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TECHNICAL AND ECONOMIC INDICATORS OF MODERNIZATION OF A FOUR-STOREY STUDENT HOUSE.

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Abstract

The article raises the issue of whether it is necessary to preserve and modernize the student residence building, or whether it is better to build a new building instead of demolishing it.

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Introduction.

In recent years, the rapid development of the construction industry requires industry experts to solve new, modern issues. Modern construction requires efficient use of land areas allocated for it, construction of beautiful and comfortable buildings. These include high-rise residential, sprawling industrial and luxury public buildings under construction in recent years.

Along with these, in the environment of modernizing cities, buildings that are old in meaning and sometimes physically are preserved. These include several 4-story student houses owned by SamDAQU, some of which are adapted for educational purposes [1].

In the current state of these student residential buildings, there are not enough conditions to meet the needs of the times. The existing residential building is of the corridor (corridor) type, with 2 kitchens, 2 bathrooms, and 2 sanitary rooms on each floor. These are not enough compared to the number of students on the floor.

Students enter the rooms directly from the corridor. (Fig. 1) shows a part of the building plan. The

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building is mentally and physically outdated and in disrepair. We are currently conducting certain scientific researches to renovate the building and increase the number of floors [2].

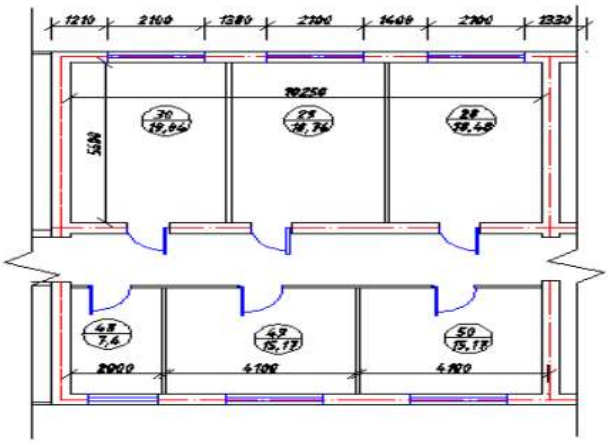

Figure 1. Plan of the student housing building.

The previous article raised the issue of whether it is necessary to preserve and modernize the building or whether it is better to build a new building instead of demolishing it. This main issue involved deciding which of the two was more effective, with carefully defined feasibility studies. In this article, we have cited the results of scientific research [1].

In the proposal, which was confirmed on the basis of scientific research, in order to reconstruct the existing student residential building, it is necessary to evaluate the technical condition of the building and carry out repair work depending on the level of decay. Curtain walls should be removed and designed according to modern requirements. The existing windows in the building will be replaced with AKFA windows. The doors will be replaced with MDF and AKFA doors. Since the floors have become unusable, they will be replaced with modern floors, and external and internal finishing works will be carried out. 3 more floors will be erected on top of the building in frame type. Columns are attached to the wall up to 11.2 m. 4 floors above 11.2 m are connected by columns and girders. The distance between the columns according to the plan is 6.0 m.

Here, we will calculate the amount spent on reconstruction of the existing building and increase in the number of floors. To do this, we first determine the amount spent on the construction of 1 m2 of the building:

[3] according to the information given in the source, 2 million per 1 m2. 393 thousand 526 soums will be spent.

The dimensions of the building: the first block is 12x26.6 m., the second block is 12x26.6 m., the third block is 12x32.2 m.

We determine the percentage of decay of the building [4] by the formula [2.4] in the source:

$$\Phi_{и} = \frac{T_{ф}}{T} * 100$$

Here, $T_{ф}$- the actual service life of the building, year;

standard design period of

T-building, year;

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$$\Phi_{и} = \frac{T_{ф}}{T} * 100 = \frac{55}{100} * 100 = 55\%$$

C_p is the amount spent on reconstruction of the existing building.

$C_p = 17\ 167\ 196\ 755$ x $0.55 = 9\ 441\ 958\ 215$ soums.

When the number of floors of the building is increased, it is specified in the project that the wall of the building will be made of foam blocks. The dimensions of the foam block are given in Figure 2. The price of the foam block is based on [5] 1m3=450,000 soums.

