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ملخص البحث رقم (2)

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العنوان باللغة الإنجليزية:

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Numerical simulation of unbonded prestressed concrete beams using improved applied element method

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الملخص باللغة الإنجليزية:

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This paper introduces a first attempt of numerical simulation based on the improved applied element method to predict the behavior of prestressed concrete beams with internal unbonded tendon. The multi-layered element is used for modeling the reinforced concrete beam while the unbonded tendon is modeled as an assemblage of straight normal springs that connect the anchorage points with dummy elements generated between each two successive multi-layered elements. Furthermore, an initial loading procedure is added in which the springs representing the tendon are exposed to an initial strain to consider the effect of prestressing. During the analysis, the strain in the unbonded tendon is assumed to be constant along the beam length and is calculated from the displacements of all the dummy elements and anchorage points. Material and geometric nonlinearities are considered in the proposed model for both the multi-layered element and the unbonded tendon. Several veri fication examples are presented to examine the capability of the model. Comparison between the numerical and the experimental results has shown good agreement, highlighting the reliability of the proposed model.

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المجلة والعدد:

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تاريخ النشر:

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