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Experimental Investigation on HPFRC Beams Subjected to Cyclic Loading

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Abstract : Concrete is most widely used construction material. Because of its specialty of being cast in any desirable shape, it has replaced stone and brick masonry^{3,4}. In spite of all this, it has some serious deficiencies such as lack of tensile strength, ductility etc. To improve the deficiencies steel fibers are added to the concrete, known as fiber reinforced concrete which is an emerging technology used in the construction industry. Fiber reinforced concrete is a concrete containing fibrous material which increases its structural integrity. It contains short discrete fibers that are uniformly distributed and randomly oriented. The addition of steel fibers to cement concrete leads to improvement in several properties of concrete.

In this project the behaviour of HPFRC are studied and compared with conventional beams. Totally four numbers of beams were cast and tested for its cyclic behaviour. The specimen is incorporated with Hooked End and Crimped fibers in the mix proportion of 70%-30% by volume at a total volume fraction of 1.5%. Silica fume and super plasticizers are added to modify the properties of concrete. The beams were subjected to single point cyclic loading by means of screw jack and the deflection is measured by using dial gauge. The load deflection behavior for all the beams were drawn and the important parameters like load carrying capacity, ductility, energy absorption, stiffness, first crack load and ultimate load has been studied and compared with other specimens.

Index Terms : Fibers, FRC, High strength concrete, Hooked end, crimped bars etc. (*key words*).

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