Исламбек Н.А.

Карагандинский технический университет, Казахстан

DEVELOPMENT OF EFFECTIVE FRAME SYSTEMS FOR LOW-EISE RESIDENTIAL BUILDINGS

According to the monitoring data of the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan, in the conditions of a recession in the construction industry, it is low-rise construction that helps to maintain the volume of activity of this industry [1]. Marketing research establishes the cost-effectiveness and high speed of construction of residential buildings with a frame system [2]. Thus, the chosen direction is one of the leading ones, however, there is a need to modernize the structural systems of frame low-rise residential buildings from a technological, organizational and moral point of view.

Traditional technologies for the construction of load-bearing structural elements involve the use of artificial small-sized stone, small blocks, monolithic or precast reinforced concrete, wood or metal [3]. Production of works and using the listed materials is traditional for domestic housing construction and there are no serious problems when performing construction and installation works. At the same time, the above-mentioned materials are universal and can be used both in the construction of low-rise residential buildings and in multi-storey construction, and some are more suitable for multi-storey than for low-rise buildings. In addition, when using a number of materials for low-rise buildings, some technologies are characterized by a large margin of load-bearing capacity, in which the operational life of the building significantly exceeds the period of obsolescence. At the same time, when constructing such houses, labor costs increase, which leads to an increase in the estimated cost of construction.

Created by FolderMill | www.foldermill.com

Alternative systems for the construction of low-rise buildings, as the most promising, are: a wooden frame-rack system, a combination of light steel thin-walled structures (LSTS) and structural insulation panels (SIP), monolithic reinforced concrete and frame houses using full-assembled technology-a variant of using the "platform" method in the category of frame-panel wooden houses. All these operations are carried out in the factory, and then on the construction site, element-by-element installation is carried out [4].

For the implementation of construction projects, it is necessary to control the quality and reliability of the work, especially the feasibility of the selected organizational and technological solutions. Currently, a lot of research is being conducted on the construction of low-rise buildings. They consider the problems of choosing materials, technological and organizational solutions.

According to the study, the leading position is occupied by the technology of a fully assembled wooden house for the construction of frame low-rise buildings. This result is due to the numerous advantages of this system, which consist in the speed of construction of the building, ease of finishing work, no need for highly qualified labor (as a result, a reduction in the wage fund), good operational characteristics and resistance to biological influences. The low prevalence of the technology, in turn, is due to the need to use lifting mechanisms during installation, low maintainability and, most importantly, the high cost of manufacturing products and a small variety of architectural forms.

Solutions and further directions of the study of this issue are the widespread introduction of this technology, which will significantly reduce the cost of a unit of output, as well as the production of frame panels in accordance with the individual project of the developer, which will reduce the construction time and the probability of installation errors on the construction site to a minimum.

References:

1. Law of the Republic of Kazakhstan dated April 7, 2016 No. 486-V "On Equity Participation in Housing Construction" (as amended as of 09.06.2020).

Created by FolderMill | www.foldermill.com

2. Zainullina T.G. Problems and prospects of low-rise housing construction. Terra Economicus. 2013. No. 4. Pp. 105-107.

3. Karasev D.O., Shipilova N.A., Arutunyan M.S. Low-rise construction. Types of building materials for the construction of buildings. Internet-magazine "Science". 2016. No. 3. Pp. 1-6.

4. Dyachenko O.S. Features of the construction of motels and affordable housing in Ukraine on the frame technology of housing construction LSTC. Bulletin of the Dnieper State Academy of Civil Engineering and Architecture. 2011. № 6-7. Pp. 65-70.

Created by FolderMill | www.foldermill.com