

THE GREEN ROOF - AN AESTHETIC SOLUTION FOR BUILDING REHABILITATION

ACOPERIȘUL VERDE – SOLUȚIE ESTETICĂ DE REABILITARE A CLĂDIRILOR

PAȘCU Roxana¹, ZLATI Cristina¹, BERNARDIS R.R.¹, GRECU Codrina¹

e-mail: ing.dr.roxana@gmail.com

Abstract. *In recent decades, the green roof is a modern system and environmentally friendly of coating buildings, partially or completely, with soil and vegetation. This particular type of landscaping allows vegetation to grow harmoniously upon considerable areas which is why architects, builders and urban planners around the world have begun to turn to green roofs not for aesthetic reasons, a concern rather secondary, but for their practical nature and the ability to alleviate environmental extremes specific to conventional roofs. Therefore this paper aims to present some of the most suitable solutions presenting the rehabilitation of a building in the area of Podu Ros-Iasi, Romania.*

Key words: rehabilitation, substrate, sustainability, roof culture

Rezumat. *În ultimele decenii, acoperișul înverzit este un sistem modern și ecologic, de acoperire, parțială sau completă, cu sol și vegetație a clădirilor. Acest tip special de amenajare, permite vegetației să crească armonios pe suprafațe considerabile motiv pentru care, arhitecți, constructori și proiectanți urbani din toată lumea au început să apeleze la acoperișurile verzi nu din considerente estetice, o preocupare mai degrabă secundară, ci pentru caracterul lor practic și pentru capacitatea de a atenua extremele de mediu specifice acoperișurilor convenționale. Drept urmare lucrarea de față își propune să prezinte câteva din cele mai pretabile soluții prezentând o propunere de reabilitare a unei clădiri din Podu Roș-Iași, Romania.*

Cuvinte cheie: reabilitare, substrat, sustenabilitate, cultură pe acoperiș

INTRODUCTION

With direct relation to ensuring the ecological balance of the environment, landscape architecture is concerned with the preservation and development of landscapes and their associated values for the benefit of current and future generations.

Landscapes contribute to improving the quality of human life and through their social function they provide the framework and a favorable environment for public or private outdoors recreating (Kristin *et al.*, 2007), they also grace the cities, places of life and work, some of which have cultural importance (gardens - museum, gardens exhibition, historic gardens) or scientific (botanical gardens,

¹University of Agricultural Sciences and Veterinary Medicine Iasi, Romania

rosaries, reserves, national parks, etc.). Thus, the green roof - garden is a modern system, environmentally friendly, coating partial or complete, with soil that enables these types of gardens, providing a favorable environment for the growth of vegetation (Nagase and Dunnett, 2011). Buildings with low slope roofs are favorable for applying the green roofs - garden technology, in composition of which vegetation is comprised of plants that require minimal care in a multilayer system (Palla *et al.*, 2010) which is actually a continuation outwards of the building's roof. It thus offers the possibility of a zone of vegetation on new or rehabilitated rooftops.

But living roofs are not a new concept. They were common in land homes in the American prairie, and the grassed ones can still be seen in houses and wooden barns in Northern Europe.

The term "green roof" is new though in landscape architecture (Compagnone, 2009) and amounts to more than a simple "greening the skyline".

It is a term that highlights changes made to thousands of neglected municipal roofs, to turn them into a genuine wealthy real estate, which benefits not only the owners of apartments in the area, but rather more the owners of buildings, who can enjoy hanging gardens, living spaces with enhanced comfort, offering quality leisure in nature.

At the same time, increasingly more researchers such as Maureen Connelly - who heads a laboratory for green roofs at Institute of Technology in Columbia - studying the practical benefits of this solution (Rowe, 2009) helping to quantify performance and accurate measurement of the ability to reduce leakage rainwater, increase energy efficiency and improve urban acoustic environment. Thus more and more green roofs started appearing in the world, each one being an experiment.

MATERIAL AND METHOD

This paper aims to revitalize green areas in Podu Ros, by adding a new green space located on a surface that is not being valued while it is in a very circulated and used by residents and visitors as a venue, as well as relaxation and rest area.

