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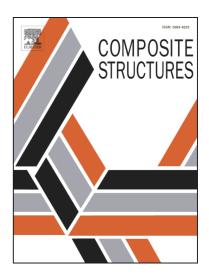
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Experimental Study on Staggered Lapped Bars in Fiber Reinforced

Concrete Beams

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ABSTRACT: The paper presents experimental results on lap splices in Fiber Reinforced Con-

crete (FRC). Several full-scale beams reinforced with rebars of different diameters were tested

with all or part of the longitudinal reinforcement lap spliced at mid-span. A traditional volume

fraction of hooked steel fibers (equal to 0.5%) was adopted for FRC. Experimental results show

that the toughness of FRC can enhance the behavior of the weak joint with only part of the

rebars lapped at the section. The capability of FRC to control the flexural and splitting crack

opening and propagation can increase the strength of staggered lapped splices, thus allowing a

reduction of lap length.

KEYWORDS: lap splices, anchorages, bond, splitting crack opening, fiber reinforced concrete

INTRODUCTION

Among the different coupler systems to link the steel rebars in concrete members (loops, welded

bars, mechanical connections) lap splices are the most used in the construction of Reinforced

Concrete (RC) elements for their cost-effectiveness, placing time and simplicity of design.

The main building Codes of concrete structures encourage staggering of lap splices since the

lapped bars are considered weak joints, which may impair the safety and the ductility of the RC

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