SHEAR RESISTANCE OF INTERFACES BETWEEN EXISTING AND NEW RC ELEMENTS

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Keywords: Interface, Shear resistance, Aggregate interlock, Dowels, Embedment length, Relative slip

ABSTRACT

Estimation of the shear resistance of interfaces between old and new concrete is essential in the design of strengthening of existing RC structures, especially when the interfaces are designed against seismic actions. The interface should not fail when subjected to the maximum expected forces. Shear resistance of an interface depends on various parameters, more important of which are the preparation of the interfaces and the quality of execution of works. The magnitude of relative slip of the two sides of the interface is essential for the assessment of the resistance of an interface, but it is difficult to predict at the phase of design.

In this work the main existing analytical models for estimation of the shear interface transfer are briefly reviewed and are applied to predict the experimental resistance of specimens tested in the literature. The adequacy of the models is discussed in relation to their predictive power and the different assumptions of the models. Code provisions of MC2010, ACI and KAN.EPE for the design of interfaces are discussed and applied to predict the shear resistance of the test specimens. Some observations on the behavior of the interfaces of RC infilled frames tested in relation to the analytical predictions of the methods discussed are also presented.

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