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SCIENTIFIC VIEWS ON GEOMETRIC MODELING OF OPTIMAL DESIGN OF SPATIAL SHELL ENCLOSES

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Abstract: The article presents thoughts and comments on some research in the field of geometric modeling of optimal design of spatial enclosures of fences.
Key words: Dome, cylindrical, conoid, ellipsoid, avoid, paraboloid, hyperboloid, modeling, constructor, architect, configuration, framework, parameter, aesthetic, parquet, construction, approximation, transcendental.

Considering the rapid development of Science and technology in modern times, the penetration of computer technology and the internet Information System into our lives, taking into account the enormous construction and construction work carried out in foreign countries in modern architectural terms in the age of sustainable development of all people of Science in the direction of Science and technology, the construction, the main pedimented facade is known to have a distinctive appearance in the architectural decoration and geometric surfaces in mosques and madrasas with constructions.

With this in mind, the implementation of spatial shell closures, which play an important role in architectural construction objects on the basis of modern requirements, still remains a problematic issue. It is known from history that the application of curved surface closures is known to have been applied in one object or another.

When we look at the history of the development of the science of drawing geometry, we have to pay attention to such a motto. This is interpreted as, i.e.; nature, geometry and architecture". It follows from this that all practical work, creative and inventive work, which has been done from time immemorial to the present period, is certainly known to have been made by default from natural landscapes.

Therefore, it is no secret that there are problems in the production and application of construction devices used in all types of building and structure construction, in which modern construction installation work is carried out, modern construction devices that fully meet the requirements of the time, which have good cost-effectiveness, taking into account the fact that, that is, in addition to improving the internal moderate climatic conditions in the environments where spatial shell closures are used, it is possible to insist on mojazity, coziness, uniform distribution of sound, normalization of air exchange in the internal environment, a decrease in the need for heating

networks applied during the winter season, savings in expenses that have gone for shutdown, increased load-bearing capacity of the, as a result of our ancestors doing a lot of research in order to improve living conditions, it is permissible to apply domed, cylindrical closures. Therefore, instead of the main devices in the construction installation work carried out at construction facilities of modern appearance, that is, traditional construction devices used in closures, it can be considered advisable to apply non-traditional construction device thin-walled spatial iron concrete shell closures of the partition. Examples of these would be the following, namely, the cylindroid, the canoid, the ellipsoid, the ovoid, the paraboloid, the hyperboloid, etc. From the above, it should be noted that the use of residential buildings under construction in modern times, closures in public buildings and roofs of additional buildings and structures around these buildings, as well as spatial shell closures in head Service and use areas gives a good result [1; 339-343- page.].

It follows that it is necessary to carry out scientific research on the scientific optimal design and its practical application on spatial shell closures using geometric modeling and computer engineering graphics.

The main feature of spatial shell closures is that it is worth noting that when closing large construction sites, including closed-Type sports complexes, shopping complexes, hangars, station buildings in the direction of cultural and domestic service to the population, Cinema-Concert Halls, etc.

From the beginning of the 20th century, from developed foreign countries: Australia, Japan, the Americas, a number of countries on the European continent and in a number of cities in the former Union, including the closure of the waiting hall at the Borispol airport in Kiev with a size of 40x60 meters, the closure of the market named Dmitrow with a closure of 36x36 meters, [2; 22-26-page.].

1. The design, construction and use of shell closures affects the entire range of predetermined requirements. If many of them are geometrically modeled, this allows us to approach the issue of designing architectural shell closures from a geometric point of view. A geometric analysis of several hundred architectural shell closures, conducted in our country and abroad, shows that even for related shells, such as cylindrical and spherical surfaces, it is necessary to give them their optimal configuration, divide them into elements, determine the metric issues of their properties, etc. More than that, geometric analysis is the study of shell closures of complex shapes;

2. In order for architects to freely control the shape in which the shell closures are made, they must master the geometric apparatus for the purpose of forming curved surfaces, which is characterized by sufficient flexibility, volatility. Methods for the construction of shell surface carcasses can be produced based on the carcass-parametric method, which has large forming capabilities.

3. The structure of shells in architecture has its own peculiarity, The Shape of which is not determined by such strict requirements and a large number of parameters, for example, in some areas of mechanical engineering, such a high accuracy of frequent and surface installation is not required, while for a shell in architecture it will be necessary, taking into account its perception in he structure of shells in architecture has its own peculiarity, The Shape of which is not determiners..

4. In living nature, there are many surfaces that can be called" strength by shape". As a result of millennia of evolution, representatives of the animal and plant world have acquired the most rational form in terms of strong economy and efficiency of their functional activities. The identification and study of geometric patterns occurring in the forms of individual representatives of living nature makes it possible to use them for the construction of architectural shells, both in full and in part, in the form of a separate surface or in various combinations. Ving nature, there are many surfaces thane bionics.

5. For the practice of architectural design of shell closures, it is important to obtain shell sections from known or constructed surfaces, as well as composite shells formed by combining multiple partitions of one surface or different surfaces.

6. Prefabricated reinforced concrete, iron cement or other elements for the implementation of the shell, its surface is divided into the minimum elements that can be produced at the plant and assembled at the construction site. Despite the existing proposals, the issue of such a structure remains relevant. It is necessary to approach the shell closures to the elements and study the optimality of division during precise parquet.

7. When designing shell closures, metric-order problems arise with the areas of the shell surfaces and the volumes they cover. In this case, it is necessary to solve problems in the formation of the lower one, in determining the metric properties, and vice versa, for example, in finding geometric parameters of the shell covering a predetermined volume.

8. The problem of determining the optimal shell shape, which satisfies a number of criteria quantitatively and qualitatively, is now very important. There can be various formulas for such a problem, in particular, if its geometric aspect is worth noting, an optimal Shell must be selected from one or another surface set that meets a number of criteria.

As can be seen from the above, a wide range of geometric issues related to the Basic Rules and requirements that affect their formation in order to widely introduce and improve the effectiveness of architectural shells will not go unnoticed [3; 1(1) 17-19 page.].

The geometric construction of shell closures presents two main problems:

1. Determination of The Shape of the middle surface, which best meets the pre-established conditions and requirements of another nature.

2. Solving special problems of geometric construction and formation of the existing middle surface: approximation, approximation, determination of metric characteristic, etc.

Many factors and conditions affect the shape of the shell: the static properties of the Shell, its functional and aesthetic qualities, economy and construction technology, etc. Although most of these factors are of no geometric nature, they somehow find their embodiment in shell geometry, they are mutually dependent on the fact that all these factors are in the form of shells. Therefore, based on the analysis of the surface shapes of several dozen shells, the most important and general aspects of the factors that determine the geometric nature of the shell, along with the assumption of their study, are systematized, geometrically modeled [3; 2(3), 27-30-page.].

Often a slight change in The Shape of the shell greatly increases its carrying capacity-the distribution of forces from its own weight is also influenced by The Shape of the Shell and the character of its support. The calculation of the shell depends on the mountain-exactly on its

geometric shape. Medium surface points can be taken into account its type, the nature of its reliance contour, the connection nature of its components, etc.

The main classification technological feature of shell closures is their strength or assembly. In addition, an important technological point that simplifies and reduces the cost of the shell is the possibility of its kinematic execution. In this regard, the shifting and transfer transcendental surfaces are very widely used as the middle surfaces of their shells.

In conclusion, when applying spatial shell closures in practice, the economic savings will be up to 40%, 60%, the load capacity will increase the earthquake tolerance will increase, and the private weight will decrease, etc.

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