

Experimental Investigation of Interfacial Bond Strength of Concrete Layers

Authors : Rajkamal Kumar, Sudhir Mishra

Abstract : The connections between various elements of concrete structures play a vital role in determining the durability of structures. These connections produce discontinuities and to ensure the monolithic behavior of structures, these connections should be carefully designed. The connections between concrete layers may occur in various situations such as structure repairing and rehabilitation or construction of huge structures with cast-in-situ or pre-cast elements, etc. Bond strength at the interface of these concrete layers should be able to prevent the progressive slip from taking place and it should also ensure satisfactory performance of the structure. Different approaches to enhance the bond strength at interface have been a major area of research. Nowadays, micro-concrete is getting popular as a repair material. Under this ambit, this paper aims to present the experimental results of connections between concrete layers of different age with artificial indentation at interface with two types of repair material: Concrete with same parent concrete composition and ready-mix mortar (micro-concrete), artificial indentations (grooves and holes) were made on the old layer of concrete to increase the bond strength. Curing plays an important role in determining the bond strength. Optimum duration for curing have also been discussed for each type of repair material. Different types of failure patterns have also been mentioned.

Keywords : adhesion, cohesion, compressive stress, micro-concrete, shear stress, slant shear test

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