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# Modeling of Fatigue Life of FRP-Concrete Interface.

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## Abstract:

The long-term performance of fiber reinforced polymer (FRP) strengthened structures subjected to cyclic loading depend directly on the fatigue behaviour of the steel reinforcement, FRP, as well as the FRP-to-concrete interface. This study focuses on the behavior of the interface between FRP and concrete of various bonding systems under fatigue conditions. The different models used for evaluating shear stress along the entire bond length of FRP-concrete interfaces due to cyclic loading were first reviewed. Experimental results of 118 specimens collected from previous publications were analyzed to propose a new model and verify the accuracy of the existing models. The results show that the mean values, the corresponding coefficients of variation and the coefficients of correlation by the suggested model are 0.99, 10.16% and 0.891 respectively, which indicates the proposed model of fatigue life of FRP-concrete interface under cyclic load achieves higher accuracy compared to previous models. The results also indicate that the externally bonded specimens did not fail after 106 cycles with the maximum shear stress limited to 0.57.

## Keywords:

Fatigue Modeling;FRP-Concrete Interface; RC beams

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