

INDUSTRIAL MONOLITHIC HOUSE-BUILDING IN MOLDAVIA

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special conditions of house-building and their exploitation in Moldavia has defined the development of monolithic house-building performed by industrial methods.

Monolithic domestic and public buildings up to 24 storeys high are erected with the help of sliding, moving rearranged, and panel forms. Each method of construction is characterized by a certain efficient field of usage.

The sliding form can be used to its best when erecting tower-type buildings and lift-and-stair wells in buildings with a great number of storeys. The application of the sliding form requires concrete to be supplied in close compliance with the progress chart. It should be noted that the attainment of proper conjunction of monolithic walls and floors (sectional or monolithic) is one of the crucial points of the building erection by this method. The available constructive solutions for the conjunction of these elements are not always sufficiently effective for production that adversely affects the quality of their fulfilment. Simultaneous erection of inside and outside walls is a merit of the buildings type under discussion as it provides their joint behaviour under the action of various forces.

A number of buildings with intricate contours expanding their architectural expressiveness has been erected in Moldavia by using the sliding form.

As can be seen from the experience in the house-building in Moldavia and other seismic regions of the USSR the moving rearranged form is finding ever increasing application in monolithic house-building. Its application is particularly efficient when erecting long buildings. The moving rearranged form is usually made as a tunnel one. Sections of such a form are rolled to buildings faces after the concrete of inside walls has reached the required strength. When using this method of house-building the outside walls are made of sectional elements connected with the inside monolithic walls with the help of reinforcement projections, built-in members and the like.

Tending to provide the monolithic conjunction of inside and outside walls the construction of three-section moving rearranged form has been developed in Moldavia. When using this kind of form the outside walls are usually made of sectional panels or blocks erected prior to concreting the inside walls. Once the inside walls have been made and the required strength of the concrete has been gained the form is disengaged into three sections each section being withdrawn through the opening in the monolithic floor. Thereupon this opening is closed by a sectional concrete-steel panel.

This method of the house-building provides the reliable joint behaviour of inside and outside walls under the load. A number of public and domestic buildings has been erected in Moldavia with the help of this method.

In many cases buildings are erected combining the usage of the sliding form for the erection of lift-and-stair wells and the moving rearranged form for the erection of walls and floors for the other building parts.

When erecting monolithic buildings in regions with high seismic activity, replacing the heavy concrete by the lightweight one produces essential results. Owing to it not only is the weight of the building being reduced, but its stiffness is being reduced as well. These two circumstances lead to the reduction of seismic load. At the same time thermo-technical characteristics of buildings are improved.

But replacing the heavy concrete by the lightweight one in monolithic buildings is associated with particular difficulties upon successful solution of which eventually depends the quality of concrete-steel constructions.

In the last few years a large complex of scientific investigations in monolithic house-building has been carried on directed towards finding the real character of the buildings behaviour under load, seismic load including. Using the results of these investigations effective systems of reinforcing the building walls and constructive solutions of wall-to-wall and wall-to-floor conjunctions are developed. Mounting of oblique frames at sites where essential main tensile stresses appear may be considered as one of efficient ways for wall reinforcement.

Alongside the development of new constructive solutions of monolithic buildings the procedure of their erections is improved. In recent years the ways of building erection using large-panel and small-panel forms have been tested in Moldavia.

The ten-years' experience of monolithic house-building in Moldavia indicates that it is advisable to erect buildings of cast-in-situ concrete by specialized building organizations.

By the time of the Carpathians earthquake in 1977 some dozens of monolithic buildings have been built in Moldavia using the sliding and the moving rearranged forms. All these buildings have endured the earthquake successfully.