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On the Safety of Construction of Buildings and Structures in Difficult Soil Conditions

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Abstract: *The article shows the impact of soil and water conditions on the safety of buildings and structures and provides recommendations for improvement.*

Keywords: *building, construction, soil, water, term, salt, territory, safety.*

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Ensuring the safety of buildings and structures is aimed at preventing an emergency and the reliable life of people in this environment. It has economic and social significance. It is known that many cities and other settlements of the republic are located on loamy territories. In terms of the construction of buildings and structures, loamy soils are loose soils. The main negative indicator of loamy soils is the loss of strength of internal bonds under the influence of moisture. [1] In this regard, under the influence of the load, adverse phenomena occur, such as flooding, landslides, landslides. For example, this could be a landslide near the city of Angren, in the village of Yangiabad (04.04.1991), the population of which remained under lolovy soils (now this place is called Zhigaristan), on the pass of Kamchik (2022), we can say about the collapse that occurred.

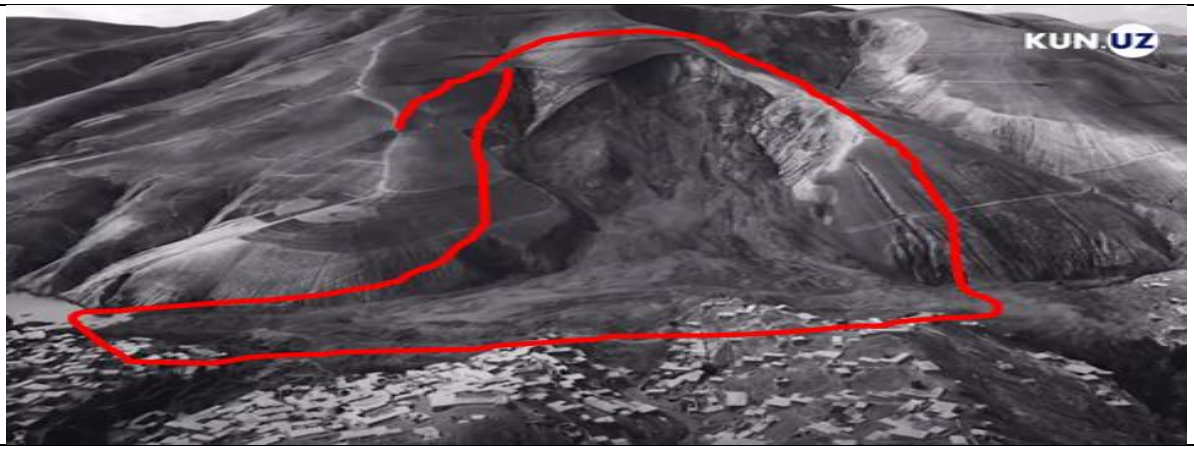
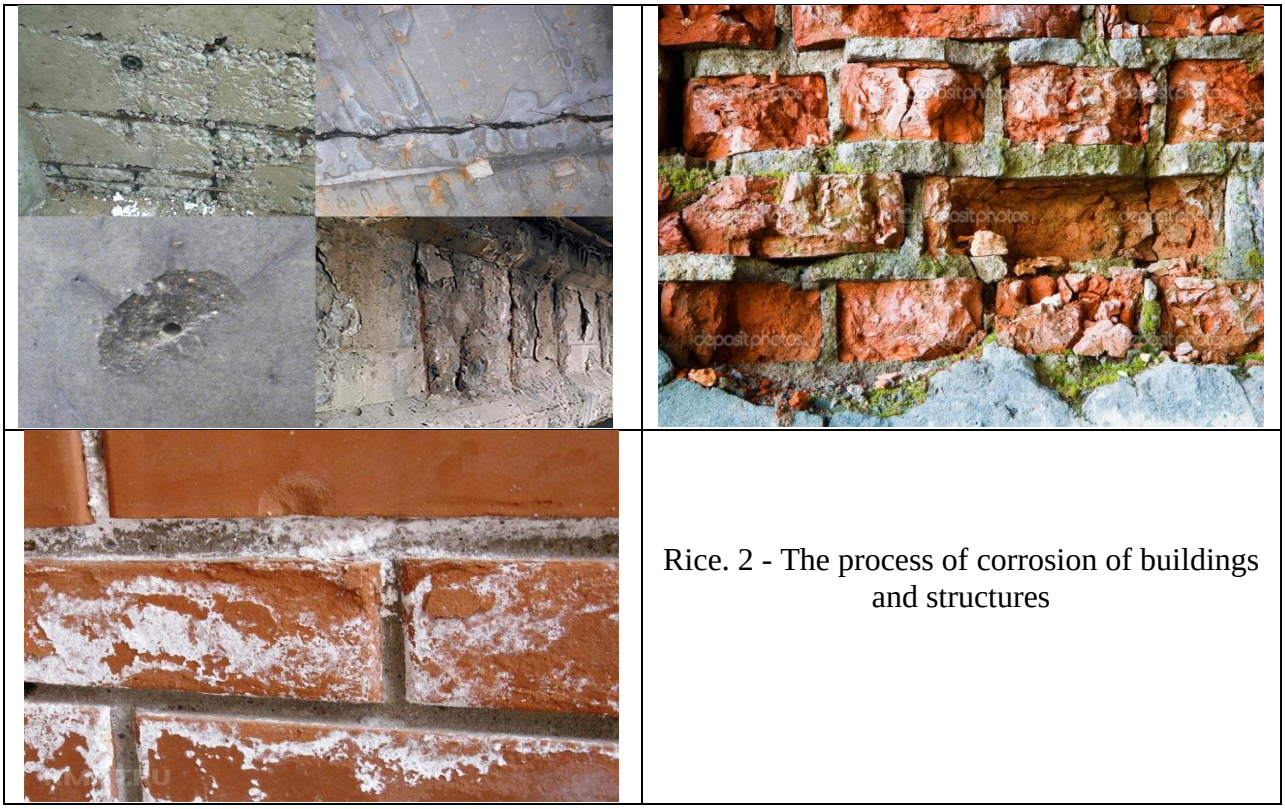


