

# J-Drain<sup>®</sup> GRS

Before

Green Roof Drainage System



Our Greenroof System (GRS) is designed as a reliable drain product to assist in the development of solidly performing greenroofs.



After

**JDR** Enterprises, Inc.

[www.j-drain.com](http://www.j-drain.com) 1-800-843-7569

# Greenroofs...

## it's about 'attitude' & 'altitude'



Greening of new and existing buildings is a promising option for the urban setting.

### Advantages Of Greenroofs:

- Reduces rainwater run-off
- Reduces heat island effect
- Reduction of structure's heating & cooling costs
- Reduces sound levels
- Protects roofing from UV degradation
- Absorbs carbon dioxide
- Produces oxygen
- Additional use of space
- Provides wildlife habitat

# What is a 'Greenroof'?

A **greenroof** is a 'contained' space on top of a man-made structure.

'**Greenroof**' is often used to describe many other landscape & architectural treatments:

- Rooftop Garden
- Living Roof
- Turf Roof
- Sod Roof
- Eco-Roof
- Garden Roof



**With current technological know how, greenroofs can be located on a variety of structures: atop underground parking garages, office buildings, hotels, residences, bridges, schools and even building edges.**

# Generally, there are two different kinds of greenroofs:

## *Extensive*

### Low-Profile, Ecoroofs



- Low growth media: 2 – 6"
- Lightweight: 13 – 50 lbs/sf
- Low growing plants: 1"– 24" H
- Less variety of plants: Alpine types, succulents, herbs, some grasses and mosses
- Usually non-accessible
- Slopes up to 30° & higher
- Less expensive: \$12-\$25/sf
- Low water requirements
- Low maintenance

&

## *Intensive*

### High-Profile; Roof Gardens

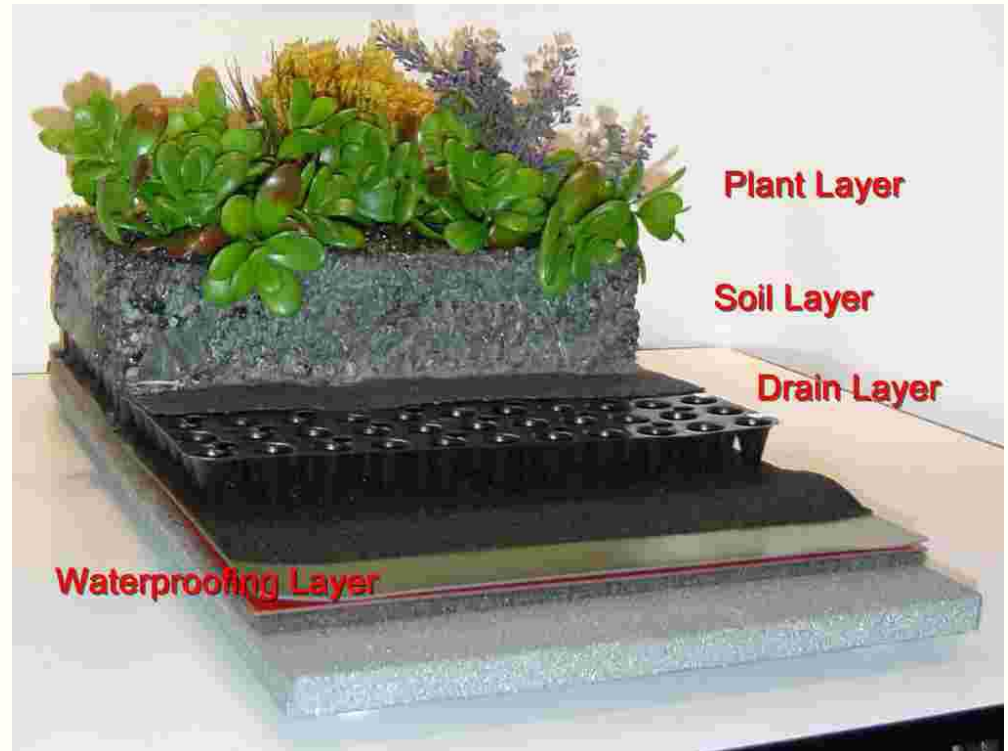


- > 6"-15' and deeper
- Heavier weights: 50 lbs/sf +
- Trees, shrubs and more
- Huge variety of plant selection, depending on loads, design & budget
- Designed for human recreation
- Relatively flat
- More expensive: \$25-\$40/sf +
- Irrigation usually necessary
- Higher maintenance

# Typical Greenroof Design

The basic components of a greenroof should include four essential layers:

- Waterproofing Layer
- Drain Layer
- Soil Layer
- Plant Layer



***Each roof is unique!*** The success of a greenroof depends on the thorough understanding of all components and also the specific needs & conditions of the particular site. **Before any components are added to a roof, the structural weight limits must be determined by a professional.**



A thorough water flood test needs to be conducted for leaks after the installation of the waterproofing membrane to ensure quality control, certainly before the other layers are applied.



