

RESEARCHES ON LANDSCAPE PLANNING OF GREEN SPACE IN THE ARAD COUNTY HOSPITAL

CERCETĂRI PRIVIND AMENAJAREA PEISAGERĂ A SPAȚIULUI VERDE DIN CADRUL SPITALULUI CLINIC JUDEȚEAN ARAD

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Abstract: *In the planning proposal for green space in the Arad County Hospital left the idea of creating an environment specifically designed to provide favorable conditions for the recovery of health and recovery of people in distress. Elements were used to give patients a state of putting the fore chosen vegetation and its effects on people. Plants create an environment of welfare reducing blood pressure, stress and giving a general state of good health physically and mentally. This was done by choosing vegetation for the effects it has on the environment and on people. Species were used for air filtration and solar radiation. The arrangement was based on the ability of the hospital to receive a large mass of people. Resting places are in high numbers, the spread over the entire surface and paths linking all hospital bodies.*

Key words: *landscape planning, trees, hospital, Arad*

Rezumat: *În propunerea de amenajare peisageră a spațiului verde din cadrul Spitalului Clinic Județean Arad s-a plecat de la ideea creării unui mediu special conceput pentru asigurarea condițiilor prielnice de refacere a sănătății și de recuperare a oamenilor aflați în suferință. Au fost folosite elemente care să le dea pacienților o stare de bine, punând în prim plan vegetația aleasă și efectele acesteia asupra oamenilor. Plantele crează un mediu de bunăstare reducând tensiunea arterială, stresul și dând o stare generală de sănătate bună fizică și psihică. Acest lucru s-a făcut prin alegerea vegetației în funcție de efectele pe care le are asupra mediului și asupra oamenilor. S-au folosit specii pentru filtrarea aerului și împotriva radiației solare. Amenajarea s-a făcut în funcție de capacitatea spitalului, pentru a primi o masă mare de oameni. Locurile pentru odihnă sunt în număr ridicat, fiind răspândite pe întreaga suprafață, iar aleile fac legătură între toate corpurile spitalului.*

Cuvinte cheie: *amenajare peisageră, arbori, spital, Arad*

INTRODUCTION

The Arad County Hospital covers a surface of 40,805 m² and is one of a kind in the entire county, with a 700 bed capacity. The hospital may take over about 2000 consults/day. Of the 40,805m², approximately 12,000 m² represent green space. The largest share of the surface is situated in front of the hospital and covers about 11,700 m² of the entire surface, regarded by the landscape planning proposition.

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The surface occupied by buildings is of about 259 m², among which one can find the Wooden Church from Groșeni, the building for infant neuropsychiatry and the building for adult infectious diseases. The connection between the Arad County Hospital and the building for infant neuropsychiatry is done by an alley bordered by a hedge of the *Buxus sempervirens* species, which was kept as such in green space landscape planning proposal.

Regarding the building for infectious diseases, as well as the one for infant neuropsychiatry, these are currently not used for medical purposes, due to the degradation state they are in. Both constructions are included in the plan, integrated in the composition.

MATERIAL AND METHOD

Hospitals must comprise parks or gardens to insure optimal conditions for regaining one's health and for suffering people recovery. A norm of 70 m² per ill person is considered optimal for hospital placed in cities and of 150 m² for curative institutions outside populated centres. On the green spaces afferent to hospitals it is recommended to develop spaces for physical exercise, for walking and resting (Simonds and Starke, 2006)

Plantations must be distributed so as to insure areas differentiated as sunshine degree and to isolate the perimeter from external noise sources. For the development of some spaces with a lot of shadow, it is recommended to plant resiniferous trees, which also play a role in purifying the air through phytoncide emissions. In order to obtain slightly shadowed spaces which protect from strong insolation, it is recommended to plant ornamental trees like *Betula*, *Albizia julibrissin*, *Salix*.

For the phonic isolation and against pollution, it is recommended to plant vegetation curtains, tree alignments, as well as compact tree and shrub groups with rich and persistent leafage, especially in perimeters neighbouring traffic arteries. For the protection against solar radiation, *Picea abies* presents the highest capacity to retain it (Iliescu, 2003).

