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## **Modern Masonry Walls - Plaster versus Open Joints**

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Open vertical joints inside plastered masonry walls are a well-established way to reduce the expenditure of human labour in construction work. Due to the same reason, modern bricks and classical bricks fundamentally differ in their proportions: the wall thickness diminishes and the in-plane dimensions increase. In particular, the increase in height has to be mentioned. Due to cost effectiveness, both techniques are often combined. As long as the open vertical joints are small compared to the length of the brick, the vertical stiffness of a wall - the vertical Young's modulus - is hardly affected by thin open joints. Hence, the static load capacity is about the same. However, this does not hold for other effective elastic properties of the wall, e.g. the in-plane shear modulus. By means of a suitable homogenisation software, the dependence of the effective elastic properties of a plastered wall of simple bricks on the in-wall proportions, the wall thickness, gap size and plaster layers has been investigated for sand-lime stone. The method has been compared to experimental data. It is found that for thin walls the plaster plays an important role in sustaining the shear stiffness of walls. Sufficiently thick and armored, the plaster transfers most of the shear loads across the open gaps, especially for thin walls. Hence, the plaster and its connection to the wall plays a important - but rarely perceived - role in concurrent masonry.

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