribution of the cable pretensions on structural stability is studied, and the influence of half-span loading on structural stability is investigated. The resulting partial differential equation in terms of the radial displacement of the shell is of the tenth order instead of the eighth, for the classical elastic case.

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Results indicate that the static properties and stability of the structure can be most effectively improved for adoption of the crossover arrangement of the cables and struts according to the buckling shape of the non-pretensioned structure. A Simplified Method of Elastic-Stability Analysis for Thin Cylindrical Shells This paper develops a new method for determining the buckling stresses of cylindrical shells under various loading conditions. Using this method of analysis, the factors affecting the accuracy of Bishop's simplified method have been investigated.

Stability analysis of gradient elastic circular cylindrical thin shells

In part I, the equation for the equilibrium of cylindrical shells introduced by Donnell in NACA report no. Cite this paper as: Li F. En utilisant cette méthod d'analyse, on a étudié les facteurs qui affectent la précision de la méthode simplifiée de Bishop.

Buckling and collapse of cylinders with one end open and one end simply supported with varying axial restraint

On décrit une méthode d'analyse pour déterminer le facteur de sécurité d'un remblai contre la rupture sur une surface de glissement cylindrique. On est arrivé à des diagram-mes pour les trois valeurs différentes de coefficient de pression interstitielle r u quiidentifient la position du cercle de glissement critique. The collapse load and imperfection sensitivity of cylinders with the boundary conditions examined here is also found to be a

function of the axial restraint.

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The varying axial restraint is applied in the form of linear springs. The influence of boundary conditions related to edge displacements in the shell median surface is discussed. A set of stability charts is also given.

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Those results can provide a theoretical basis for the practical design of caisson breakwater.

Stability analysis of gradient elastic circular cylindrical thin shells

In part II, a modified form of Donnell's equation for the equilibrium of thin cylindrical shells…. Many geotechnical failure modes may take place. The basic static properties of the pretensioned reticulated mega-structures with different types of cable-strut arrangements are compared and the optimal one is then selected.

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