

Analysis of bond-slip between concrete and steel bar in fire

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Abstract:

This paper presents a robust model for predicting the bond-slip between the concrete and steel reinforced bar at elevated temperatures. The model is established based on a partly cracked thick-wall cylinder theory and the smeared cracking approach is adopted to consider the softening behaviour of concrete in tension. The model is able to consider a number of parameters: such as different concrete properties and covers; different steel bar diameters and geometries. The proposed model has been incorporated into the Vulcan program for 3D analysis of reinforced concrete structures in fire. The model has been validated against previous test results.