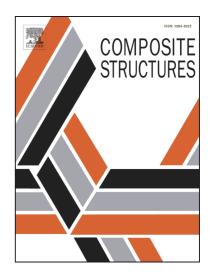
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Effect of Aggregate Size on Stress-strain Behavior of Concrete Confined by Fiber Composites

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Effect of Aggregate Size on Stress-strain Behavior of Concrete Confined by Fiber

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Composites

Cheng Jiang¹, Yu-Fei Wu²*, Jia-Fei Jiang³

4 Abstract

There is no consensus in extant literature on the size effect of fiber reinforced polymer (FRP) 5 confined concrete columns. This work studies the size effect by studying the influence of 6 aggregate size on the stress-strain behavior of FRP confined concrete. Experimental tests were 7 conducted on concrete cylinders with different aggregate sizes and fixed specimen dimensions. 8 9 Aggregate size shows no effect on the stress-strain behavior of unconfined concrete but has 10 significant effect in the transitional region of the stress-strain curve of FRP confined concrete. However, no significant effect exists on the hardening slope of the stress-strain curve and the 11 12 ultimate strength of FRP confined concrete. Based on the experimental results and Bazant's law of size effect, a new method is proposed for modeling the stress-strain relationship of FRP 13 confined concrete allowing for size effect. 14

15 Keywords: Concrete; Size effect; Aggregate size; FRP; Confinement; Stress-strain relationship.

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