EFFECT OF STEEL FIBRES (TENSION ZONES) IN INHIBITING FLEXURAL CRACKS IN BEAM

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DECLARATION BY THE CANDIDATE

I Mohd Yuasrizam bin Musa (2009444142) confirm that the work in this report is my own work and the appropriate credit has been given where references have been made to the work of other researchers.

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ABSTRACT

Reinforced concrete beams are arguably the most used in the construction because of its advantages such as lowest cost and effective construction material property as compared to all other material. Since the concrete known as brittle material and weak in tension, whenever tension occurs in beam concrete, cracking will take place. The introduction of the steel fibre in reinforced concrete beam at tension zone has been proposed in inhibiting flexural cracks in beam. This experimental research of effect of steel fibre (tension zone) in inhibiting flexural cracks in beam conducted focus on simply supported beam to determine the crack propagation incorporating steel fibre under flexural behaviour. The 100 mm x 100 mm x 100 mm concrete cube was cast to determine the compressive strength in accordance to BS8110-4:1997. The 25 kg/m^3 dosage of steel fibre from concrete mixing was tested on compression test. Two sets of simply supported of size of 150 mm x 250 mm x 1000 mm were tested under flexural test to determine the flexural strength behaviour. A set of two beams is with steel fibre of 25 kg/m^3 at the tension zone of the beam and the other set of two beams is without. The flexural strength test known as three point bending test was used in order to determine the flexural strength behaviour due during serviceability and at ultimate. From the analysis of data obtained from the test, it had shown that addition of steel fibre in tension zone of conventional reinforced concrete beam increased the ultimate load by 42 %, improved the flexural stress by 66 % and deflection by 28 % and reduced the crack opening. The number of cracks on steel fibre (tension zone) reinforced concrete beam is more than the number of cracks on plain reinforced concrete bean but the crack opening width on steel fibre (tension zone) reinforced concrete beam is smaller than crack opening width on plain reinforced concrete beam.

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