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Vertical Gardening

Khalikov Sindorkul Ravshanovich
Jizzakh Polytechnic Institute, Department of Architectural Design Senior Teacher

Abstract: *The article describes the work of vertical gardening in the field of design, one of the directions of modern methods in landscape design, to transform cities into more attractive and environmentally friendly places without decorating the interiors and exteriors of modern buildings with vegetation.*

Keywords: *Landscape, living walls, plants, design, vertical, decor.*

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Introduction: Landscape design is a series of vertical gardening in another direction in a modern way, ie in the field of design not only decorates buildings with indoor and outdoor flora, but also gives the building a unique decoration and human health. It brings a lot of benefits to the house, the walls are added with all the irritation.

It is one of the modern requirements to transform modern cities into better and more environmentally friendly places.

Main part: Set by Patrick Blanc, French biologist and landscape designer, inventor of vertical gardening systems. He was the first to design a "living wall" and masterfully supported it in designing building jabs. The following works were very large: the Quai Branley Museum in Paris, the Caixa Forum Museum in Madrid, the Marche de Halles in Avignon, and others[1].

French biologist and landscape designer Patrick Blanc rose to the top of the world in the name of the invention of biological ornamentation, calling the area a "vertical wall" or "plant wall". He is a

[1] Yerjanovich, Y. B., & Mamadiyoroglu, A. A. (2021). ABOUT THE URBAN PLANNING PRACTICE OF THE URDA FORTRESS OF ANCIENT JIZZAK.*International Journal of Discoveries and Innovations in Applied Sciences,1*(5), 148-151.

trustee of the French Science Center, where he heads the development department and details his discoveries. But it deals with the creation of vertical gardens.

Patrick Blanc, who studied botany at the university (defending his doctoral dissertation), is almost enlightened by the diversity of life in tropical forests. Over time, plants growing on rocks and trees attracted installation. In 1978, when he was away from South America, he visited Fran Guiana and collected philodendron seeds there. He planted this plant in the first large vertical garden in his home.

Vertical arrangement of the garden

The vertical garden consists of the following parts:

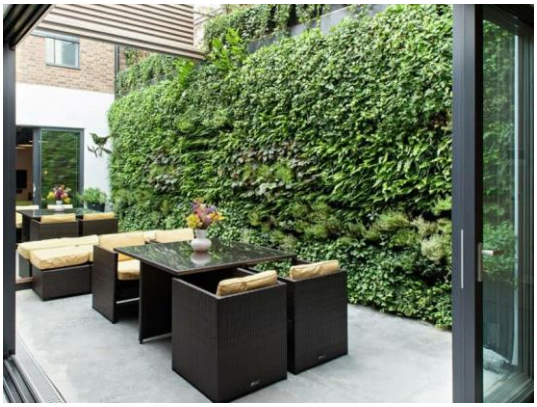
1. Metal frame.
2. PVC layer.
3. Synthetic felt layer
4. Air gap.

The metal frame can be mounted on a load-bearing wall or be a stand-alone structure. The air gap works as a very efficient heat and sound insulation system. A 1 cm thick rigid PVC sheet is glued to the metal frame, which hardens the whole structure and makes it waterproof. In addition, this structure is covered with rotten synthetic materials. Due to the high capillarity of this material, the

water rises and is evenly distributed over the entire height of the structure. The roots of the plants are always moist and can breathe at the same time.

Irrigation is carried out from above with ordinary tap water saturated with minerals. Irrigation and fertilization process is automated. The weight of the vertical garden, which includes plants and a metal frame, is less than 30 kg per square meter. Therefore, a vertical garden can be placed on any wall without any size or height restrictions. Such vertical gardens or living walls can be used successfully in the interiors of residential and public buildings.

Its "walls" can be built both on the outside city walls and inside the building. Using the same method, Patrick also offers pure "home" solutions



Patrick Blanc grew his first vertical garden in 1988. Since then, vertical gardens have adorned the facades of dozens of buildings inside and outside shopping malls, hotels, offices, museums and private properties in many countries around the world. Patrick Blanc's vertical gardens are stunning and charming!

Patrick Blanc works with many famous architects: Jean Nuvel, Andre Putman, Francis Soler, Edward François, Duke Myron, Mark Newson. Blan's most famous work in Paris is the administration building of the Quai Branley Museum (architect Jean Nuvel). Its walls are decorated with 15,000 plant specimens of 150 different species. It is a living canvas of ferns, mosses, hanging plants and even shrubs. People are very tired of concrete and glass, so vertical gardens are in great demand today.