Design principles apply also in vegetable compositions carried out on the roof garden design, choosing of species and planting in general. These principles were essential in developing color schemes when we took into account the succession of flowering for drafting the rehabilitation of the roof of an apartment building in Iasi County, Podu Ros neighborhood, Rozelor Alley.

In order to achieve the arrangement a wide range for of flower species (*Begonia*, *Schizostachyum*, *Lavandula*, *Pelargonium*), decorative herbs (*Poa*, *Lolium*) and dendrological species (*Prunus*, *Acer*, *Cotoneaster*, *Rosa*, *Salix*, *Spiraea*, *Cornus* etc) was used (Haggas, 2006).

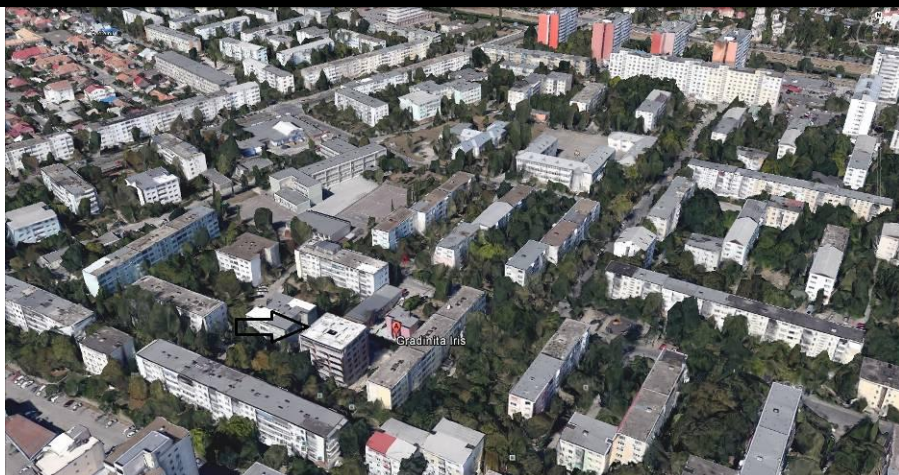


Fig. 1 Framing the proposed space for rehabilitation

The neighborhood area in which the building stands on whose roof the rehabilitation project is going to be carried out has an area of about 1973 square meters, with the limits in the west Str. Nicolina (fig. 2. a, b), in North Blvd. Socola (fig. 2 d), and in the south the Iris kindergarten.



Fig. 2 The roof before rehabilitation

A large part of area of this street is paved and the current vegetation does not have a unified composition, which is why the introduction in this area of a new green surface (Negrea *et al.*, 2014) is meant not only to revitalize the area, but also to provide the tenants of the building possibility to benefit from a green space plus the comfort of parking.

The overall objective of research pursued in this paper was to develop a formula for designing this enjoyable order called composition by using universally valid principles such as sequencing, unity, balance and emphasis for the drafting the rehabilitation of a roof of 289 sq.m. (fig. 2) belonging to a block of flats on the Roses Alley.

RESULTS AND DISCUSSIONS

Investigations addressed in this paper aimed to identify and the sustainable use of disused spaces in cities in order to turn them into green areas, taking into account, in particular demographic developments. The opportunity of the study is in direct relation to ensuring the ecological balance of the environment and has as main objective the preservation and development of landscapes and their associated values for the benefit of current and future generations.

