



## FLOOR CONSTRUCTION TECHNOLOGY: SEQUENCE, COMPONENTS AND TECHNICAL REQUIREMENTS

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### ANNOTATION:

This article examines floor construction technology, focusing on the sequence of installation processes, structural components, and technical requirements. It highlights the importance of proper base preparation, subfloor installation, insulation layers, screed application, and finishing works. The study also analyzes modern construction materials and technologies used in flooring systems. Special attention is given to quality control, durability, and compliance with engineering standards. The article emphasizes that correct execution of each stage ensures long-term performance, safety, and efficiency of floor structures.

### KEYWORDS:

floor construction, installation sequence, structural components, flooring materials, screed, insulation, durability, construction technology, engineering standards, building materials

Floor construction is one of the most important aspects of modern building technology, as it directly affects the strength, durability, safety, and comfort of any structure. Floors serve not only as load-bearing elements but also as protective and functional layers that provide insulation, stability, and aesthetic value. The quality of floor construction depends on правильная технологическая последовательность, правильный выбор материалов и соблюдение строительных норм и требований. In contemporary construction practice, floor systems are designed to meet a wide range of functional requirements. These include resistance to mechanical loads, protection against moisture, thermal insulation, acoustic comfort, and long service life. A properly constructed floor must



withstand dynamic and static loads while maintaining its structural integrity over time. Therefore, understanding the sequence of floor construction and the role of each component is essential for engineers, builders, and technicians. The process of floor construction begins with the preparation of the base surface. This stage is crucial because it determines the stability and reliability of the entire floor system. The base may consist of soil, concrete slabs, or structural elements, depending on the type of building. Before further work begins, the surface must be cleaned, leveled, and compacted to eliminate irregularities and ensure proper adhesion of subsequent layers. Any defects at this stage can lead to serious problems in the future, such as cracks or uneven surfaces. After the preparation of the base, the next step is the installation of the subfloor or supporting layer. This layer plays a key role in distributing loads evenly and providing additional strength to the structure. In many cases, reinforced concrete is used as the subfloor material due to its high durability and load-bearing capacity. The thickness and composition of this layer depend on the expected нагрузка and building design. Following the subfloor installation, insulation layers are applied. These layers are essential for improving the thermal and acoustic performance of the floor. Thermal insulation helps maintain indoor temperature and reduce energy consumption, while acoustic insulation minimizes noise transmission between floors. Common materials used for insulation include mineral wool, foam boards, and современные полимерные материалы. The choice of insulation depends on environmental conditions, building type, and required performance characteristics. The next stage in the sequence is the application of the screed layer. The screed serves as a leveling layer that creates a smooth and even surface for the final flooring. It also contributes to load distribution and protects the underlying layers. The screed is typically made of cement-sand mixtures or self-leveling compounds. Proper installation of the screed is critical, as any unevenness can affect the quality and durability of the finishing layer. Once the screed has cured and achieved sufficient strength, the finishing layer is installed. This is the visible surface of the floor and plays a significant role in both functionality and aesthetics. Common finishing materials include ceramic tiles, laminate, parquet, and vinyl покрытия. The selection of finishing materials depends on the purpose of the помещение, design requirements, and эксплуатационные условия. Each component of the floor system has specific functions and must meet certain



technical requirements. The base layer must provide stability and resistance to deformation. The subfloor must ensure proper load distribution. Insulation layers must meet standards for thermal and acoustic performance. The screed must be strong, even, and crack-resistant. Finally, the finishing layer must be durable, wear-resistant, and safe for use. Modern construction technologies have introduced advanced materials and methods that improve the efficiency and quality of floor systems. For example, the use of self-leveling compounds allows for faster and more precise installation of screeds. Polymer-based flooring systems provide enhanced durability and resistance to chemicals and moisture. Additionally, prefabricated floor systems are becoming increasingly popular due to their ease of installation and consistent quality. Despite these advancements, several common problems can occur in floor construction. One of the most frequent issues is cracking, which may result from improper material selection, inadequate curing, or structural movement. Moisture damage is another common problem, especially in areas with high humidity or poor waterproofing. Uneven surfaces and poor adhesion of finishing materials can also affect the performance and appearance of floors. To prevent these problems, it is essential to follow proper construction practices and adhere to technical standards. Quality control at each stage of construction is necessary to ensure that all components meet the required specifications. Skilled labor and proper supervision also play a crucial role in achieving high-quality results. The requirements for floor construction are determined by building codes and engineering standards. These requirements include load-bearing capacity, resistance to environmental factors, durability, and safety. Floors must be designed to withstand expected loads without deformation or failure. They must also provide adequate protection against moisture and temperature variations. Environmental considerations are becoming increasingly important in modern construction. Sustainable materials and energy-efficient technologies are being used to reduce the environmental impact of buildings. For example, eco-friendly insulation materials and recycled components are gaining popularity in floor construction. These innovations contribute to sustainable development and improve the overall performance of buildings. In addition to technical requirements, economic factors also influence floor construction. The cost of materials, labor, and maintenance must be considered when selecting construction methods. Efficient planning and proper



resource management can help reduce costs while maintaining quality. The integration of digital technologies is another important trend in construction. Building Information Modeling (BIM) allows engineers to design and analyze floor systems more accurately. This technology helps identify potential problems before construction begins and improves coordination between different stages of the project. In conclusion, floor construction technology is a complex and essential aspect of building engineering. The sequence of construction, the selection of materials, and compliance with technical requirements all play a critical role in determining the quality and durability of floor systems. Modern technologies and materials offer new opportunities for improving efficiency and performance, but their successful implementation depends on proper planning and execution. By following established standards and adopting innovative approaches, it is possible to achieve high-quality floor systems that meet the demands of modern construction.

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