UDC 692.415:69.059.25

THE FACTORS INFLUENCING THE CHOICE OF TECHNOLOGY FOR ROOFING REPAIR OF INDUSTRIAL BUILDINGS

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Formulation of problem. The experience of arrangement of combined coating in Ukraine in previous years was due to the impossibility of pitched roof covering on industrial buildings that have large areas in plan.

Three types of roofing systems: a multilayered roof membrane made of polymer-bitumen materials (roofing felt), floor roof of the film material (very rare) and roofing mastic (mastic of liquidised hot or cold mastic) are mainly used. Combinations of two or three types of roofs are often used at the same building.

Operating experience of these roofs show the problems associated with mass leaking, blistering, wrinkles on the surface of a roof membrane, separation webs in places of contiguity, surface and through cracks and complete destruction of the stratified roof cake. They usually appeared after the first year of operation. Usually, a new layer of flooring or roofing mastic was made on the top of a destructed layer. Therefore, in buildings constructed more than 10 years ago, the roof is a true "roof pie", with a minimum of 10-15 layers.

Apart from the damage and deterioration of the roof, directly related to its functionality, the reasons for the reconstruction of roofs may also be their unsatisfactory appearance, roof replacement at overhaul of the building or changing the functionality of the building as a whole.

Purpose. The choice of repair method of a multilayer flat roof is a complicated task due to the lack of information about technical conditions of the inner layers of the roof repaired, appearance of new materials and new varieties of known roofing materials, conflicting recommendations on their application and methods of installation.

Basic material. The following types of roof repair are possible depending on the condition of the roof pie, the requirements of the state building code and customer requirements:

1. Overhaul repairs of the roof with a full replacement of roofing (removal of the old roofing "pie" to the carrier base and possible removal of ties, removal of former old insulation and vapor barrier).

2. Maintenance repairs with the partial replacement of the roof and application of layer on the top of the roof repaired.

3. Comprehensive process of repair and building of a soft roof in addition to a waterproofing mat includes a number of other operations: making screed, steam and heat insulation, making of eaves, junctions, etc.

The following factors: a composition of a roof "pie" (the bigger and more difficult is the "pie", the slower is the installation), the compatibility of material chemical composition, the cost and quality of repair material, the weight (possibility of its application in the reconstruction of the building), etc. must be taken into account at the stage of making the design decision (see figure 1).