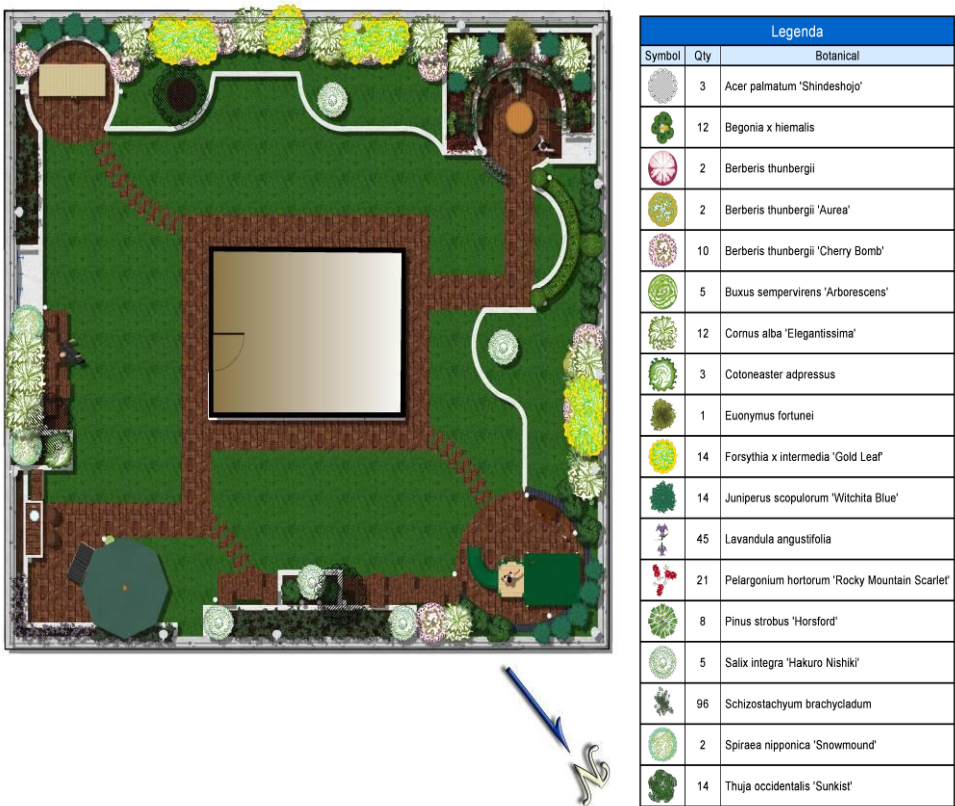


Fig. 3 The systematization proposal of the space on the roof of the building

Each plant in this arrangement has a different way of growth, forming a unique mass and volume (fig. 4.a), which develop, intervening changes as the plant matures. These forms of species used, whether pyramidal, spherical,

weeping, columnar or displayed (fig. 4.d) define and subdivided the space of the roof. Some forms give a much more dramatic effect than others and have been used in order to attract attention (fig. 4.b).



Fig. 4 Details on compositional units that form the landscape design

Selected plant shape and location fitting was essential to create dynamic, attractive and comfortable spaces resulting in uniform distinct compositional units, but unitary. Also, their texture creates a wide range of emotions, as a visual stimulus in these gardens. This is perceived as a mass, devoid of foliage, bark, leaves or flowers and changes according to the light of the day and season. Up close, the size and shape of the leaves and branches become predominant textural elements of each group. From a distance, appears light and shadow effect on the entire arrangement, different intensities of light and dark translate as texture in this garden. Rough textures of specimens of roses and hawthorn tend to create a relaxed mood and are visually dominant, while fine and smooth textures of species of *Prunus* L. and *Malus* Mill. are associated with official, elegant, discreet attitudes and visually are more passive.

Powerful texturized contrasts between the species used add intensity and volume to the arrangement and create interest for the both spaces. The bark of *Cornus* L. and *Crataegus* L. and leaves of the *Prunus* L. and *Corylus* L. are ways textural interest for the space was added, complemented by herbs and spring flowers, embellishing both the texture and the color.

Fragrance of the flowers in this arrangement has been rigorously taken into account by use of specimens of roses with scented flowers that add extra charm to the garden, creating a point of interest by expanding sensory awareness.

CONCLUSIONS

These types of gardens have an important role in the greening of cities affected by serious pollution in recent decades. Green gardens contribute to lowering energy consumption of the building, ecological and sustainable solves the problem of rainwater and improve the aesthetic appearance of the building and area. Finding ways to bring nature in cities - even as nature itself is urbanized - will make them more livable, and not just for people.

The main objective of this paper was to present a way of designing a vegetal composition by using universally valid principles of sustainable landscaping.

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