

THE DESIGN OF LANDSCAPING OF EXTERNAL AREAS OF KAZAN UNIVERSITY SCHOOL BUILDING

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Abstract .The article describes the project of the landscaping of the exterior area of one of the educational buildings of Kazan University. The problems of preserving the external appearance of the architectural ensemble are considered. The negative urban factors identified and their influence on the selection of plant range was shown. Marked individual characteristics of the areas, identified private landscape solutions. Emphasized that the ecological approach not only allows to create decorative compositions are fully viable in a tough urban environments, but also contributes to the development of elements of ecological framework as the basis of conservation of urban fauna.

Keywords: green building, landscape design, urban gardening.

1. INTRODUCTION

The history of the building of IEF KFU originates in 1936, when construction started on the project, corresponding member of the Academy of architecture of the USSR Yury Y. Savitsky.

Space-planning composition of the complex is based on the combination of two equal-size wings located in relation to each other at an acute angle and forming in conjunction a general concave arc exterior wall (Fig.1).

The four-story brick building with A-shape in plan is an example of Stalinist Neoclassicism of the 1940s; it is located on a high hill bounded by Butlerova street and Scherbakovsky lane. This location gives it the character of high-rise architectural dominant that have a topping town planning influence on the organization development of the entire surrounding area.

The main entrance is built a front stone staircase, wide, straight, with a horizontal rest areas, decorated delivered directly to the site of capitals complex orders.



Fig.1 The photo was taken in 1952.

2. TERMS AND METHODS OF RESEARCH

Attempts landscaping a hill rising from the Old pottery street, were numerous, and were confined mostly to the natural trees along the Grand staircase, the device of lawn seed and "stone flower vase" of the annuals, the dilapidated remains of which are still preserved in the North-Western slope (Fig.2).

The practice of gardening such monumental objects includes a device kurdoner or front parterre in front of the main entrance and registration areas in a regular classic style (Kurbatov, 2007), (Nikolaev, 2005), (Likhachev, 1998). However, the organization of parterres presupposes the existence of quite a considerable horizontal area, what in this case.

When designing landscaping, the authors were faced with several difficult circumstances, as a purely technological and aesthetic properties. Among the first we mention the following:



Fig.2. Pre-project analysis of area. North-Western slope.

- extremely adverse insulations regime of the territory (in the hot days the surface

 - temperature of the soil reaches 50-55C°)

- both hillside are windward that promotes deep winter freezing of the ground

- a significant steepness of slopes (25-45°) greatly reduces the efficiency of

 - irrigation; slopes lose the most part of precipitation due to surface drain poorly and

 - retain snow cover

- advanced age of the building explains the large variety underground utilities for

 - which data is ambiguous and often contradictory; it is very difficult, for example,

planting of large-size trees or the conduct of trench landing

- sole slope does not have a pronounced horizontal platform (Fig.2), and flowing

irrigation water as well as rain and melt water, wash away the soil, contaminating

the closely adjacent sidewalk

However, these adverse factors can be overcome at the present level of development a landscape of technologies.

3. DISCUSSION

No doubt that any green island in a large city is goodness. Green areas become part of the ecological framework (Jian, Huijua & Yanxu, 2017), (Mario, 2016), (Soboleva, 2010), bringing invaluable advantage in the conservation of urban fauna, which is quite scarce. Slight fragmented pieces are included in the environmental corridors occur migration of birds and small animals (Podolsky, 2011).

To provide a high density vegetative plantings, to create a piece of biosphere reserve in the city centre – the idea is very tempting, but ...the bigger problem is that landscape designers have been practically



Fig.3 Olesko castle, Lviv Oblast

deprived of the opportunity to change the appearance of the external appearance of a building, are the object of cultural heritage of regional significance (*The resolution of Council of Ministers of the TASSR, 1983*). This fully applies to the hill on which the building stands, and which is a kind of pedestal. Any radical intervention in the lower part, for example, construction of terraces, stairways, or retaining walls that can upset the delicate visual balance of the architectural ensemble, built on the principle Golden ratio, majestically calm, monumental, breadth of coverage which makes a buoyant and festive mood. For example, it seemed completely unacceptable a composition in which a pile of green mass in the bottom of the slope nearly negates, smooths the relief, "eating" part of the total height (Fig.3).

There are countless examples of the use of vegetation to emphasize or, on the contrary, smoothing of uneven terrain (Bogovaja, 1988), (Bogovaja, 1990), (Teodoronski, 2008). Landing thus act as a powerful visual tool (Fig.4).

The preservation of so-called sculptural relief in which the spatial properties of the forms dictate a certain approach to the assessment of the area (Bogovaja, 1988),, was indispensable in the design.

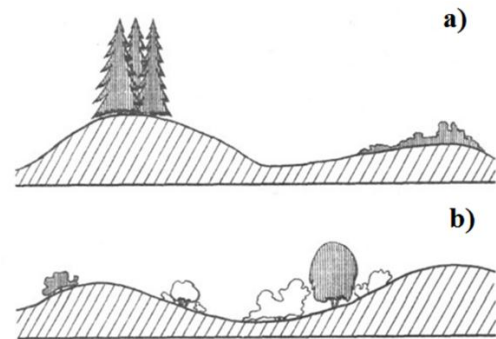


Fig.4 [9]. Examples of the use of vegetation to: a) underscore the nature of the terrain, b) its smoothing

Mentioned the Grand staircase is the main axis of composition, the same spatial dominant, which are subject to the rest of the parts. Conducted inventory of trees located on both sides of the stairs, showed that almost half of them are in poor condition (sagging, hollow, curved) and requires radical pruning, treatment or replacement. In the latter case, if you are a full replacement of plants, the staircase

is framed with a contrasting color barberry *Thunberg Artropurpurea*.