Correct and meticulous application of the waterproofing membrane is essential to the viability of the greenroof. The waterproofing system may consist of a liquid-applied membrane, a specially designed single-  
ply, or multiple layers. ***The ultimate priority is to keep the building watertight.***

# Waterproofing Layer

# J-DRain<sup>®</sup> GRS

## Green Roof Drainage System

**JDR** provides key drain components for successful greenroofs:  
• *Root Barrier Fabric* • *Drain Core Composites* • *Filter Fabric*



A drainage expert should be consulted regarding the physical characteristics of the drainage & filter fabric layers to assure they provide adequate water flow for peak rainstorms.



Greenroofs must have a ***drain layer*** to prevent water from accumulating on the roof or in the substrate. Good roofing practices require no water ponding. **Greenroofs are no exception.**

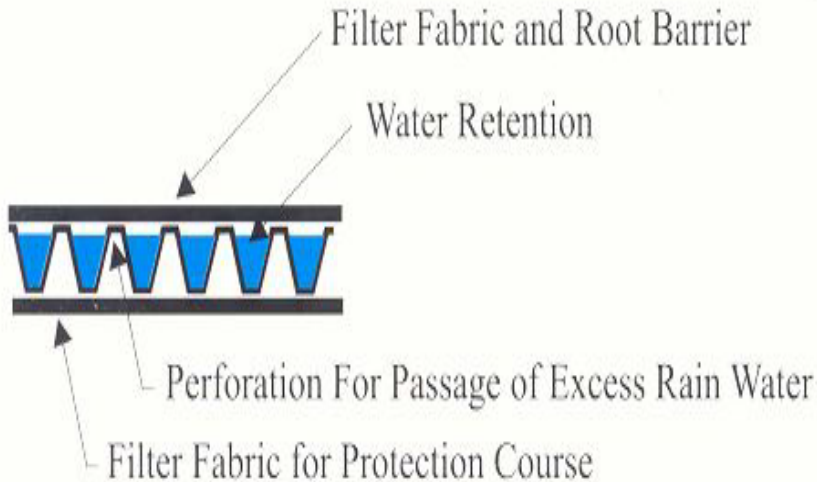
## Drain Layer

# J-DRain<sup>R</sup> GRS

## Green Roof Drainage System

### ADVANTAGES OF J-DRain GRS

- Lightweight and easy to install
- High strength and crush resistant
- High Flow capacity
- Pre-assembled drain system
- Built in water retention chambers
- Low cost
- Reduces weight of total system by eliminating sand or gravel
- Prevents root penetration into drain layer
- Filters fine particles & ensures drainage efficiency



**J-DRain GRS** is a pre-assembled greenroof drainage system, consisting of a high strength plastic core & two layers of geosynthetic fabric attached top and bottom.

## Drain Layer

# J-DRain<sup>®</sup> GRS

## Green Roof Drainage System



Unimpeded drainage is assured in greenroof systems because the ***drain layer*** is applied over the entire roof area.

The ***drain layer*** serves the dual purpose of keeping the soil well aerated & in some cases also acts as a water retention layer.



## Drain Layer

# J-DRain<sup>®</sup> GRS



Green Roof Drainage System

## ***Root Barrier Filter Fabric:***

Root resistance is achieved by the upper layer of the root barrier filter fabric.



Overlaps drain core at seams

The ***Root Barrier Filter Fabric*** prevents fine particles from being washed out of the substrate soil and prevents roots from growing and rotting in this stored area.



Filter fabric without 'root barrier'.

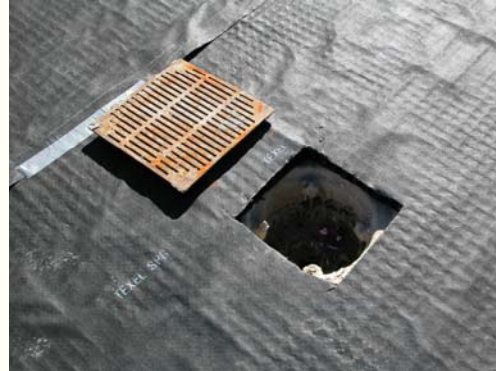
# Drain Layer

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## Green Roof Drainage System



Additional **Root Barrier Filter Fabric** is applied up sides of parapet wall & around all pavers and drain boxes, eliminating any chance of soil loss.