Studying the experience of various designers and architects, we have come to the conclusion that the vertical garden - the requirements of our modern architecture - the systems themselves and the almost infinite importance for their application. And in our conditions, what is possible in France, the Netherlands or Australia does not fit perfectly or only fits into the interior walls. It only brings an individual approach to each specific project.

Decorating a plot with live plants is a design technique that ensures order in the area. Vertical landscaping helps to decorate the upper level of the garden in a unique way. To create a positive environment in the landscape, you need to understand the technology available.

What is vertical gardening?

Design techniques are used to decorate the area. The method is used to decorate the facades of buildings, create decorative structures from plants and zoning individual plots of the garden. The technology allows you to hide outdated walls from prying eyes, block out additional buildings, or create a "live" screen of neighbors.

Vertical horticulture uses climbing crops, pruned shrubs and trees. The method is handy when there is a lack of useful space or the site is neglected. A properly designed landscape will protect this area from dust, overheating and noise. Plants do not break the walls of buildings, protect them from destruction.

Designers use different types of designs to place crops vertically. Absorbed varieties are mounted on a grid or tied to supports. The vines are mounted on a grid, moving along a wire or grid. The area cools and the humid air provides a pleasant microclimate.

Tasks of vertical gardening.

The unity of the composition of plants and buildings is the main goal of landscape techniques. Designers pay attention to the individuality of buildings and structures, emphasizing their

advantages or hiding their unpleasant parts. To achieve decorativeness, experts combine different varieties and types of crops.

The functions of vertical gardening depend on the type of object. The design for residential buildings improves microclimate conditions, increases shade for recreation areas and separates them from prying eyes. The technique helps to mask economic and engineering structures. Technology enhances the decorativeness of small architectural forms.

Green building at the entrance.

Vertical gardening creates favorable conditions for the development of plants, especially in the composition of several species. When planting, pay attention to light requirements, nutrient requirements and soil moisture levels. With a successful combination, the green "neighbors" complement each other.

Types of vertical gardening.

In landscape design, there are many technologies that allow you to design the upper floors of the site. The choice of technique depends on the size of the area and the style of the garden. Structures should be beautiful, safe, and resistant to the weight of parts and green mass.

Arcs.

The structure is made in the form of a shelf or a flat covering between two columns. The support is made of wood, stainless steel or brick (concrete) and is surrounded by climbing plants on top. The landscape design element decorates the area, visually enhancing the space due to the tunnel effect.

Decorative construction in the garden.

In the vertical landscape, the belts are mounted on the tracks. Through the structure belt, a person reaches a beautiful landscape object (tree, bush or flowerbed). The structure does not block roads and the plants do not stick to the clothes of passers-by. Minimum construction parameters:

- height - from 2.1 m;
- width - 1.2 m;
- side wall thickness - 0.5 m.

Construction source

The shape of the arch can be rectangular, rectangular or round, the gothic (elongated) floors have the original appearance. In landscaping, the basis of the design is often large shrubs (fake orange, spruce) and trees. The branches that go into the structure are cut to form an ornament. Climbing crops are used to add emphasis. Weaving types rise with the net.

Pergolas.

The landscape design element looks like a light gazebo. The structure consists of a roof and several rows of supports that support the grate. The design helps to hide ugly buildings, separating the recreation area from the rest of the garden. The pergola plays a unique role in the design of the site.

The central element of the garden.

To create a tunnel effect, the element is often mounted on garden paths. An umbrella model with solid walls and an umbrella solution are used to protect from the sun. The screen-shaped structure is suitable to block the recreation area from prying eyes. Minimum parameters:

- height of columns - 2.5 m;
- distance between columns - 3 m.

Beams, pillars and barriers are connected in the form of light arbors. The choice of building material for vertical gardening depends on the design of the site. Traditionally, the pergola is made of wood (beams, planks and slats), polished and covered with stain. If the paths in the garden are paved with wild stone, then the texture is repeated on a decorative base.

Decorate with flowers.

In metal structures, the test is carried out on pipes. Steel models are often combined with wooden bars and lintels. Placed horizontally on the roof. Options with a sloping top look original.

Pergola source for grapes reparasiandroid.

Wall-mounted landscape design elements are adjacent to the buildings, creating a decorative entrance effect. The only solutions in the garden are becoming dominant components. Flowerbeds and flower beds are "gathered" around the structure. Not only vines, but also unusual leaf crops and flowers are grown on the support[2].

Containers are hung.

Ceramic plants are used for vertical gardening type. It is easy to create original hanging gardens using design elements. Technology allows you to improve the landscape, hide ugly surfaces. The more the flowerbeds are hung, the wider the coverage area will be.

Containers of different diameters are mounted on a support frame (wall, columns) with chains or ropes. Annual ampelous and weaving crops that are not afraid of heat are used in landscaping. Containers, baskets can be replaced, they can be moved to a more convenient location.