RESULTS AND DISCUSSIONS

The existent vegetation is not high in number, being grouped around the church and made up by *Biota orientalis*, *Fraxinus excelsior* and *Picea abies* species. On the SW side of the grounds, there is an alignment made up by *Biota orientalis* species which separates the park from the hospital parking lot, thus forming a protection curtain (Fig. 1).

At the Calea Victoriei entrance of the hospital, there is a spring fountain shadowed by two *Picea abies* specimens, but is does not work. It was kept in the landscape planning project, with small changes regarding the material coating it.

Regarding the development itself, it was planned according to the hospital's capacity, namely to receive a large mass of people. Thus resting places are high in numbers, spread out on the entire surface, and alleys connect all hospital buildings.

Around the fountain, a circular alley was traced with benches placed at its margins. The alley makes the connection with the main entrance of the hospital and with two of its buildings. Vegetation was completed with already existing species,

namely *Picea abies*, and around the fountain *Lavandula* bushes were planted.

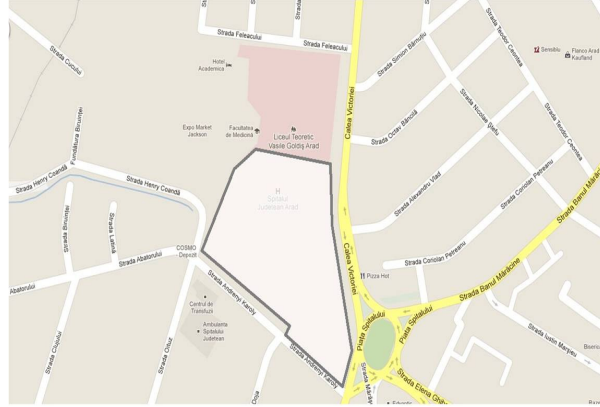


Fig. 1 – Arad County Hospital – situation plan in the area

The main access alley is delimited from the rest of the surface by a *Buxus sempervirens* hedge, species used for the completion of the already existing hedge, as well as for the creation another one, with protection role (Fig. 2).

In front of the hospital, there is a resting area situated alongside an alley around which a small rosary is formed of multicoloured rose bushes, in order to bring a colour extra to the development and for patients to enjoy. Here is also where the Wooden Church from Groșeni comes in .



Fig. 2 – Arad County Hospital – general development plan

Another resting area is placed in the composition centre, where there are circular benches placed in the shadow of linden, and from place to place one can find circular flower arrangements of various dimensions, with aromatic plants and shrubs. These species were chosen because of their scent and the effect they

have on the human organism.

An amphitheatre was built with a 25-30 person capacity for educational purposes, targeting students who practice in the hospital, and which can be used as a „class room". It is placed in an intimate space, intimacy conferred by the abundance of the surrounding species and its placement.

The presence of a water source in a composition is very important. Water has a certain influence on the microclimate, the soil, vegetation, but also on the human psyche (Fig. 3).



Fig. 3 – Arad County Hospital – air view

Around the trees pergolas were built, which serve as support for climbing roses and in their shadow people can relax. From the spots where they were situated, beautiful perspectives open to the pond and the rest of the composition.

The hospital green space landscape planning proposal is designed in a mixed style, with a dominant landscaping side. The geometric style composition elements are reduced, namely only a few straight alleys, delimited by low, cut vegetation, and some artificial elements, like the spring fountain placed in the centre of a circular alley, near the main gate.

The landscaping area is highlighted by a diverse composition of lines and volumes, which is balanced and compensated on either side of the perspective line. The tracing of the alleys is carried out by curb lines and make up comfortable, agreeable routes leading to precise objectives (Rosemary A., 2009).

The vegetation represents the main element of the composition, and is placed differently throughout the composition. Around the buildings small size species are introduced with a beautiful and rich inflorescence, which should allow to easily spot the buildings (Rosemary, 2009).

The hospital courtyard can be accessed from Calea Victoriei, as well as from Andrenyi Karoly street. The alleys are free curves with variable openings, but also straight ones, bordered by trees and shrubs. Their tracing divides the ground in unequal surfaces.

The alleys present various widths, ranging from 2.00 and 4.00 m. The main alley, with a 3.00 m width, crosses the entire park, widening and creating a resting area. It leads to the wooden church with a 4.00 m width, and the one surrounding

the spring fountain is of a 2.00 m width. The secondary alleys are of 2.50 m width.

