WAYS TO REHABILITATE FACADES BY USING PLANTERS

MODALITĂȚI DE REABILITARE A FAȚADELOR PRIN FOLOSIREA JARDINIERELOR

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Abstract. *In the context of urbanization accentuated in recent decades, there has been an orientation towards paradigms, which will shape human settlements in a sustainable way able to meet the needs of adaptability to climate change, ensuring primarily environmental quality and conservation of species and habitats. In cities, paved or concrete constructions and surfaces create a specific urban climate, with higher temperatures and a restriction of air circulation, which leads to the production of the so-called "heat island" effect. In contrast, vegetation, through the effect of shade and increasing air humidity contributes to creating a more comfortable environment. Hence the use of the phrase "park - cool island". Lately, a compositional concept of capitalization of vegetation is making its presence felt more and more, emphasizing both the aesthetic role and the role of purification and regeneration of the polluted environment. The solution approached by this work are the arrangements on the vertical given the fact that in the urban environment the vegetation has a role not only aesthetic but also sanogenic.*
Key words: planters, vegetation, vertical arrangement

Rezumat. *În contextul urbanizării accentuate, în ultimele decenii s-a constatat o orientare către paradigme, care să modeleze aşezările umane într-o formă durabilă capabilă să răspundă nevoilor de adaptabilitate la schimbările climatice, asigurând in primul rand calitatea mediului dar si conservarea speciilor şi habitatelor. În oraşe, construcţiile şi suprafeţele pavate sau betonate creează un climat urban specific, cu temperaturi mai ridicate şi o restricţie a circulaţiei aerului, ceea ce conduce la producerea aşa-numitului efect de „insulă de căldură”. În contrast cu acesta, vegetaţia, prin efectul de umbră şi de creştere a umidităţii aerului contribuie la crearea unui mediu mai confortabil. De aici şi folosirea sintagmei „parcul – insulă răcoroasă”. În ultima perioadă îşi face simţită prezenţa din ce în ce mai mult un concept compoziţional de valorificare a vegetaţiei, punându-se accent atât pe rolul estetic, cât şi pe cel de purificare şi regenerare a mediului poluat. Solutia abordata prin aceasta lucrare sunt amenajarile pe vreticala dat fiind faptul ca in mediul urban vegetaţia are un rol nu doar estetic ci si sanogen.*
Cuvinte cheie: jardiniere, vegetatie, amenajare pe verticala

INTRODUCTION

Although today the spaces with vegetation are subordinated to the built spaces, green walls represent an alternative for maintaining air quality, offering all

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the advantages of a classic insulation system, to which is added a better permeability with the outside (preventing the appearance of undesirable phenomen), but also capitalizing on the anost aspect of some of the constructions. Recent studies in the field of sustainable urban planning emphasize the vegetal component, favoring the implementation and preservation of vegetal tissue at the highest possible level of quality and performance (Nordh *et al*, 2009). Contemporary approaches focused on the beneficial impact of vegetation in architecture are defined as "Biophilic Design/Architecture", the aim being to develop a closer relationship between architecture and the natural environment (Dumitras *et al*, 2010).

Vegetation also plays a vital role in moderating the urban climate. In cities, constructions and paved or concrete surfaces create a specific urban climate, with higher temperatures and a restriction of air circulation, which leads to the production of the so-called "heat island" effect (Joshi and Gautam, 2010). In contrast to this, the vegetation, through the shadow effect and the increase in air humidity, contributes to the creation of a more comfortable environment. Hence the use of the phrase "park - cool island", in contrast to the urban "heat island". (Rayner *et al,* 2010).

In the last period, a compositional concept of valorizing vegetation is making its presence felt more and more, emphasizing both the aesthetic role and the one of purifying and regenerating the polluted environment (Joshi and Gautam, 2010). This concept is quite old, being known as a green wall or vertical garden, found both in the external and internal environment, Professor Stanley Hart White being the one who patented the system back in 1938 (Van den Berg *et al* 2015).

