

Strength of reinforced concrete beams in hot weather

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Abstract

Hot weather creates many problems for concrete construction. Costly precautions are laid down in construction specifications to reduce the concrete mix temperature at preparation. However, curing of concrete is to be carried out in hot weather which also affects the properties of concrete. This research work attempts to investigate the effect of hot weather on the shear and moment capacities of reinforced concrete beams provided with adequate shear reinforcement. The variables considered are: (1) Concrete mix temperature, (2) beam size and span, and (3) yield strength, size and development length of bars. The beams were tested under a central point load over a simple span. The results of the tests on beams prepared and cured in hot weather have been compared with those of the corresponding beams prepared and cured at normal laboratory temperature. It has been found that the ultimate steel stress, shear strength and moment capacity of R. C. Beams are reduced with increase in concrete mix temperature. Equations have been developed to determine these reductions in relation to the concrete mix temperature ranging between 24°C to 46°C.