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PRINT ISSN : 0289-8063

STRUCTURAL ENGINEERING / EARTHQUAKE ENGINEERING

Vol. 21 (2004) , No. 1 pp.27s-41s

[PDF (691K)] [References]

A SHAPE-FINDING ANALYSIS OF SUSPENDED STRUCTURES ON THE DISPLACEMENT-METHOD EQUILIBRIUM

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(Received: March 19, 2003)

By its geometrical nonlinearity, the realization of a desired suspension structure depends on the shape-finding procedure. In an actual suspension structure, cable members are usually combined with bending members. For a beam-cable structure, in this study, the displacement method is employed to deal with the structural equilibrium, but in which each cable member is treated as the elastic catenary through a force-method computation. Thereafter an iterative scheme of shape finding is developed for such a mixture of cable and beam members, which is based on the tangent coefficients to change of the cable natural lengths on each updated equilibrium configuration.

Key Words: shape finding, displacement method, elastic catenary, iteration

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To cite this article:

Masahiro AI and Hironori IMAI; “A SHAPE-FINDING ANALYSIS OF SUSPENDED STRUCTURES ON THE DISPLACEMENT-METHOD EQUILIBRIUM”, *Structural Eng./Earthquake Eng.*, Vol. 21, No. 1, pp.27s-41s, (2004) .

doi:10.2208/jsceseee.21.27s

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