Evaluation of the performance of elements of the old brickwork

Engineering & Computer Science/ Civil Engineering,

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Recently, a significant part of brick houses and structures constructed of brick have received both physical and moral wear and a need for modernization. To assess the efficiency of such buildings, it is necessary to carry out a series of measures, among which not least the assessment of the tense state of the buildings.

In practice, it is necessary to deal with structure of old building, which are characterized by significant defects in wall material and, as a consequence, changes in the strength characteristics of the surface layer. Sclerometric principle of action evaluates the strength of the material according to the elastic-plastic characteristics of the surface layer, which differs from the strength of the main mass of the construction material. Using these devices, it is impossible to objectively assess the strength of the brick structure. Since the stone masonry is a complex material with significant heterogeneity, and more often than not, with unknown stresses in the material, this method cannot assess the state of the entire structure.

The assessment of the performance of existing old brick buildings should be carried out comprehensively with the assessment of the strength of the wall material, its tense state and, if possible, with a long observation of it, but no such assessment. Therefore, the task of assessing the performance of old brickwork is relevant.

This method is used in the reconstruction or inspection of buildings and structures. Using this method, nine surveys of buildings and structures related to architectural monuments were carried out. In my work I consider the development of a new non-destructive method and methods for assessing the strength of old brickwork. By drilling, you can obtain the strength characteristics of the brick and mortar. About a thousand tests were carried out with samples of bricks and mortar. In the process of testing a brick and mortar using a non-destructive method, a comparison was made with a standard test method. Based on these tests, calibration dependencies for brick and mortar were obtained. Using these data, you can determine the strength characteristics of materials, and by the formula of prof. L.I. Onishchenko determine the strength of the masonry as a whole. The analysis of the formula of prof. L.I. Onishchik, coefficient A and the number 2 in the denominator of the formula. Graphs of the relationship between the strength of the brick and the drilling time, as well as the strength of the mortar and the drilling time with different values in the denominator of the formula of prof. L.I. Onishchenko.