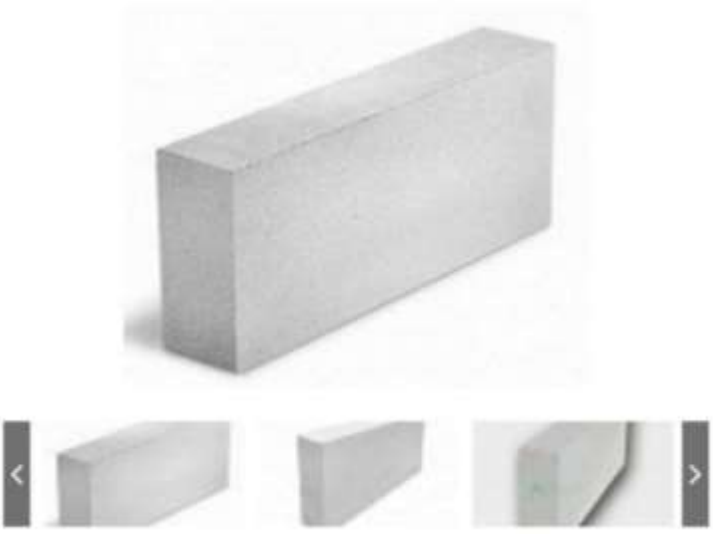

Figure 2. Samples of foam blocks

Foam block width b=100 mm, height h=300 mm, length l=600 mm.

In the proposed method, that is, when building an additional 3 floors on top of an existing 4-story building, we will calculate the cost per 1 m2 of construction:

$$1\ м^2 = \frac{23\ 022\ 364\ 116 + (450000x2575{,}6)}{10022.4} = 2\ 412\ 734\ \text{Soum}$$

We calculate the cost of increasing the number of floors in the building:

$$C_1 = (12\ x26.6\ x\ 3\ x\ 2\ 412\ 734)x\ 2\ = 4\ 620\ 868\ 156.8\ \text{Soum}$$

$$C_2 = 12\ x32.2\ x\ 3\ x\ 2\ 412\ 734\ = 2\ 796\ 841\ 252.8\ \text{Soum}$$

where: C_1 , C_2, the cost of raising floors;

$$\Sigma\ C = C_1\ + C_2\ + C_p\ = 4\ 620\ 868\ 156.8 + 2\ 796\ 841\ 252.8 + 9\ 441\ 958\ 215$$
$$= 16\ 859\ 667\ 624.6\ \text{soum}$$

where: ΣC -total amount.

Feasibility studies of demolition of the existing building and construction of a new building in its place.

We calculate the costs of demolishing an existing 4-story building and building a new 7-story building in its place. We determine the expenses incurred for the demolition and cleaning of the existing building.

In this case, 160,000 soums will be spent per 1 m3 of demolition of the existing building and cleaning of waste [6].

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Dimensions of the existing building: the first block is 12x26.6 m., the second block is 12x26.6 m., the third block is 12x32.2 m. We calculate the amount spent on demolishing and cleaning the existing building:

$$С_{б1} = 12x26.6x11.2x160\ 000 = 572\ 006\ 400\ soum$$
$$С_{б2} = 12x32.2x11.2x160\ 000 = 692\ 428\ 800\ soum$$
$$С_{б3} = 12x26.6x11.2x160\ 000 = 572\ 006\ 400\ soum$$

where: $С_{б1}, С_{б2}, С_{б3}$ is the amount spent for demolition and cleaning of the first, second and third blocks of the existing building.

$$С_{у1} = С_{б1} + С_{б2} + С_{б3} = 5\ 720\ 06\ 400 + 692\ 428\ 800 + 572\ 006\ 400 = 1\ 836\ 441\ 600\ soum$$

where: : $С_{у1}$ is the total cost for demolition and cleaning of the existing building.

We calculate the expenses for the construction of a new building:

[3] according to the information given in the source, 2 million per 1 m2. 393 thousand 526 soums were spent.

$$С_{к1} = 12\ x\ 26.6\ x\ 7\ x\ 2\ 393\ 526 = 5\ 348\ 093\ 815\ soum$$
$$С_{к2} = 12\ x\ 32.2\ x\ 7\ x\ 2393526 = 6\ 474\ 009\ 125\ soum$$
$$С_{к3} = 12\ x\ 26.6\ x\ 7\ x\ 2393526 = 5\ 348\ 093\ 815\ soum$$

where: $С_{к1}, С_{к2}, С_{к3}$ is the amount spent on the construction of the first, second and third blocks of the new building.

$$С_{у2} = С_{к1} + С_{к2} + С_{к3} = 5\ 348\ 093\ 815 + 6\ 474\ 009\ 125 + 5\ 348\ 093\ 815$$
$$= 17\ 170\ 196\ 755\ soum$$

The total amount spent on the construction of the new building.

$$Σ = С_{у1} + С_{у2} = 1\ 836\ 441\ 600 + 17\ 170\ 196\ 755 = 19\ 006\ 638\ 355\ soum$$

where: Σ -the total amount spent on demolishing the existing building and cleaning the debris and building a new building in its place.

Conclusion: As can be seen from the above calculations, 19 billion will be spent on the construction of the new building. 6 mln. 638 thousand 355 soums will be spent. 16 bln. 859 mln. 636,880 soums will be spent. These indicators are not only economically effective, but also allow to increase the floors of existing buildings in the territory of our republic without destroying them. Moreover, the use of this method is a novelty in our practice today.

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