

Analysis of the bond behaviour between prestressed strands and concrete in fire

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Abstract:

In this paper a robust model has been developed to predict the average bond stress-slip relationship between the strands and concrete of prestressed concrete structural members. Two bond-slip curves have been proposed to represent the bond-slip characteristics for the three-wire and seven-wire strands.

This model considers the variation of concrete properties, strands' geometries and the type of strand surface ,smooth or indented. The degradation of materials and bond characteristic at elevated temperatures are also included in the model. The proposed model has been validated against previous experimental results at both ambient and elevated temperatures.