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## EVALUATION OF THE RESISTANCE TO PROGRESSIVE COLLAPSE OF MONOLITHIC REINFORCED CONCRETE FRAME BUILDINGS WITH SEPARATE AMPLIFIED FLOORS

In the article the authors propose a simplified method of dynamic analysis of the resistance to progressive collapse of a fragment of the building bearing system with amplified floors. This method is based on representing the building bearing system as a dynamic model with a denumerable number of degrees of freedom, in which the resistance of the system is provided mainly by the behavior of the columns. The degrees of freedom number is determined by the number of floors «hanging» to amplified floors. The contribution of slabs in the total system resistance is not taken into account. Stress-strain state of the columns is determined by the non-linear resistance diagram, including three stages: elastic, elastic with cracks and plastic stage connected with plastic yield in the steel of the columns. The criterion of sustainability to the progressive collapse is relative strain of steel of the undestroyed columns. A numerical example of the calculation of the building resistance to progressive collapse in case of sudden destruction of one vertical element based on proposed theoretical method is offered. A model with two numbers of degrees was considered. The suggested method allows estimating the strength, deformability and stability of monolithic reinforced concrete frame buildings with separate amplified floors. In the future it is intended to complicate the model by the accounting for the influence of deformation and constructive solution of the slabs on the stiffness characteristics of the model as a system with a finite number of degrees of freedom.

**Key words:** amplified floors, progressive collapse, dynamic design, building sustainability, frame buildings.

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