

ملخص البحث رقم (1)

العنوان باللغة الإنجليزية:

Improved Applied Element Model for Bonded Prestressed Concrete Structures

الملخص باللغة الإنجليزية:

The current study introduces an extension for the multilayered improved applied element method to provide a tool for bonded prestressed concrete structures. In the new extension, a new layer has been implemented to represent the behavior of the prestressing tendon and the transfer of the stresses between the tendon and concrete. Furthermore, an initial load step has been developed to consider the effect of prestressing. During this load step, an initial strain is produced in the tendon layer to represent the effective prestressing. Both material inelasticity and geometric nonlinearity have been considered in the proposed model. Several verification examples under monotonic and cyclic loading are presented to examine the reliability of the model and identifies its limitations. Comparison between the analytical and experimental results has shown good agreement, highlighting the reliability of the new extension.

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