MATERIAL AND METHOD

The purpose of this paper is to propose the rehabilitation of the Electroalfa building (figure 1) belonging to a large manufacturer of medium and low voltage electrical equipment, metal fabrications from Botosani by creating a green wall made of planters, on its central body. This wall with vegetation will highlight the grandeur of the building, but will also fulfill a role of greening the area by filtering the air, absorbing carbon monoxide, retaining microparticles, dust, as well as reducing urban noise.

Fig. 1. Electroalfa building view and location

In order to implement this concept, the use of the predominant vegetation with persistent and sempervirescent foliage was pursued to provide decoration in every season of the year, but also to lend itself to the existing climatic conditions, pruning and the

conditions imposed by this type of proposal. The proposed idea was realized with the help of AutoCAD (figure 2) and Photoshop (figure 3) design programs.

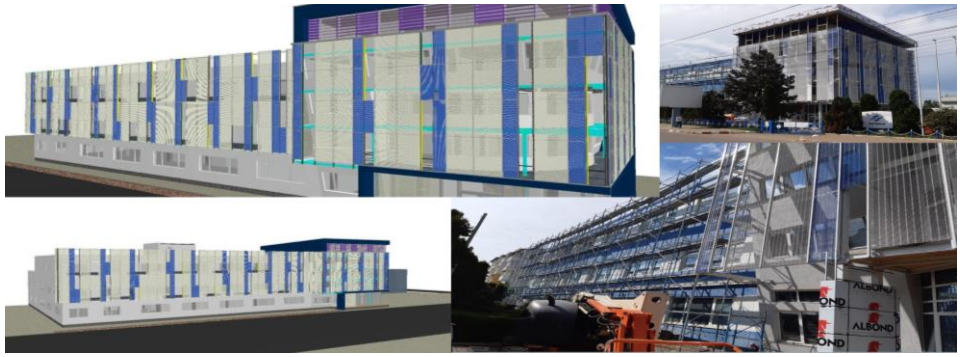

Fig. 2. The Electroalfa building made in AutoCAD

The advantage of using these two programs is that any idea can be processed in such a way that everything reproduces the proposed design idea as faithfully as possible. With the help of the AutoCAD program, the plan of the existing site was made, and with the second program, Photoshop, 3D details of the respective space were designed, from the realization of the construction to the outlining of the vegetation.

Fig. 3. The Electroalfa building made in Photoshop

Dendrological species shown in table 1 were used as plant material.

Table 1.

The plant material proposed to be used in the arrangement

Dendrological species	Flower species and ornamental grasses
Acer palmatum	*Pennisetum alopecuroides*
Bamboo spectabilis	*Stipa tenuissima*
Weigela florida	*Carex oshimensis*
Yucca filamentosa	*Heuchera spp.*
Clematis florida	*Clematis florida*

RESULTS AND DISCUSSIONS

The rehabilitation project of the Electra building proposes the introduction of planters into the landscape, respecting the design principles and norms, so that the vegetation that is part of them creates a harmony between it and the architecture of the building. The metal structure, located on the entire surface of the central body to be rehabilitated, is the first material used in the realization of the project. These structures, as well as the rest of the elements, will be introduced into the landscape by following the order of execution of the work, as can be seen in figure 4.

