

## **Flexural Behaviour of Normal Strength and High Strength Fibre Concrete Beams**

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**Abstract :** The paper presents the results of an experimental work on the flexural behaviour of two types of concrete in terms of the progressive cracking process until failure and the crack opening, and beam deflection, using Digital Image Correlation (DIC) technique. At serviceability limit states, comparisons of the building code equations and the equations developed by some researchers for the short-term deflections and crack widths have been made using the reinforced concrete test beams. The experimental results show that the addition of steel fibers increases the first cracking load and amplify the number of cracks that conducts to a remarkable decreasing in the crack width with an increasing in ductility. This study also shows that there is a good agreement between the deflection values for RC beams predicted by the major codes (Eurocode2, ACI 318, and the CAN/CSA-S806) and the experimental results for beams with steel fibers at service load. The most important added benefit of the DIC technique is that it allows detecting the first crack with a high precision easily measures the crack opening and follows the progressive cracking process until failure of reinforced concrete members.

**Keywords :** beams, digital image correlation (DIC), deflection, crack width, serviceability, codes provisions

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