

Accepted Manuscript

Experimental Study on Staggered Lapped Bars in Fiber Reinforced Concrete Beams

G. Metelli, E. Marchina, G.A. Plizzari

PII: S0263-8223(17)30337-9
DOI: <http://dx.doi.org/10.1016/j.compstruct.2017.07.069>
Reference: COST 8724

To appear in: *Composite Structures*

Received Date: 4 February 2017
Revised Date: 3 June 2017
Accepted Date: 19 July 2017



Please cite this article as: Metelli, G., Marchina, E., Plizzari, G.A., Experimental Study on Staggered Lapped Bars in Fiber Reinforced Concrete Beams, *Composite Structures* (2017), doi: <http://dx.doi.org/10.1016/j.compstruct.2017.07.069>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Experimental Study on Staggered Lapped Bars in Fiber Reinforced Concrete Beams

G. Metelli^{1a}, E. Marchina¹ and G.A. Plizzari²

¹⁾ Assistant Professor, DICATAM, University of Brescia, Via Branze, 43, 25123 Brescia, Italy

²⁾ Full Professor, DICATAM, University of Brescia, Via Branze, 43, 25123 Brescia, Italy

^{a)} Corresponding author: Giovanni Metelli, DICATAM, University of Brescia, via Branze 43, Brescia, Italy, Tel: +39 0303711234, Fax: +39 0303711312; E-mail: giovanni.metelli@unibs.it

ABSTRACT: *The paper presents experimental results on lap splices in Fiber Reinforced Concrete (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

1 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

Download English Version:

<https://daneshyari.com/en/article/4911891>

Download Persian Version:

<https://daneshyari.com/article/4911891>

[Daneshyari.com](https://daneshyari.com)