It is essential to mark the position of roof outlets before installing the **J-Drain GRS**, so that they can be located easily and cut out for easy access.



Excess fabric is then cut away after soil is installed.

Together, the **J-Drain GRS** forms an extremely stable and pressure resistant sub-base, ensuring efficiency of the drain layer and maximum, long-term success of the greenroof.

## Drain Layer

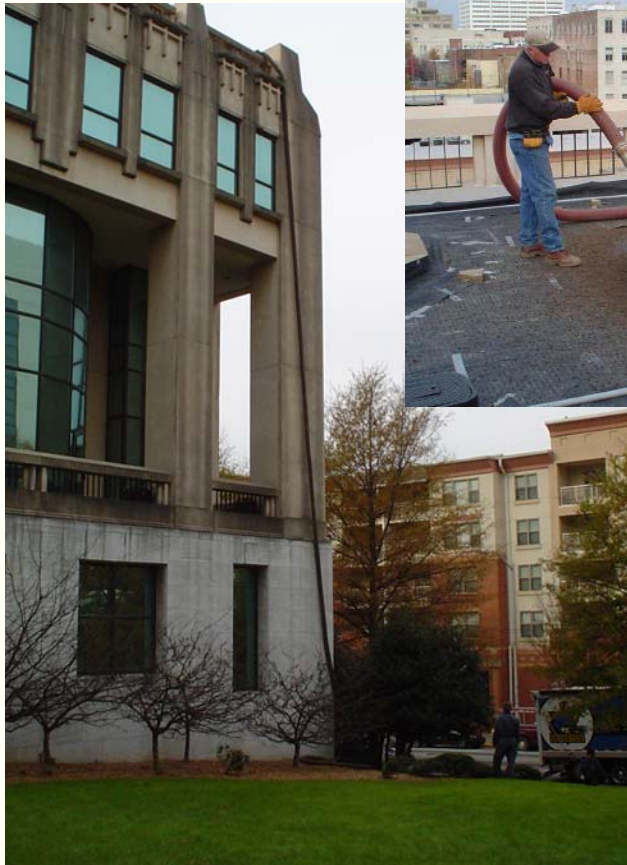
Because natural soils are heavy, particularly when wet, greenroofs often involve the use of ***lightweight engineered soil mixes***.



Soil cannot contain any silt that would clog the filter fabric.

These soil mixes need to be:

- Water permeable
- Water & air retentive
- Resistant to rot, heat, frost & shrinkage
- Good nutrient status
- Provide an excellent rooting medium



# Soil Layer

Vegetation (green) is the most visible layer of the greenroof. Plants add aesthetics and ultimately determine the success or failure of the greenroof.

Compatibility of plant selection with the artificial environment is essential.

**An experienced horticulturist should be involved in plant selection.**



**Characteristics of plants typically used on greenroofs include:**

- Shallow root system
- Good regenerative qualities
- Resistance to direct sun, drought tolerant, frost & wind
- Compatibility with local range of temperature, humidity, rainfall & sun

# Plant Layer

# Market Applications

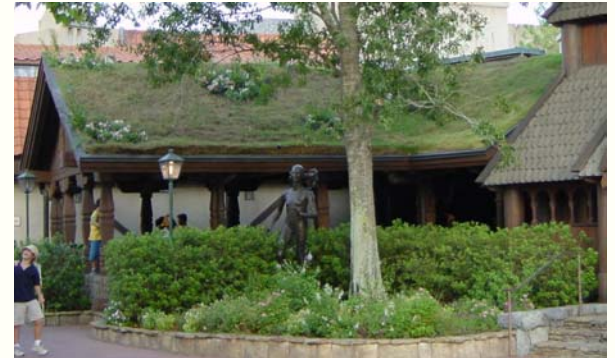
In the United States the concept of greenroofs is just now being introduced and will become more common. They represent an *entirely new market* and business opportunity.



Commercial



Parking Decks



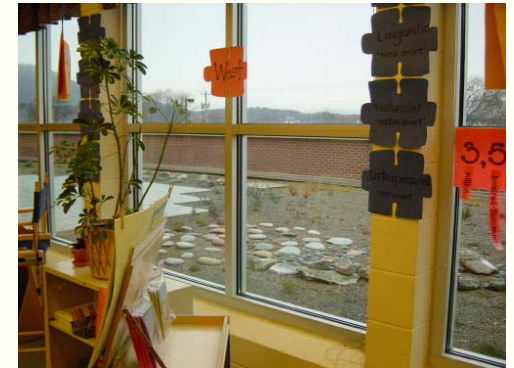
Residential/Multi-Family



Municipal/Government



Industrial



Educational

The potential market includes all existing and future roofs in the country.

**A market too large to ignore.**