AN INTRODUCTION TO GREEN WALLS: GREEN FACADE

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Abstract

Although green wall is not a new concept and date back to hanging gardens of Babylonia in 600 BC, but flourished in current decades. In the age of sustainable development planners and architects look for solutions to green the buildings envelops and restore environmental conditions. A variety of different terminology in this area indicates the importance of issue: Hanging or vertical gardens, balcony gardens, vertical farms, containers or planter boxes greening, green roofs or rooftop gardens, green or eco buildings, green walls, wall planters, green envelops and green facades. They can be applied to increase bio diversity and ecological value, out door and indoor value, air quality and finally enhance social and physical well being of city dwellers. This presentation discusses the green facades as one of the vertical greening systems.
Introduction

• In urban area
• Where space on the ground is limited
• But vertical spaces are abundant

• Vertical greening is a fruitful merge of nature and structure

• A variety of climber plant species can rise on a small quantity of growing medium to bring natural beauty to the cities

• According to the systems and growing methods, vertical greening (green wall) is divided to “living wall” and “green façade”. This presentation discusses different aspects of green façade.
• green walls (vertical greening) can be categorized according to their systems and growing methods:

1. **green façades** (direct and indirect system)

2. **living walls** (passive, active, Mur-Vegetal and landscape wall)

This presentation will discuss different issues of green facades.
Green facade

- Plant climbers attached to the building elevation
  - Deciduous or evergreen
  - Directly in traditional architecture
  - Indirectly by mesh, steel cable or trellis

- Climbers can be plated
  - In the ground
  - In the planter boxes at different levels
  - On the roof-tops

A- Direct system, B- Indirect system, C-Indirect system with planter boxes
Green façade (Direct system)

- Self climbers planted at the base of the building to directly attach the walls and cover the elevations.
- Used in traditional architecture
- May decay inappropriate walls

Direct green façade (Source: http://www.greenovergrey.com/)
Green façade (Indirect system)

- Climber plants are kept away of the walls by supporters (cable or mesh)
  - Supporters can be made from:
  - Steel, Aluminum, Wood or Plastic

1. Modular Trellis Panel Systems
  - These panels are: Three dimensional, lightweight and rigid usually from steel (coated, galvanized and welded)
2. Cable or wire-Rope Net Systems

- It applies high tensile cables to accommodate numerous patterns and sizes
  - Wire-Rope system is for: Slower growing plants and provides a greater degree of design utilization
  - Cable system is for: faster growing plants with denser foliage

Stainless Steel Wire (Source: http://www.s3i.co.uk)

Cable and wire-Rope Net System, (source: http://www.intechopen.com)
3. Indirect greening systems combined with planter boxes

- Planter boxes are combined with indirect systems at different levels to cover a vast area of building.
- The system may need nutrient and irrigation equipment look like living walls.

Indirect greening system combined with planter boxes, 1- Containers 2- Insulated container 3- Maintenance remote monitored irrigation / fertilization system 4- Wall mounting system, (source: http:gsky.com)
Green walls (vertical greening)

- Should be chosen according:
  - Climate, budget and architectural design
- Need regular maintenance for:
  - Watering, nutrient substance and pruning
- Are beneficial because of:
  - Sound reduction, aesthetic enhancement, external insulation and energy efficiency
- Plant species should be chosen according:
  - Environment and natural supporting systems

Source: http://www.omni-ecosystems.com
Thank You
References: