

MODULAR CONSTRUCTION DURING A PANDEMIC

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The article analyzes the experience of building hospitals during a pandemic, and on the basis of this, a proposal is formulated to create modules that are most efficiently used in construction. The use of these types of modules will reduce the time of their production, and as a result, reduce the construction time of the entire facility.

Modular construction is one of the classic ways of constructing buildings, but recently, modules have been modernized, adjusted to different needs and become more versatile [1-2]. Thanks to this, the scope of application of modular construction is expanding. One of the most relevant directions in recent years is the construction of hospitals.

During the construction of hospitals during a pandemic, one of the main indicators is the speed of construction [3]. When constructing modular buildings, the speed of construction directly depends on the speed of manufacturing modules at the factory.

To increase the rate of productivity of manufacturing plants, it is proposed to reduce the variety of types of module sizes used for the construction of hospitals. An analysis was carried out to identify the most used modules, as well as a study of the structural diagram of pre-fabricated hospital buildings.

The most effective is a corridor structural scheme, in which a corridor runs along the entire building, and rooms are located on one or two sides. In this regard, the use of the following modules was proposed.

Modules used for corridor rooms (fig. 1). It is proposed to use four main types of the module. Two of which on one side have doors for entering other rooms, and on the other side - window openings. The use of such modules is implied when the premises are located only on one side of the corridor. The second type has doorways on both sides, respectively, when the premises are located on both sides of the corridor. All corridor modules have door openings at their ends for a through passage. The length of the modules will be of two types 3000mm and 6000mm, respectively, designed to interface with one or two modules for infected patients. The height of all modules is 2800mm.

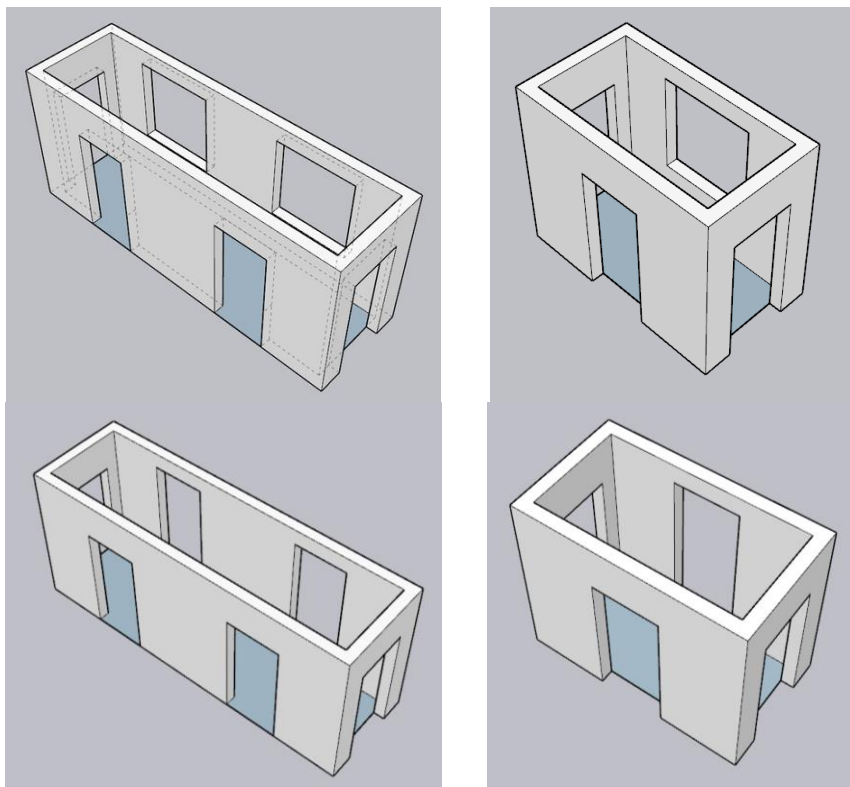


Fig. 1. – Modules for corridor rooms

The second main type of modules will be to accommodate infected patients, equipment, and staff accommodation (fig. 2). Such modules are subdivided into corner and private. The width of a private is 3000mm, and the

length is 3000mm, 4500mm and 6000mm, depending on the required number of beds and according to technological characteristics for the placement of hospital equipment. The dimensions of the corner module are 3000x3000mm and 1500x1500mm.

