

Behavior of high-strength concrete cylinders repaired with CFRP sheets

ABSTRACT

This study aims to investigate the behavior of damaged high-strength concrete cylinders repaired using carbon fiber reinforced polymer (CFRP) sheet. The experimental work on CFRP-wrapped concrete cylinders with various predamage levels indicated that CFRP can precisely resist the axial aggravated deformation of cylinders caused by damaging under uniaxial loading. The findings also revealed that the energy absorption of the damaged specimens confined with CFRP was restored approximately three times more than that of the undamaged specimens without confinement. Therefore, an empirical relationship exists between the pre-damage levels and the uniaxial compressive strength reduction of the concrete cylinders.

Keyword: Concrete; Confinement; Damage; FRP; Repair