Reliability of macro and micro model for post tensioned masonry structures

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Abstract

During the revitalization of masonry structures the pre-stressing of masonry structure is used frequently for improving the structural mechanical properties. In practice the intensity of pre-stressing is often designed according to engineering judgement of the designer. It is obvious that utilization of masonry structures mathematical modelling for post tensioned structures is very valuable.

Authors are interested particularly in so-called micromodels and macromodels of masonry structures. Structural parts are analyzed using ANsys computer program (Čajka, R. Kaločová,L., 2008), (Mynarzová, L., Čajka, R., 2008).

Mathematical model is verified with testing. At VSB – Technical University of Ostrava unique equipment was designed for experimental testing of tri-axial state of stress and strain of pre-stressed masonry corner. Plan dimensions of the tested corner are 900 x 900 mm, the thickness of the wall is 450 mm and the height is 900 mm. Experiments started in the beginning of the year 2011 with masonry corner made of clay bricks and general purpose mortar.

Ongoing experiments and appropriate mathematical modelling should contribute to higher reliability of engineering computations of masonry structures.

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