4. RESULTS



Fig.5 View from the main entrance

An important circumstance was the fact that the project design envisaged the creation of a complete image with the use of trees in the adult plant habit.

The arguments of opponents of this option was limited to the following:

- large trees will be closed part of the façade, thereby distorting the historic

appearance of the building

- there are significant technical difficulties in large-scale plantings in highly cramped conditions of the upper terrace (the working width of the pad is not more than 4 meters, the slope along the top edge of about 40°, the impossibility of the entrance of special equipment)

- it is necessary to take into account another important factor – the reaction of public opinion on biodiversity of urban plantings (Hoyle, Hitchmough & Jorgensen, 2017), (Hoyle, Hitchmough & Jorgensen, 2017) and in the process of greening in general

Account was taken of the circumstance, that selection and placement of trees and shrubs, which is part of the composite solution should be approached from an ecological positions, i.e. taking into account the requirements of plants to environmental conditions.

A heated debate among the designers was the issue of the use of trees in the landscaping of the front of the building. Was offered the option which visually emphasized the beauty of the facade row planting silver columnar poplars *Pópulus álba* (Fig. 5).

The range of plants for green building is determined on the basis of a complex set of requirements, taking into account the climatic conditions of the area, purpose of object, particularly natural green space (soil, relief, hydrology, insolation, etc.), architectural and planning situation (Yuskevich & Luntz, 1986). Given the mentioned unfavorable influences for mass plantings were selected to be the most resistant species of trees and shrubs, and take into account a complex variety of factors, such as the choice of methods of artificial irrigation, special farming techniques of planting in the soil, deprived of natural fertility, etc. All this is necessary to ensure optimal conditions for plant development, creating aesthetically complete object, and is crucial as the regulation of planting density, and considering the external appearance of the plant, its physiognomic features.

The range of vegetation for urban greening, despite the rather impressive list in fact did not give the designers the possibility of significant choice in terms of the effect of hard negative factors of the urban environment.

We considered that the choice of material in a landscape design are of great importance to the aesthetic features of trees and shrubs, they are characterized by changes in the size, shape, color, foliage, due to their growth and development, as well as the seasonal cycles of vital activity (Gorokhov, 1991). Every plant, especially detached, has its own features. At the same time, in group plantings, the trees and shrubs have the ability to "get used" to each other, forming not a set of individual plants, a single coherent group with specific ability to create a balanced volume (Sokolov, n. d).

It shows, for example, decorative-shrubs group laid around the side stairs of the left wing (Fig.6), where the designers had not been as rigid artistic restrictions.

In addition to the general pattern of the crown, the great value has character of branching, the silhouette and the architectonics of the basic skeletal branches, especially in those seasons when trees shed their leaves, i.e. conifers, planted along the railing,

continue to "hold" the overall pattern of group and winter (Fig.6).



Fig.6 Staircase of left wing

In the same tone issued two small triangles on both sides at the bottom of the ceremonial staircase (Fig.7).

The basis of ornamental coniferous groups are thuja western *Columna* and *Sankist*, junipers *Blue Arrow* and *Cossack variegata*, the decorative border is made of barberry Thunberg *Artropurpurea*, plants, is able to perform protective and barrier function in the presence of heavy pedestrian traffic.

One of the plants that are almost ideal for the purposes of urban gardening, but, unfortunately, not often used, is the oleaster *Elaeagnus angustifolia* L. Contrasting silver-burgundy combination shrub and barberry is a bright decorative frame front stairs and sod slopes and will be a worthy replacement to thickets of American maple *Ácer negúndo* along the right wing.



Fig.7 Right frontal group

Back in 1954 L. Rubtsov (pechatnik, 1938) noted that the nature of gardening landscape is primarily dependent on the physiognomic appearance of plants that are members of the plant groupings. The marked details, the authors tried to diversify, not forgetting,

of course, the decisive factor when selecting plants – resilience in urban environments.

A bold decision to design the bottom of the slopes could be the installation of vertical lawns (Fig.8) the example of the work of Martha Schwartz (Rubtsov, 1954), however, a number of negative factors in the first place located near a busy traffic artery, was forced to turn to more practical option. The slopes will be covered with turf by "dry lawn" using «biocarpet» BT-VMP intended for the device of vegetation on dry sandy soils, not subject to mechanical stress. Specially selected composition of mixtures aims to ensure a high decorative lawns.



Fig.8 The oversized lawns of Martha Schwartz

4. CONCLUSIONS

The submitted draft landscaping of the external areas of the educational building of Kazan Federal University, executed with maximum consideration of adverse anthropogenic factors. The concept of gardening, aimed at preservation of the external historic appearance of the building. Selected plant range corresponding to decorative criteria and having a high resilience in urban environments

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