

THE VERTICAL GARDEN, FROM NATURE TO CITIES



by Bernadell Larson, HCMG

Patric Blanc is considered the Father of Vertical Gardens (also referred to as Living Walls). We have permission to reprint part of his article describing a Vertical Garden.

Do plants really need soil? No, they don't. The soil is merely nothing more than a mechanical support. Only water and the many minerals dissolved in it are essential to plants, together with light and carbon dioxide to conduct photosynthesis.

Whenever roots are allowed to grow deep inside a wall, they can easily damage the wall and cause its destruction. That is precisely what happened to the Angkor temples. This root related damage can be prevented if water is regularly given to plants. Roots are then only

spreading on the surface, leaving the inner wall unaffected. From these observations, and aiming at setting up permanent plant cover on walls with a minimum of maintenance, Patrick Blanc conceived the Vertical Garden. The core innovation is to use the roots' ability to grow not only on a volume (of soil, of water, of sand, etc.) but also on a surface. Without any soil, the plant-supporting system is very light and thus can be implemented on any wall, whatever its size. The whole weight of the Vertical Garden, including plants and metal frame, is lower than 30 kg per square meter.



Created by Flora Grubb Gardens in San Francisco

The Vertical Garden is composed of three parts: a metal frame, a PVC layer and a layer of felt. The metal frame is hung on a wall or can be self-standing. It provides an air layer acting as a very efficient thermic and phonic isolation system. A 1 cm.-thick PVC sheet is riveted to the metal frame. This layer brings rigidity to the whole structure and makes it waterproof. A felt layer, made of polyamide, is stapled on the PVC.



This felt is rot proof and its high capillarity allows a homogeneous water distribution. The roots grow on this felt. Plants are installed on this felt layer as seeds, cuttings or already grown plants. The density is about thirty plants per square meter. The watering is provided from the top. Tap water must be supplemented with nutrients. Watering and fertilization are automated.

Residential Shade Wall . . . walls and plants, a surprising, though long-lasting combination

The Vertical Garden allows man to re-create a living system very similar to natural environments. It's a way to add nature to places where man once removed it. Thanks to botanical knowledge, it's possible to display natural-looking plant landscapes even though they are man-made. Besides, thanks to its thermic isolation effect (heat sink), the Vertical Garden is very efficient and aids in lowering energy consumption, both in winter (by protecting the building from the cold) and in summer (by providing a natural cooling system). The Vertical Garden is also an efficient way to clean up the air. In addition to leaves and their well-known air-improving effect, the roots and all the micro-organisms related to them are acting as a wide air-cleaning surface with the highest weight to size efficiency. On the felt, polluting particles are taken in from the air and are slowly decomposed and mineralized before ending up as plant fertilizer. The Vertical Garden is thus an efficient tool for air and water remediation wherever flat surfaces are already extensively used for human activities.



The Vertical Garden on concrete walls . . . A shelter for biodiversity and a cleaning system for cities