

NON-DESTRUCTIVE TESTING OF SOLID BRICK COMPRESSION STRENGTH IN STRUCTURES

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Resumen

Solid burnt brick sized 290 × 140 × 65 mm or 303 × 145 × 70 mm respectively, represents one of most widespread brick building material, both structural and non-bearing ones, in Czech historical buildings. During their rebuilding and reconstruction, we frequently ask for brickwork material strength. Most exact method is to take test samples just from the construction and put them to trial nevertheless; such method is inapplicable in principle due to damage of the construction under testing. Other potentiality consists in collection of test samples just from brickwork and preparation of small test specimens. However; currently there is no sufficient number of data for elaboration of correct rates for conversion coefficients as to compression/tensile bending strength for small test specimens and whole brick failure strength. Brick strength can be detected also by means of non-destructive testing method such as ultrasonic pulse method. Practically, it appears that non-destructive testing and ultrasonic pulse method are optimal. This paper evaluates efficiency of these methods for brick strength evaluation; It also describes – for selected methods – testing methodology and test result evaluation along with calibration correlations to determine strength based on non-destructive testing parameter. The set of 300 values for each of parameter under monitoring is adequate to specify appropriate calibration correlation. Defined correlation coefficients for given calibration are high enough (more than 0.9) so presented correlations are usable in practice.

Keywords : Non-destructive testing, Solid brick, Compression strength, Tensile bending strength Calibration,