

The bonding capability of FRP bar with different size and embedment length at elevated temperatures

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ABSTRACT

The major concern of this research project is to deal with the bonding capability of different size and embedment length of FRP bar in concrete at elevated temperatures. The relationship between bonding stress and slip displacement at different temperature were executed.

The results show that the failure mode of specimens at the normal temperature is pullout failure. With the increase of temperature, the failure mode become splitting failure due to the reduction of the strength of concrete. With the increase of temperature over 200 °C, the bonding capability decrease due to the failure of rough surface of FRP bar.

The results of this research show that the tension strength of the FRP is well, but the FRP can't endure high temperature. Adding fire-proofing material over surface and finding another adhesive material for rough surface that can endure high temperature are necessary for using FRP bar in stead of steel.

Keywords : Fiber Reinforced Polymer bar, bonding stress, failure mode, splitting failure, pullout failure, slip displacement