MONOLITHIC CONSTRUCTION - AS FUTURE CONSTRUCTION

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Annotation: This article provides information on the methods of erecting buildings based on monolithic concreting and features, the advantage of monolithic construction as a promising type of future construction.

Key words: monolith, thermal conductivity, insulating properties, stability, expanded polystyrene.

Monolithic construction is a method of erecting buildings in which the main material of structures is monolithic reinforced concrete. The main feature of monolithic construction is that the site for the production of material for monolithic buildings is a construction site. The use of monolithic reinforced concrete makes it possible to implement a variety of architectural forms, as well as to reduce the consumption of steel by 7-20% and concrete by up to 12%. But at the same time, energy costs increase, especially in winter, and labor costs at the construction site increase.

It should be noted that monolithic construction - the construction of structures from a concrete mixture - already in the 30s of the last century became popular in the construction industry. In our country, the monolith in construction was replaced by brickwork and prefabricated structures in panel housing construction. But, in the last decade, monolithic construction has been developing rapidly, which allows the entire industry to grow steadily [1,2].

The construction of a monolithic house, taking into account finances, human resources and the time spent, is cheaper than a brick or panel one. In Western countries, where prefabricated houses are expensive, developers prefer one-time labor costs and are already using monolithic construction.

Pros and cons of monolithic construction

What are the advantages of the technological process? Let's look at how monolithic works differ from other common technologies.

1. When comparing concrete walls and brick walls, preference is given to a monolith. Given the same thermal conductivity, insulating properties and stability, a monolithic wall is thinner and lighter by 15-20%, which facilitates the entire structure. The lighter weight of the house implies a lighter and cheaper foundation.

2. In prefabricated construction, designers and architects are tied to the standard sizes of panels or other types of "details", so there are certain limits in design decisions. When designing a house from a monolith, the freedom of choice is limited only by the operational properties of the material.

3. In prefabricated construction (for example, panel construction), all panels are manufactured at the factory, transported to the construction site, and then assembled. Each manufacturing process of manufacturing a “detail” has its own tolerance, so the processing of walls, sealing and sealing joints after

installation are additional labor costs. During the construction of a monolithic house, the manufacturing process takes place right at the construction site.

4. Durability, high soundproofing and heat-conducting performance of a monolithic house are ensured by the absence of seams in the structure.

The disadvantage in the construction of monolithic houses can be considered the dependence of the process on weather conditions - in severe frosts, work on laying concrete is suspended. To better understand all the details, we will divide the construction process of a monolithic house into the main stages and consider each in more detail.

It is most reliable to make one monolithic slab under the entire building. Thus, the lower part of the slab will be located practically on the surface, acting only with its upper part, therefore, various soil deformations will not affect the stability of the base and the entire structure as a whole [3,4].

Quite often, a slab foundation is planned as a subfloor. In this case, insulation is carried out - from below the ground with extruded polystyrene foam (foam), and in the upper part of the slab, during the pouring process, it is possible to install the components of the "warm floor" system.

The accumulated experience of monolithic housing construction has revealed the undeniable technical and economic advantages of this method, as a result of which, over the first decade of the 21st century, monolithic construction has practically ousted brick, large-block and even large-panel construction from the market. To date, the industry of monolithic housing construction has a developed technical base and a variety of formwork systems.

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