The alleys connect all hospital buildings, cross the entire park, forming comfortable routes and succumbing to the other composition elements. Their total surface is of 1,790 m.

The materials used for alleys are concrete and natural stone.

The park presents the following areas:

- Pedestrian area;
- Recovery, resting, relaxing area;
- Stationary area: benches, gazebos;
- Ornamental areas: pond, spring fountain, flower patches.

Species were chosen, which through their characteristics (colour, texture, aroma) should help with patient recovery as well as with creating a peaceful environment, relaxing for their families and for the hospital medical staff (Iliescu, 2002).

The existent vegetation, made up by *Biota orientalis*, *Fraxinus excelsior* and *Picea abies* species was wholly kept, as it presented a reduced number of specimens. Other species of trees and shrubbery came to complete it so as to create the desired natural environment.

The vegetation choice satisfied the creation of spaces with varying degrees of insolation, semi-shadowed, shadowed, but also for protection against noise and pollution. For the creation of semi-shadowed spaces, species such as *Betula pendula*, *Albizia julibrissin* and *Salix alba* were used in the development. These species have beneficial effects on the human health. *Albizia julibrissin* is a species used in Chinese traditional medicine as an anti-depressive or as medicine for "calming the spirit." *Salix alba* has a tonic, antiseptic, anti-inflammatory, sedative, anti-thermal, anti-rheumatic effect, due to its content of starch, proteins, fats, tannin, resins, cellulose, mineral substances (Iliescu A.F, 2002).

Against solar radiations the existent *Picea abies* specimens were kept, to which other specimens were added in order to enlarge the surfaces plated with these species, since they help purify the air. An alignment of *Ulmus glabra* „*pendula*,” as well as *Fagus sylvatica* specimens were planted for this purpose. These also help to purify the air.

Other species used in the development are aromatic herbs, used for their special scent and their pleasant appearance, with side effects such as stress reduction and organism revitalising. Among these one can find *Lavandula angustifolia*, *Rosmarinus officinalis*, *Artemisia arborescens*, *Viburnum opulus*, *Salvia officinalis*, *Eleagnus ebbingei* and *Philadelphus coronarius*.

The arrangements with Rose used in the development are meant to help create a pleasant environment with their bright colours, their scent and their beauty, being considered a health well (Fig. 4). The rose species used belong to the *Rosa Floribunda* și *Rosa Polyantha* groups and include small and medium size species, with small or medium sized flowers, simple or double, of various colours. In the development, one can white and perfumed climbing roses (*Rosa wichuraiana*).

Besides the species enumerated above, the landscape planning includes *Liquidambar styraciflua*, *Tilia cordata*, *Syringa meyeri* „*palibin*”, *Spiraea*

bumalda, *Spiraea vanhouttei*, *Osmanthus x burkwoodii* and *Buxus sempervirens* specimens.



Fig. 4 – Arad County Hospital – rose alley perspective

We added the water plants used for the development of the pond, such as: *Iris pseudacorus*, *Glyceria maxima "variegata"*, *Lythrum salicaria*, *Nymphaea alba* and *Pontederia cordata*. The lawned surface which covers 8,783 m² is made up by mixtures of *Festuca rubra*, *Lolium perene* and *Poa pratensis*.

The ornamental facilities are represented by benches, pergolas, garbage cans and lamps. Benches are made up of concrete posts and wooden seats, being elegant, comfortable and enduring in time. There are 20 pieces, with 1.80 m length, 0.50 m width and 0.60 m height. We also designed circular wooden benches placed around trees and wooden benches on concrete structures.

The pergola, through its presence in the composition, confers it a unique, warm note, constituting an attraction point and customizing the space. It is built around trees, serving as support for climbing roses, and is made up of thin seamed pipes, with a 3m height. Garbage cans are cylindrical, from steel platband plated with wood ledgers, of 0.40 m diameter, 0.60 m height and a 50 litre capacity.

CONCLUSIONS

We believe that our research has proved that it is necessary to develop the green space afferent to the Arad County Hospital, since it is very important in order to improve the health of the patients. A harmoniously developed space creates a good state of mind, for the patients as well as for the hospital staff members. The maintenance of the green space is easily done and the expenses allotted to this process are reduced.

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