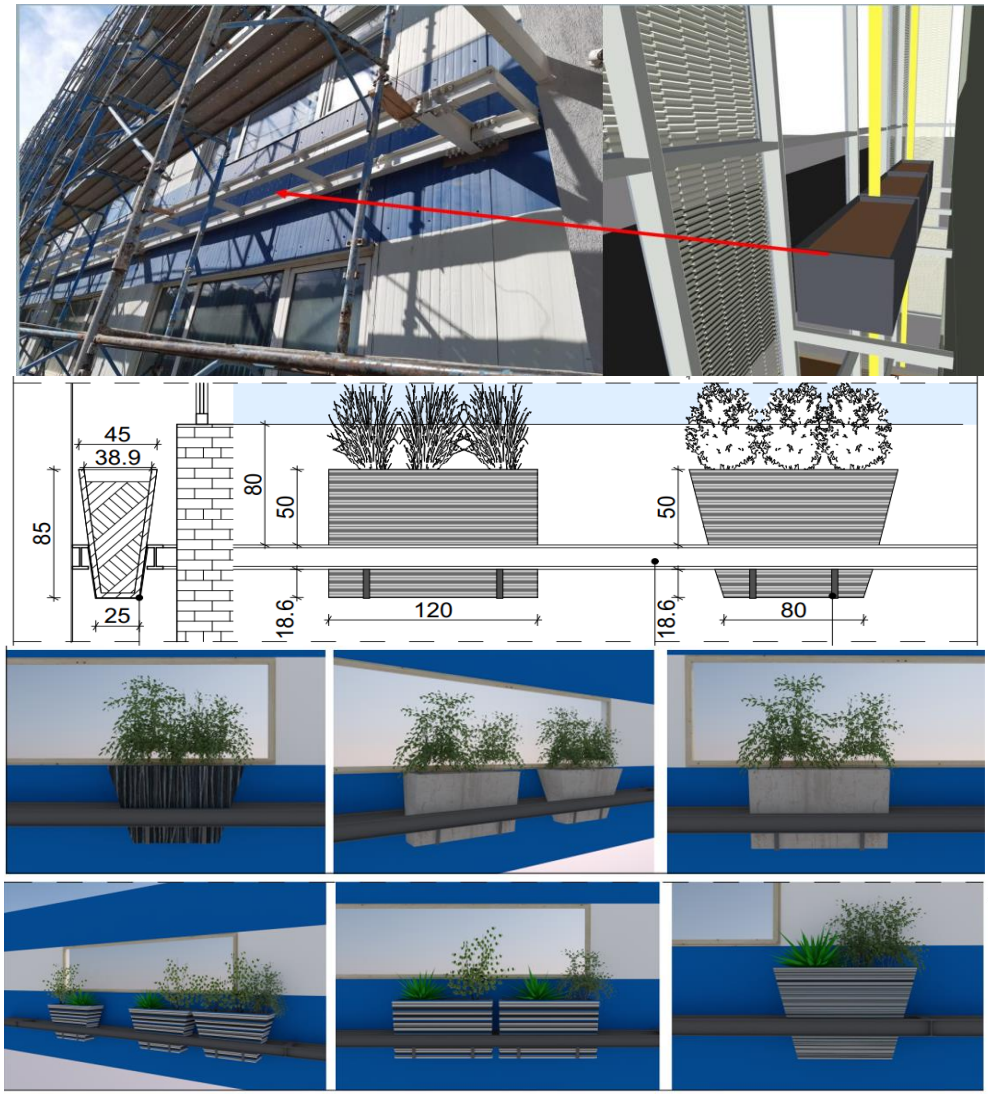

Fig. 4. The planters proposed to be placed on the building

The proposal for the rehabilitation of the building was carried out on the central body of the construction, through a different layout of the plant material placed in planters whose weight was estimated to be 200 kg, with a quantity of substrate consisting of 30% coconut fiber, 30% peat and 40% compost, in a proportion of 0.23 cubic meters, up to 2 cm from the lip of the planter (fig. 5).

Fig. 5. The arrangement of plant material in the planters

CONCLUSIONS

1. The proposal to rehabilitate the Electra building in Botosani by implementing a green wall aims to create a new image of the framework built in an ecological manner, thus, thanks to the use of vegetation, it has a multitude of benefits: increasing air quality, retaining dust particles and of other pathogens, increasing tourism through the concept itself.
2. The major benefit of the green wall, which very few investors in the construction field notice, is that of mitigating the effects of overheating of the facades that directly affect the urban space.
3. For the realization of the proposal, plants that lend themselves to this concept were chosen and plant compositions were created to have the desired visual effect, giving the space a special aesthetic.
4. The selected plant material aims to provide a decoration throughout the year, which is achieved through flowers, fruits and persistent or semi-persistent foliage, this aspect constituting the main element of the green wall.
5. The color of the plants was chosen to be in harmony with the existing vegetation of the area and to give people an image that does not affect them from an emotional point of view.
6. The most important factor that was taken into account in the realization of the project is the choice of ornamental vegetation that is exactly correlated with the requirements of the respective species with the local requirements, taking into account the requirements of the plants in relation to the biological, ecological and technological factors.

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