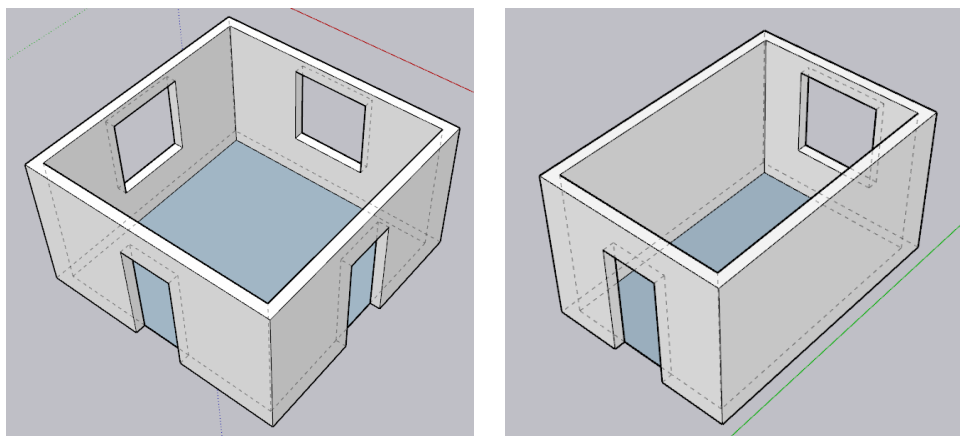


Fig. 2. – Modules for accommodating the infected

The interfaces are typical and depend on the material from which the module itself is made.

It should be noted that we are talking about one-story construction, which is the most common in the construction of hospitals during a pandemic. One of the advantages is that in the future, if necessary, the modules can be transported to another place and be used for the construction of a completely different object for its intended purpose. Such a reduced typing of modules will increase the pace of construction and will allow to create a larger number of hospitals in the shortest possible time.

Modular construction is distinguished by its speed of construction of buildings, which is one of the most important criteria for the construction of hospitals during a pandemic. Based on the analysis carried out, our own variants of the modules have been developed and modeled, which are most suitable for the construction of hospitals.

REFERENCES

1. Бородейко, И. В. Зарубежный опыт проектирования модульных зданий / И. В. Бородейко // Международное сотрудничество: опыт, проблемы и перспективы. – 30 сентября 2020. – Сборник материалов международной научно-практической конференции. - С. 6-9.
2. Бородейко, И. В. Формообразование модульных зданий и их объёмно-планировочные решения / И. В. Бородейко // Результативность и эффективность внедрения современных методологий в научные исследования и разработки. – 16 октября 2020. – Сборник материалов международной научно-практической конференции. - С. 6-8.
3. Бородейко, И. В. Оптимальный метод строительства в период пандемии / И. В. Бородейко // Результативность и эффективность внедрения современных методологий в научные исследования и разработки. – 16 октября 2020. – Сборник материалов международной научно-практической конференции. - С. 8-11.
4. Бородейко, И. В. Особенности модульных зданий / И. В. Бородейко // Результативность и эффективность внедрения современных методологий в научные исследования и разработки. – 16 октября 2020. – Сборник материалов международной научно-практической конференции. - С. 14-16.
5. Бородейко, И. В. Типы используемых модулей в современном строительстве / И. В. Бородейко // Результативность и эффективность внедрения современных методологий в научные исследования и разработки. – 16 октября 2020. – Сборник материалов международной научно-практической конференции. - С. 11-14.