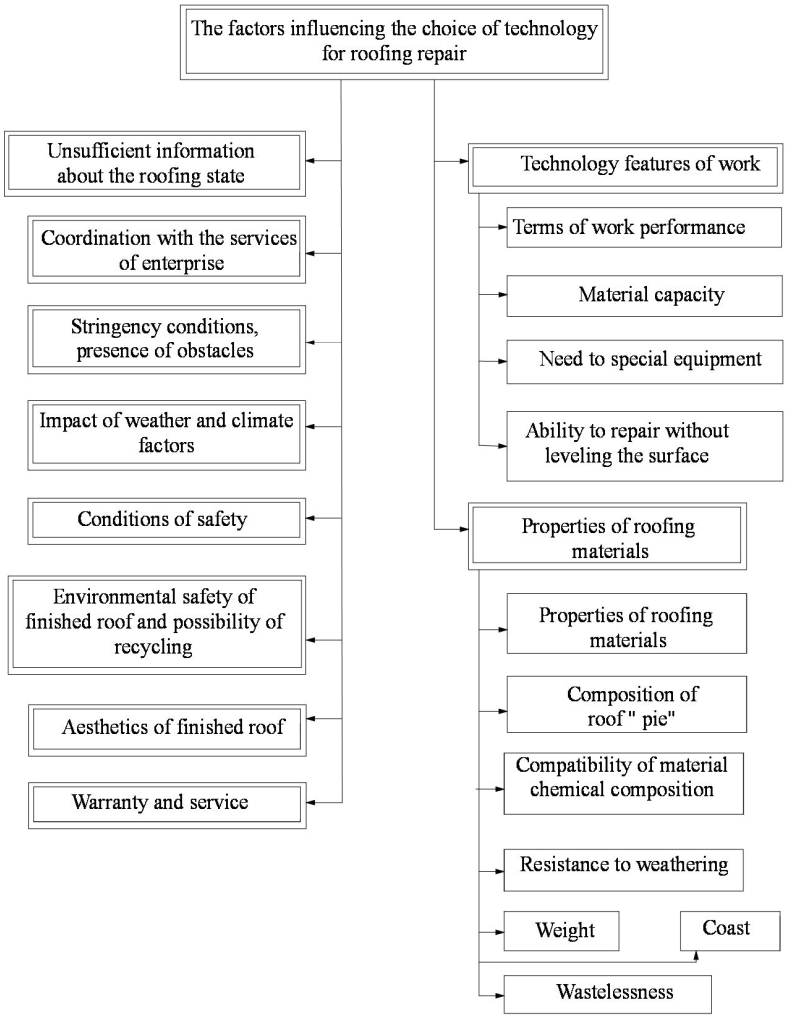

Figure 1. Analysis of factors influencing the choice of technology for roofing repair

Technology of roof installation depends on the type of roof repair and materials. Traditionally, making up a roof is a seasonal work. And the bulk of such work is carried out in the summer. However, with the use of modern roofing materials "seasonal factor" is becoming less pronounced.

The main well-known methods of roofing repair of industrial buildings are: the following repair of roofs with polymer-bitumen roll materials, repair of roofs using hot and cold sealant, repair of roofs with synthetic PVC, TPO-, EPDM membranes, change of structural elements of the roof (building pitched roof covered with trapezoidal sheet, lightweight sandwich-panel, slate, etc.).

Modern building material market offers a wide selection of materials for roofs different in costs, composition, characteristics. To make the best use of roofing materials, it is necessary to know their properties, and rules for storage and transportation, as well as their behavior in constructions and installations.

According to statistics, these are traditional materials such as roofing, slate, sheet iron, which remain the most sought after today, owing not so much to the material quality as to the low purchasing power of population and shortage of working capital at enterprises because of the crisis.

During the last 10 years, which the mass importation of a wide range of materials and products used in international practice for arrangement of roofs to Ukraine, a lot of roofing materials (e.g., roofing membrane), appeared as well, but their use is not reflected in state standards, what leads to problems in coordination of projects and violation of the technology of roof arrangement of these materials. Supply of imported materials, as a rule, is not accompanied by the necessary technical documentation and the more (tactically) knowledge, which reveals a particular appropriateness of their application.Today, out of any modern material can be waterproof and durable roof subject to the rules of technology installation. Therefore, one of the most pressing problems in the smooth functioning of buildings and structures is to develop efficient technologies of roofing repair.

An important component is a factor of really-made roof operation. The roof which is being operated is a special structure for the movement of people or vehicles, recreation, growing green plants, etc. For example, such roofs can solve the problem of creating a playground and a parking lot downtown, where there is no free space. The main advantage of such roofs is that they increase the efficiency and functionality of operation. Besides "Green roof" is an important environmental issue. Additional advantage of such roofs is a covering under the protection of the working layer, and there are no problems with ultraviolet radiation. As improved thermal performance is better, it is possible to a thin layer of a thermal insulator. And finally, one of the decisive criteria when choosing the method of repairing roofs of industrial buildings is competence, qualifications and experience of contractors. Only professionals equipped with appropriate equipment should perform roofing work.

Conclusions. At present there are no special techniques and recommendations, scientifically proved to selection of optimal methods for roof repair of industrial buildings in Ukraine. Designers and contractors choose materials and technology intuitively relying on personal experience and recommendations of manufacturers and material suppliers.

As to 95% of the total amount is made from rolled roofing coating, priority should be given to the technology of making up the roof from top roll coating. The

importance of this trend is also due to the fact that, as analysis of references shows the volume of roof repair is more the amount then under construction.

Therefore for industrial buildings, research of various technologies of repair and reconstruction of roofs of industrial buildings, the methodology of their choice with regard of all the requirements to the above mentioned factors are necessary.

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