

عنوان مقاله:

IMPROVEMENT IN AXIAL STRESS-STRAIN BEHAVIOR OF COLUMNS USING PRE-STRESSED NON-LAMINATED FRP

محل انتشار:

سومین کنفرانس بین المللی بتن و توسعه (سال: 1388)

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نویسندگان:

H Hajiloo - M.Sc. Student, School of Civil Engg. Tehran University, Tehran, Iran

M Motavalli - Assistant Professor, School of Civil Engg. Tehran University, Tehran, Iran - Swiss Federal Laboratories
(for Materials Testing and Research (Empa

A Hosseini - Assistant Professor, School of Civil Engg. Tehran University, Tehran, Iran

خلاصه مقاله:

As a new approach to obtain high efficiency from FRP confinement, pre-stressing of FRP composites have been introduced. Pre-stressed FRP straps change confinement situation from passive to active confinement. At active confinement, without considerable axial stress, confining stresses due to pre-stressed FRP composites are present in perimeter of column. In this paper, an innovative method is presented to confine square reinforced concrete columns using non-laminated CFRP straps. Tests were carried out on three medium scale columns (2.0 m high with a cross section of 0.4 m x 0.4 m). Numerical analyses are performed to predict the effects of the pre-stressing at square column. In this paper, a new geometrical model to account for the effects of FRP pre-stressing and shape modifying of the section is proposed which describes better distribution of confinement stresses. Using FE modeling and proposed model, effectiveness of FRP confinement is revised and effectively confined area increased.

کلمات کلیدی:

columns, finite element, confinement, effectiveness, pre-stressing

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