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Experience of Using Operated Roofs Abroad

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Annotation: This article analyzes wildlife and architecture, are inextricably linked, and that huge areas of the roofs of industrial, residential and public buildings, underground structures make up an indispensable reserve of cities.

Keywords: roof, landscaping, lawn, architecture,. fountain, garden, square.

Introduction The history of gardens on the roofs of high-rise gardens began before our era. The first ancient landscape ideas were the hanging gardens of Babylon and the green terraces of Caesar Augustus.

The modern history of such landscaping begins in Iceland, where the roofs were covered with earth and planted with grass. The houses of the inhabitants of this island country resembled living corners, on the roofs of which greenery grows freely almost as in natural conditions

Abroad (in the USA, Canada, England, Norway, Sweden, Germany, Japan, France, Switzerland) more than 70% of reinforced concrete roofs are used. They are used for tanning salons, gymnastic and walking grounds, cinema, cafes, summer gardens, etc.

The main part At present, the experience of designing and arranging gardens on artificial grounds can no longer be reduced to single examples.

The courtyard garden of the administrative building in Sulbach (Germany), located on the roof of an underground garage, has a regular layout designed for visual perception from the windows of the upper floors. The garden of 1000 m2 can be divided into two parts, one of which, located in the center, is buried and occupied by a lawn and flower beds, and the other is paved with concrete tiles. Garden furniture and containers with trees and shrubs are arranged on the tiled paving. The core of the garden composition is a three-level fountain. [Fig.1]

Интересно декоративное оформление сада на крыше жилого дома в Сан-Франциско. Сад хорошо гармонирует с окружающим дом прибрежным пейзажем с причудливыми зарослями кактусов и агав. Открывающаяся с крыши живописная панорама делает целесообразным устройство удобных мест для обзора. Сад имеет небольшие размеры (11X14 м) и интересен прежде всего ассортиментом растений. В саду нет высоких деревьев. Гармонично высаженные в грядки разной высоты кактусы, карликовый можжевельник, полынь и другие растения декоративны прежде всего своей формой или цветом листьев. Около 60 % площади сада отведено под дорожки и площадки, покрытые деревянным настилом; отдельные участки выложены морской галькой. Для защиты от палящих солнечных лучей в саду устроена пергола с вьющимися растениями. [Рис 2)

The decorative design of the garden on the roof of a residential building in San Francisco is interesting. The garden harmonizes well with the coastal landscape surrounding the house with bizarre thickets of cacti and agaves. The picturesque panorama opening from the roof makes it advisable to arrange convenient places for viewing. The garden has a small size (11X14 m) and is primarily interesting for its assortment of plants. There are no tall trees in the garden. Cacti, dwarf juniper, wormwood and other plants planted harmoniously in beds of different heights are decorative primarily by their shape or color of leaves. About 60% of the garden area is reserved for paths and

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playgrounds covered with wooden flooring; some areas are lined with sea pebbles. A pergola with climbing plants is arranged in the garden to protect it from the sun's rays. [Fig. 2)

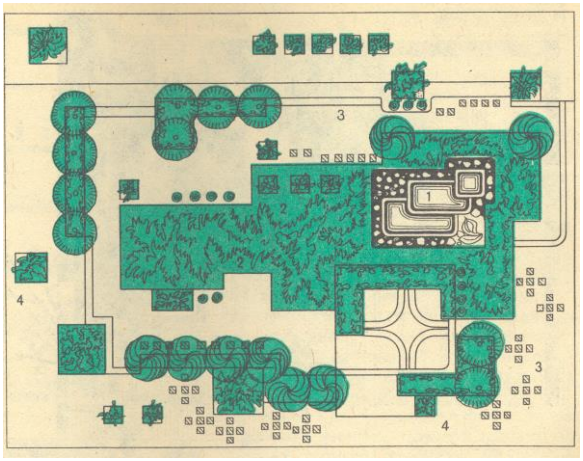

Fig.1.. Roof garden of an administrative building in Sulbach (Germany)

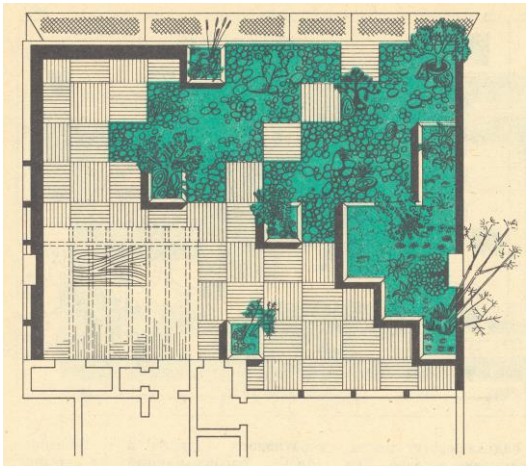

Fig. 2. Roof garden of a residential building in San Francisco

1 – fountain; 2 – lawn; 3 – benches, chairs;

3 – benches, chairs;

4 – glazed walls

Roof gardens can be very diverse in shape, decorative solutions, and space composition. An artfully made microrelief can decorate tubs in which trees are planted, creating the illusion of complete naturalness of greenery. The "water garden" on the roof of a department store in one of the cities of England is solved as a single water surface (the depth of the reservoir is only about 20 cm), through which the decorative paving of the bottom shines through and in which, according to the author's plan, the sky with clouds is reflected. A complex system of bridges, platforms, passages, decorative walls, as well as fountain bowls and flat containers with water-loving plants complement the composition of the garden.