Tapestry.

The grid structure consists of a dense base (frame) and thin inner pillars. Landscape design elements are used both as a pergola, in addition to the gazebo, and as a stand-alone object. Tapestries create shadow zones on the site, set up accents, and bring original notes to the design. The structure is often used to form vines and fruit trees[3].

Obelisks.

Design solution for vertical gardening. Base-pyramids are used to grow textile crops. The design of the correct geometric shape is surrounded by flowers, decorative peas or tomatoes. Structures are used in zoning the site, which help the plants to have a good view.

The flower beds are vertical.

The landscape design element is suitable for an area with a lack of space. The multi-level decor consists of dishes of different diameters. The stepped structure is assembled in the form of a pyramid or polygon. Ampel species, herbs, spices and garden strawberries are used for landscaping[4].

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[4] Ravshanovich, X. S. (2021). Types of domes of architectural monuments of Uzbekistan. *International Journal of Culture and Modernity*, *1*, 5-8.

Popular vertical gardening plants.

In decoration, landscape designers use annual and perennial crops. Qualitatively selected combinations of deciduous and flowering varieties contribute to the volumetric structure in a small area. Appropriate care should be provided for the rapid growth of plants[5].

Perennials.

Weaving crops are used in the vertical gardening of the garden. The simplest - it's red grapes. The look throughout the season is capable of weaving a small pergola, arch or fence. The green leaves have a rich red color until autumn. The vibrant decor is geared towards support, cutting off excess lashes in the spring and fall. During the growing season, the plant is abundantly watered, fertilized, and the soil loosened[6].

Virginia Diversity.

Common hop is a simple fragrant perennial plant that quickly combines vertical landscaping in the form of pergolas and arbors. Beautiful liana tall liana looked very open[7]. To obtain dense foliage, the species regularly contains moisture and nitrogen. In the actual fall, the aerial parts are cut and in the spring, the wire lashes are held[8].

Amur vines are processed to create walls, arches and vaults. During the growing season, the color of the leaves changes: they live in the beginning, are saturated in summer and purple in cold weather. With proper care the plant will bear fruit:

- regular pushing;
- fertilization (March 5);
- soil loosening;
- eyelash formation.

Honeysuckle is a beautiful vine-growing family that works in vertical gardening. “Kaprifol” and “Telmana” varieties are classified as leafy grapes that bloom in May-July. By the end of the season, decorative (uneaten) fruits of orange color appear on the branches. Giralda hybrid lives in color until spring, does not shed its leaves for the winter. The culture prefers to grow in well-lit areas, does not lose acidic soil. During the growing season, the garden decor is abundantly watered, regularly assimilated with organic matter. You need pruning to form a bush[9].

Clematis - is a flowering vine, there are large beauty hybrids to support. In the design of arches, pergolas and fences, a fast-growing ornamental perennial is developed. For the winter, the species is protected from the cold by spruce branches and peat. During the transition period, the culture is

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assimilated 5 times. Regularly start the soil from the soil and water it. Thin buds are gently directed to the structure[10].

How to know vertical gardening without roses. Curly new ones rise to a height of 15 m and are suitable for decorating arches, pergolas. Mountain climbing species grow at a return of 3-5 m, the plants prefer to grow in sunny and fertile places. Shrubs need to be fertilized regularly for the culture to bloom for a long time. Nitrogen-containing sheets are obtained in spring, and in summer they are replaced by phosphorus-potassium. At the beginning of the season - sanitary and formative shooting[11].

Annual vertical gardening.

Plants for vertical gardening can be connected with seed or open seedling, changing the design that is tied every year. To decorate the landscape, echinacea and nasturtiums, decorative new ones of beans and pumpkins are developed. Crops are not as massive and textured as perennials, but they make it easier to decorate the site.

Beginners love the splendor of land demand. A beautiful flowering liana with large gramophones and heart-shaped leaves quickly ties a fence, ar or belt. The structure is bush and double inside the tourist buds. Crops were planted in May, and in June they were transplanted to open ground. Water when dry, fertilize - 1 time in 3 years, cut weak lashes.

Kobeya - other years with beautiful trumpet flowers and delicate leaves. The plant grows rapidly, covering the structure with a thick carpet. Liana was planted in March for seedlings, and in late May - early June - planted in the garden. Ornamental species grow well in moist areas. Potassium and phosphorus-based compounds - in addition to the location of the buds are fertilized every 7 days with a sheet containing nitrogen.

Conclusion.

Vertical gardening is a design technique that helps to update a careful area. Perennial and annual crops are used for the appropriate composition. Properly crafted green construction turned it into a vibrant landscape detail.

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