

Accepted Manuscript

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F.O. Falope, L. Lanzoni, A.M. Tarantino

PII: S1359-8368(17)32453-8

DOI: [10.1016/j.compositesb.2018.03.019](https://doi.org/10.1016/j.compositesb.2018.03.019)

Reference: JCOMB 5578

To appear in: *Composites Part B*

Received Date: 20 July 2017

Revised Date: 8 November 2017

Accepted Date: 13 March 2018

Please cite this article as: Falope FO, Lanzoni L, Tarantino AM, Modified hinged beam test on steel fabric reinforced cementitious matrix (SFRCM), *Composites Part B* (2018), doi: 10.1016/j.compositesb.2018.03.019.

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Modified hinged beam test on steel fabric reinforced cementitious matrix (SFRCM)

F.O. Falope^{a,*}, L. Lanzoni^{a,b}, A.M Tarantino^a

^aUniversity of Modena and Reggio Emilia, Department of Engineering Enzo Ferrari, Via P. Vivarelli 10, 41125, Modena, Italy

^bUniversity of San Marino, Via Salita alla Rocca 44, 47890, Republic of San Marino

Abstract

An experimental campaign based on modified hinged beam test (MhBT) set-up has been reported in the present study. The samples consist of two concrete blocks coupled by a proper hinge device and laminated with steel wire fabrics embedded in a cementitious mortar layer. Two kinds of fabrics, made of galvanized steel strands with different mesh spacing, have been used to reinforce the concrete joists. With the aid of a DIC monitoring system, slippage profile at the interface between the concrete support and the mortar laminate along the contact region has been assessed, together with the fracture opening. Force vs slippage at the interface has been retrieved for the sampled tested according to the MhBT set-up. With the aim to obtain predictive ultimate load design formulas, a novel classification of laminate here proposed will be argued and related to a MhBT design formula. The influence of peel and shear stresses interaction on the ultimate strength of the system has been discussed in detail.

Keywords: FRCM, modified hinged beam test, steel fibres, slip profiles, fracture opening, ferrocement.

*Corresponding author

Email addresses: federicooyedeji.falope@unimore.it (F.O. Falope), luca.lanzoni@unimore.it (L. Lanzoni), angelomarcello.tarantino@unimore.it (A.M Tarantino)

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