

Chesapeake Conservation Landscaping Council's
3rd **Turning a New Leaf** Conference
Friday, December 4, 2009
George Washington University, Washington, DC

TRACK A: SUSTAINABLE LANDSCAPE DESIGN: MAKING BEAUTIFUL PRACTICAL

Session A3. *Green Roofs and Living Walls*

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I. INTRODUCTION

Mr. Furbish introduced his presentation with a brief history of his company and how he came to be known as an expert in living roofs. From a grand vision of being a developer of sustainable neighborhoods, he fell into an opportunity to install a green roof and since this was a new concept (at least in the U.S.), he quickly became recognized as an expert in spite of the fact that he was new to the business. From a systems engineering perspective he was intrigued with the idea that the efficient, no waste life cycle of a plant could improve the performance of a building.

The conventional building industry is based on these assumptions:

1. Energy is cheap
2. Natural systems can be adapted to human impact
3. Climate is stable
4. Natural systems can be regulated to reduce risk

The realization that all mankind is striving to live like the U.S.; we would need 4-5 Mother Earths to provide the needed natural resources to support this demand. This means a "train wreck" is inevitable. Mr. Furbish's personal goal is to mitigate against this future.

Implementing "appropriate technologies" is the goal and is definite as "to enhance local capacity to meet local needs."

The solution is the simplest technology that will get the job done. A shorter feedback loop means less impact if there is a malfunction in the system.

Technology of a Plant

- Self erecting
- Self sufficient (makes it own food)
- Nonpolluting
- Waste=food
- Beauty

Ecoservices of a Plant

- Stormwater management
- Energy efficiency
- Nutrient sequestering
- Heat island effect
- Erosion control
- Air quality
- Habitat creation
- Beauty
- Air quality

II. GREEN ROOFS

A well-kept secret

4" green roof medium will handle 70% of the water retention of rainfall.

Benefits of Green Roofs

1. Stormwater management (retains 60-70% of rainfall)
 2. Cuts temperature $\frac{1}{2}$ on a summer day, reducing heat in a building
 3. Extends life of roof
 4. Reduces energy use (note has not insulating value in the winter)
 5. Wildlife habitat
 6. Beauty
- Installation requires diligence about achieving fast coverage with vegetation with goal of 80-90% by first year.
 - Uses nonnative growing medium and nonnative plants that can withstand harsh conditions.
 - Cost of living roof determined by size (scale), pitch, accessories, logistics.
 - Maintenance is 15-50 cents/square foot.
 - Uses rubber roof which is not a new technology.
 - The future of roof gardening: urban farming; greenhouse production.
 - Current cost of green roofs is too high with a 200-250% mark up.

III. BIOFILTERS are designed for interior use to remove VOCs (toxic chemicals), photoremediation

Plants are grown on a wall hydroponically with no soil. The wall is connected to the HVAC system so the “returns” pull air through the biofilter.

1 square foot of wall filters 100 cubic feet.

Requires artificial lighting.

Benefits of Biofilters

- Natural indoor air filter
- No pollutant accumulation
- Reduces HVAC load
- Aesthetic

IV. VEGETATED RETAINING WALLS

A concrete structure covered with plants.

Government agencies like the systems.

Current source is a fabricator in St. Louis. Furbish is trying to produce the product locally.

Applications: shorelines, highways

No reinforcement required.

Footer is designed by a geotech engineer.

Drainage system is behind wall.

No irrigation.

Drain pipe not necessary.

Modular construction.

[Summary prepared by Ellie Altman]