BEHAVIOUR OF REINFORCED CONCRETE BEAM WITH KENAF FIBRE DUE TO STATIC LOADING

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Bachelor of Engineering (Hons) Civil (Infrastructure)
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DECLARATION BY THE CANDIDATE

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

In this study, behaviour of reinforced concrete beam with Kenaf fibre due to static loading will be analysed. From the literature review, the percentage of Kenaf fibre as an admixture to be added into the concrete mix are 0.5%, 1.0% and 1.5% of cement content which comply with the European standard (EN 934-1:2008) where only 0.2% - 5% admixture to be added into concrete mixture. This study is to analyse the effect of Kenaf fibre toward the mechanical properties of reinforced concrete beam such as ultimate load capacity, mid-span deflection and crack propagation of the reinforced concrete beam compared to the control specimen which contain 0% of Kenaf fibre. The laboratory test use to achieve the objectives of this study which are to determine the ultimate load, mid-span deflection and to asses crack propagation of reinforced concrete beam was four-point loading by using reaction frame which comply with BS 1881-118: 1983. Based on the findings and results interpretation, the presence of Kenaf fibre has improved the ultimate load bearing capacity, reduces mid-span deflection and enhanced the crack propagation of reinforced concrete beam where the optimum percentage of Kenaf fibre to be incorporated in reinforced concrete beam is 0.5% by weight of cement without to compensate its mechanical properties and flexural strength. The results of reinforced concrete beam at 0.5% Kenaf fibre shows the ultimate load increases 8.38% from control specimen with 37.003 kN of maximum load, mid-span deflection has reduced by 1.261 mm from control specimen with 16.165 mm of mid-span deflection and the number of cracks was same as control specimen with 13 number of cracks. Since the findings of this studies shows promising results which the presence of Kenaf have improved the performance of reinforced concrete beam, therefore reinforced concrete beam can be applied and recommended to be used in infrastructure design such as bridge, plate girder and concrete drain.

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