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SIMPLIFIED ANALYTICAL MODELS TO PREDICT SERVICE LOAD DEFLECTION, CRACK WIDTH AND STRESS IN STEEL REINFORCEMENT FOR BEAMS RETROFITTED WITH EXTERNAL UNBONDED REINFORCEMENT

Author(s): **S.F.A. Rafeeqi**

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Abstract:
In this paper simplified analytical models are presented to predict service load deflection, crack width and stress in steel reinforcement, both bonded and unbonded for simply supported beams retrofitted with externally unbonded ordinary reinforcement (EUBRF); a novel technique developed by the author. The results of the study are compared with experimental observations of beams tested by the author while studying the flexural behaviour of reinforced concrete beams strengthened with external unbonded reinforcement. A good agreement is found with experimental observations, and the simplified models may be used by practising engineers while retrofitting external unbonded reinforcement for relief of props during repairs, and/or strengthening of modest span simply supported beams by this method.

For full paper, contact:
Prof Muhammad Masood Rafi
Editor, NED University Journal of Research
Ph: +92 (21) 9261261-8 Ext:2277; Fax: +92 (21) 9261255
Email: NED-Journal@neduet.edu.pk
Website: http://www.neduet.edu.pk/NED-Journal