Behavior of Circular Concrete Cylinders
Confined with Both Steel Spirals and Fiber Composites

ABSTRACT

When the columns of existing RC structures are repaired with FRP composites, the core concrete of the columns is confined by both materials of steel spirals (or steel hoops) and FRP composites because the FRP composites wrap the existing columns which have been already confined with steel spirals or hoops. As the stress-strain curves of steel and fiber are different to each other, the behavior of concrete columns confined with both steel spiral and FRP composites is also different to that of concrete columns confined with only steel spiral or FRP composites. Twenty four RC cylinders were tested in order to observe the behavior of RC cylinders confined with both materials. The observed results of the test showed that the behavior of the test cylinders confined with both materials was quite different to that of cylinders confined with only one material.

Keywords: rehabilitation, carbon fiber sheet, spiral, confining pressure, concrete cylinders, compressive strength