

FAILURE OF FIBERCONCRETE BEAM HAVING LAYERED STRUCTURE

Vitalijs Lusiš¹, Andrejs Krasnikovs²

¹*Institute of Building Production, Faculty of Civil Engineering, RTU Concrete Mechanics Laboratory, Riga Technical University, 16/20 Azenes Str., LV-1048, Riga, Latvia*

²*Institute of Mechanics, RTU Concrete Mechanics Laboratory, Riga Technical University, 6 Ezermalas Str., LV-1006, Riga, Latvia*

E-mail: ¹Vitalijs.Lusis@rtu.lv (corresponding author); ²akrasn@latnet.lv

It has been discovered that fiberconcrete has many positive attributes, which make that materials a target of the numerous investigations. Traditionally fibers are homogeneously dispersed in concrete volume. At the same time in many situations fiber reinforced concrete with homogeneously dispersed fibers is not optimal (the majority of the added fibers do not participate in a load bearing process). In the present investigation it has been demonstrated that the use of homogeneous fiberconcrete in eccentrically driven and subjected to bending structures is not rational from mechanical and economical point of view. Fiber reinforced concrete prisms with homogeneous and layered fibers distribution inside them were elaborated. Prisms were tested under four point bending till macro-crack opening reached 4mm and more. Load bearing capacities at different load bearing stages of differently made prisms were compared.

Keywords: non-homogeneous fiberconcrete, layered distribution, steel fibers, failure.