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Stability of Composite Struts Using the Modified Newmark Method

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Abstract : The aim of this paper is to examine the behavior of elastic stability of reinforced and composite concrete struts with axial loads. The objective of this study is to verify the ability of the Modified Newmark Method to include geometric non-linearity in addition to non-linearity due to cracking, and also to show the advantage of the established method to reconsider an ignored minor parameter in mathematical modeling, such as the effect of the cracking by extra geometric bending moment Ny on cross-section properties. The purpose of this investigation is not to present some new results for the instability of reinforced or composite concrete columns. Therefore, no kinds of non-linearity involved in the problem are considered here. Only as mentioned, it is a part of the verification of the new established method to solve two kinds of non-linearity P- δ effect and cracking together simultaneously. However, the Modified Newmark Method can be used to solve non-linearity of materials and time-dependent behavior of concrete. However, since it is out of the scope of this article, it is not considered.

Keywords : stability, buckling, modified newmark method, reinforced
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