Fig-1. Episode from the Zhigariston territory



Rice. 2 - The process of corrosion of buildings and structures

These data should be considered as a necessary condition for the design, construction and operation of buildings and structures, their safety, the need for an in-depth study of water and soil conditions, as well as the need for adequate processing. The longevity of a building is understood as the time when, over the years, along with the time spent on repairs, the operational quality remains within the normal range. They are determined by the service life of parts that do not change during major repairs: walls, frames, foundations.

The longevity of buildings and structures is mainly divided into 2 types: physical and technological or spiritual longevity. Physical durability depends on the physical and technical characteristics of structures: strength, tightness, heat and sound insulation, and other characteristics. Technological or spiritual longevity depends on the suitability of the building itself, the functional or technological processes taking place in it.

Buildings, of course, are made up of structures. The durability of the entire building depends on their durability. The information below shows the service life of some parts of the building. In high-rise buildings, the standard period is set at 100 years, which is reduced to 50 years in a highly aggressive environment if the building is not repaired. Also in two-story buildings, the above situation is 83 and 33 years, respectively, and the decrease is 2.5 times. In similar concrete and reinforced concrete parts, as well as in brick and clinker-block materials, it was found that the standard value of durability is reduced by up to 3 times. Therefore, it is necessary to take them into account when calculating the economic indicators of buildings and structures. To increase the durability of buildings and structures, it is necessary to ensure the durability of building structures, such as waterproofing, corrosion protection of equipment. However, the work carried out on multi-storey buildings and structures under construction in recent years requires scientific justification. The basis for this conclusion is a landslide on the Kamchik Pass highway on March 19, 2022, an accident at the dam of the Sardoba reservoir. Due to the accumulation of more moisture in loess

soils, there was a collapse. In connection with these reasons, the issue of compaction on loess soils is relevant. B. Soliev. Reclamation of flooded territories of cities and towns. M. 2010 274s. Water in reservoirs is 0.2-0.5 g/l, and the level of mineralization of collector-ditch water is 7-15 g/l. Groundwater is the same as surface water, the level of soil salinity is also different. Lots of saline land. About half of the irrigated lands in Uzbekistan are saline to some extent. It is known that in recent years the salt of the Aral Sea has been spreading through its basin into the permafrost of the mountains of Kyrgyzstan. They are predominantly of sulfate and chloride type of salinity. To protect buildings and structures from the impact of an aggressive environment, drainage wells have been built in some settlements of the country. [3, 4, 5] The radius of their use is designed for 500-1000 m. In practice, it is known that the effectiveness of the expected results in areas remote from the canals according to the groundwater level chart is insufficient.

Studies in the Ferghana region showed that the change in the mass of the metal ranged from 0.44 to 7.63 g/cm^2. This showed that more water depends on the amount of salt. As a result of statistical processing of the obtained data, the following dependence was revealed

$$\mathbf{P=0.00103+0.00113M+0.00006M^2}$$

Where P is the mass loss. M - mineralization of water. The correlation coefficient was 0.92.

In order to increase the life of buildings, taking into account the above information, we can recommend the following:

1. It is necessary to design and build taking into account the characteristics of soil type and groundwater level.
2. The groundwater level curve must be designed in a straight and horizontal position, this is achieved by increasing the density of closed drainage.
3. The foundation of the building must be designed raised and not connected to the ground, in this case it is advisable to lay a waterproofing layer under and above the foundation.
4. It is advisable to design the floors of buildings and structures with aeration devices against water accumulation..
5. The walls of the building, roofing materials should be periodically treated from aggressive environments, additional scientific research should be carried out to determine its type and duration.

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