In some examples, the main interest is unusual in color, pattern, texture paving, while plants are given in a limited assortment and simple color combinations.

Roof gardens can be extensive in area (reaching several hectares) or relatively small, according to the size of the building on which they are located.

Mellon Square in Pittsburgh (USA) (about 0.5 hectares) is located on the roof of an underground garage among the busy highways of the city; it is a kind of oasis among dense buildings.

The lack of available space forced the designers to use this space as a public garden and as an underground garage.

In the square on the roof, tall trees are planted in special boxes, flat lawn spaces and fountains in small bowls are created. The square is covered with tiles of different colors of a strict geometric pattern.

The square on the roof of a multi-storey garage is interpreted in a completely different way. Curved lines of roads and reservoirs, free groups of trees, extensive lawns make you forget that this site is surrounded by urban development devoid of greenery. The trees are planted in boxes above the structural supports of the garage. To disguise these boxes, small mounds of soft outlines are made, completely destroying the impression of artificiality of tree planting.

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It is the largest rooftop garden in the USA. Its area is 1.4 hectares; its base is a solid concrete slab. It has a closed irrigation and drainage system: columns (including one) are equipped with drains serving a certain section of the roof. Where it was impossible to lower the relief of the garden for water runoff, the drains are picked up and diverted to the drain by a 10-centimeter pipe. In order not to spoil the soil cover, a 10-centimeter drainage layer of crushed stone is laid under the entire area of the garden. Paving and structures are made of lightweight concrete, stones and rocks are made of pumice. The ground layer is made of lightweight soils. 42 trees each weighing up to 3 tons are placed above the columns. The species used are low: olives, holly, fan-leaved maple, cherry, wild apple, magnolia, boxwood. Jets beat from the holes around the perimeter of the pool, water is filtered through the same holes.

The roof-garden of the residential house "Sarabgai" in Ahmedabad (India). The roof of the superstructure and the house is covered with a thick layer of earth, which is necessary in the tropical climate of India. Water for irrigation of plantings goes through concrete patches, which divide the turf cover into separate sections. Both roofs, located at different levels, are connected by an external staircase

An apartment of the bank owner has been built on the roof of the bank building in Hanover and a garden has been arranged there. Pergolas, tubs and pots with plants picturesquely separate separate areas. The concrete covering occupies most of the roof. [Application]

High walls, hedges and climbing plants give the roof-garden of a residential building in Vienna comfort. A clear division into areas occupied by grass, flagstones and a swimming pool contributes to the creation of spaces of commensurate scale. [Application]

The house for doctors in Middelgarnis (Holland) is located in the center of the village. There is a viewing platform on the roof of this house for viewing the surroundings. The high silhouette of the building and the beautiful medieval church give architectural expressiveness to the village, located on an even place.

A garden is organized on the 11th floor of a residential building in Milan. Surfaces covered with natural stone, wood, aluminum, give the garden a great variety. The plants chosen for planting correspond to the humid climate of Milan: evergreen sumac, roses and azaleas. Lawns consist of voles and mosses.

On the territory of the district hospital of Thun (Switzerland) there was no room for the rest of the medical staff. It was decided to build a roof garden over the house under construction for medical workers for this purpose. The roof garden is well equipped for relaxation.

The roof garden of the Sigram Building in New York. The architects were faced with the task of creating such a greening of the roof of a five-storey building, so that when viewed from above, from the numerous floors of a skyscraper, it would correspond to the architecture of the skyscraper itself. Various options led to the decision to create green hills on the roof. For design reasons, the hills could not be made of heavy earth mounds, so it was decided to make light baskets of metal nets on a wooden frame on the roof.

Vessels with nutrient solution for ivy climbing along the top of the hills were installed on top of such baskets. These artificial landscaped hills had different sizes: from 4 to 9 m in diameter and were picturesquely placed on the roof. Careful preparation and continuous addition of nutrient solution ensured good ivy growth

There is a large water garden on the roof above the general store in Guildford (England). The garden is protected from the winds by windproof walls, superstructures, which house the elevator engine room and a water tank. The water layer in the reservoir has a 15-centimeter thickness. The bottom is lined with gravel of various colors, which gives the impression of different water depths. [Appendix] Aquatic plants grow in some areas. Towering above the water, fiberglass bowls with colored mosaics measuring 150 cm serve as fountains, and four large round containers are used for planting flower plants in them.

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Conclusion. Huge areas of roofs of industrial, residential and public buildings, underground structures are an indispensable reserve of urban areas. Of course, they can be used in different ways: for parking lots, landing pads for helicopters, placement of utility blocks or engineering devices (which mainly happens on the roofs in use), but they can also become a kind of artificial foundation for gardens, boulevards, squares and other objects of the landscape architecture of the city. Environmental benefits of roof greening: Due to greening, the temperature of the roof surface is significantly reduced. Plants absorb dust and toxic secretions and serve as additional insulation of the building. The sound-absorbing effect of such a coating is also significant. Rainfall, partially absorbed by plants and evaporating, significantly reduces the drain from roofs and thereby contributes to the prevention of leashes and floods. It is not by chance that the use of roofs was considered the "program point of new architecture" by the world-famous architect Le Corbusier, who, like many outstanding architects of our time, repeatedly confirmed this principle in his work. "Truly, it contradicts all logic when an area equal to an entire city is not used, and the slate is left to admire the stars!" (Le Corbusier). Landscaped roof gardens are a direct contact with wildlife, the removal of negative emotions. If you use the landscaping of roofs for recreation, it will be able to enrich life with new content. Rest among plants improves the health, psychological state of a person, bringing him closer to nature.

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