

## A POSSIBILITY OF SIMPLE MODELING OF FRAME WITH INFILL

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**Abstract:** Masonry infilled-frames are composite systems with reinforced concrete or steel as a primary system, and usually with brick masonry infill. It is apparent that the infill increases the stiffness of structure under normal loading, but under extreme loads its behavior is unknown and hence it is treated with caution. Analytical model used in the designing of such structures should contain masonry infills, and not be based on a system of frames with empirical corrections (increases) of loads, as specified by Eurocode EN 1998. The only correct way to incorporate negative effects of incorrectly placed masonry infills, and also positive effects of masonry infill that is “the first line of defense” of a structure, is to model the infill within the model of the structure itself. Rehabilitation of structures, aimed at improving the seismic behavior of structures, has become widely applied around the world. Infilled-frames with panels are an acceptable substitution. Simplified modeling methods that reliably represent infilled structures are essential to provide parametric analysis of structure during its design, and for assessment of condition of existing structures. In this paper, we tested the possibility for a linear model to simulate the nonlinear behavior of an infilled frame for two limit cases of earthquake loading: the limit state of serviceability and the limit state of bearing capacity. We tried to replace the nonlinear model of a diagonal infill, which is the usual method to simulating the effects of infills, with linear wall sections modeled with two different values of the modulus of elasticity of infills. That is also the first step toward the practical simplification of modeling of infilled frames.

**Key words:** masonry infilled RC frames, calculation, limit states, replacement diagonal, continuous model, replacement modulus of elasticity.



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