SM2S_12082

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Experimental and Numerical Study of the Brick-Mortar Interface

Leila Abdou, Ramdane Ami Saada, Fekri Meftah, Ahmed Mebarki

Laboratoire de Mécanique (LaM), France

Masonry is a composite material made of brick and mortar. The mortar constitutes the bed and head joints that act as planes of weakness. The shear slip at the bed joint is one of the failure modes of masonry structures. In order to investigate the shear behaviour of the bed joint, some experiments were carried out. The specimens were built with two half bricks jointed with 10 mm mortar. First, loading/unloading tests have been performed to define the type of shear bond behaviour up to the softening regime. Then, tests with several normal compressive stresses were carried out to identify the bond characteristics when a confinement is concomitant with shearing. The brick holes influence was also studied by performing tests on both solid and hollow bricks made of the same basic material. The brick holes do not affect the friction angle, but increase the stiffness and the residual cohesion. The obtained results, leads us to develop an interface model defined by two yields functions. This model was implemented in a finite element code, which will permit to carry out some numerical simulations.

View the extended summary