Stress-Strain Curve of Concrete Confined with both Steel Ties and FRP Composites

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ABSTRACT

In recent years, the use of FRP composites to repair and strengthen existing reinforced concrete (RC) structures has been widely used. When the columns of existing RC structures are wrapped with FRP composites, the core concrete of such columns is confined not only by the FRP composites but also by the existing steel reinforcing ties (or spirals). Therefore, it is necessary to understand correctly the compressive response of concrete confined with both steel spirals and FRP composites in order to predict the behavior of such RC columns. This paper proposes a model to predict the compressive stress-strain curves of concrete confined with FRP and steel reinforcing ties.