

Study on High Performance Fiber Reinforced Concrete (HPFRC) Beams on Subjected to Cyclic Loading

Authors : A. Siva, K. Bala Subramanian, Kinson Prabu

Abstract : Concrete is widely used construction materials all over the world. Now a day's fibers are used in this construction due to its advantages like increase in stiffness, energy absorption, ductility and load carrying capacity. The fiber used in the concrete to increases the structural integrity of the member. It is one of the emerging techniques used in the construction industry. In this paper, the effective utilization of high-performance fiber reinforced concrete (HPFRC) beams has been experimental investigated. The experimental investigation has been conducted on different steel fibers (Hooked, Crimped, and Hybrid) under cyclic loading. The behaviour of HPFRC beams is compared with the conventional beams. Totally four numbers of specimens were cast with different content of fiber concrete and compared conventional concrete. The fibers are added to the concrete by base volume replacement of concrete. The silica fume and superplasticizers were used to modify the properties of concrete. Single point loading was carried out for all the specimens, and the beam specimens were subjected to cyclic loading. The load-deflection behaviour of fibers is compared with the conventional concrete. The ultimate load carrying capacity, energy absorption and ductility of hybrid fiber reinforced concrete is higher than the conventional concrete by 5% to 10%.

Keywords : cyclic loading, ductility, high performance fiber reinforced concrete, structural integrity

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