

Prediction of Shear Strengthening of RC beams using Embedded Through Section (ETS) Technique Using Artificial Neural Networks (ANN)

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ABSTRACT

Embedded Through-Section (ETS) technique is a relatively recent shear strengthening strategy for reinforced concrete (RC) beams, and consists on opening holes across the beam thickness, with the desired inclinations, where bars are introduced and are bonded to the concrete substrate with adhesive materials. The artificial neural networks (ANN) were used to develop a number of models in order to predict the ultimate shear strength of reinforced concrete deep beams shear strengthened with ETS technique for both normal and high concrete compressive strength. In this research a large number of experimental results databases will be collected carefully from previous studies. This database will contain experimental results for normal and high strength respectively. The feed forward back propagation neural network was used to build up the required model. Using the trial-and-error technique the topology of the neural networks was obtained. The ANN model will be employed to predict the ultimate shear strength of deep beams as well as a FEM using ABAQUS to study this topic and the important affecting factors.