SOILMatrix™
GIVES YOUR GREENROOF
THE LIGHTWEIGHT ADVANTAGE

(Above) Intensive Roof Garden
North Park 400, Atlanta GA
Installed 1997; Pictured 2002

(Inset) Aerial view of North Park roof after installation in 1997
SOILMatrix has a long history of success in horticultural applications all over the world. It is marketed under various trade names and has established itself as the standard for creating planting media for rooftop gardens. This track record of proven performance demonstrates how SOILMatrix, at about 50% of the weight of natural planting media, contributes to sustainable development by conserving energy, reducing trucking requirements and minimizing the impact on structures. The use of this environmentally friendly ceramic material in greenroof design helps address important issues such as managing storm water runoff, improving water quality, reducing urban heat, conserving energy, lowering dead load and increasing green space.

Greenroof Planting Media

One of the most important components to both extensive and intensive greenroof systems is a quality planting medium. Because of the complex nature of greenroof construction and the difficulties of access after completion, the planting media must be able to support and sustain plants for the duration of the intended life span of the roof. A well-designed planting medium will have the following physical characteristics:

• Be free of silts and clays that could clog the filter fabric;
• Have permanent internal aeration even after several years of consolidation;
• Insure adequate drainage;
• Insure stable root support;
• Not degrade, breakdown or shrink in volume over time.

SOILMatrix is the environmentally friendly answer that provides a long-term solution to the above complex design requirements.

Besides exceeding all the requirements of an ideal planting medium, SOILMatrix provides additional important benefits. Its reduced weight can often accommodate structural design requirements; yet it is heavy enough to avoid loss caused by excessive wind or water. Its angular, stable and
porous ceramic nature ensures an adequate supply of air to enable
plants to be established quickly and develop healthy root systems.
Ample aeration increases the insulative properties of the planting
media and helps reduce energy consumption as well as lessen the
urban heat island effect. Overall project costs are often reduced
because SOILMatrix can also serve as the drainage portion of the
greenroof system. When used for storm water management, the
porous planting medium allows rain water to readily penetrate the
soil surface. This reduces runoff and allows pollutants to be
naturally filtered and remediated thereby improving water quality.

**What is SOILMatrix?**

SoilMatrix is a lightweight, ceramic material produced by expanding and
vitrifying select shales, clays and slates in a rotary kiln. The process produces a high
quality ceramic aggregate that is structurally strong, physically stable, durable, environmen-
tally inert, light in weight, and highly insulative. It is a non-toxic, absorptive aggregate that is
dimensionally stable and will not degrade over time.

**SOILMatrix: A comparison to other aggregates**

Natural sand and soil are heavy. They frequently require that structural modi-
fications be made to the project’s design. Native soils have silts and clays that
may clog the filter materials or drainage layers and reduce effectiveness. The
physical properties of natural volcanic aggregates vary widely with source and
location. Natural materials may degrade and compact over time, and require
additions to or replacement of planting media. Some horticultural products
used in greenhouses and container planting, such as vermiculite and perlite, are
extremely light in weight and do not offer adequate anchorage and support for
larger plants. In exterior applications vermiculite and perlite often float to the
top of the planting media where they can be carried away by wind or water.

**LEED™ Benefits**

The Leadership in Energy and Environmental Design (LEED) system was designed by the United States Green
Building Council (USGBC) to evaluate the influence of building design and construction on the environment.
SoilMatrix is an environmentally friendly, lightweight, ceramic product that saves material, labor and transporta-
tion cost. It also improves the functionality and service life when used in greenroofs and other planting media. These benefits support sustainable development and contribute to designs becoming LEED certified. For more
detailed information on LEED, see ESCSI Publication # 7700.

<table>
<thead>
<tr>
<th>LEED-NC Rating System Summary (Version 2.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>Sustainable Sites (Section 6.1, 6.2, 7.1, 7.2)</td>
</tr>
<tr>
<td>Water Efficiency (Section 1.1, 1.2, 2)</td>
</tr>
<tr>
<td>Energy &amp; Atmosphere</td>
</tr>
<tr>
<td>Materials &amp; Resources (Section 5.1, 5.2)</td>
</tr>
<tr>
<td>Indoor Environmental Quality</td>
</tr>
<tr>
<td>Innovation &amp; Design</td>
</tr>
<tr>
<td><strong>Total Possible Points</strong></td>
</tr>
</tbody>
</table>

**Note (1):** 1-10 points can be awarded for energy cost savings of 15%-60% for new buildings and 5%-50% for existing buildings. Improving the thermal performance of building materials contributes toward obtaining these credits. **Note (2):** Ideal for indoor planting media.
SOILMatrix: The Versatile Planting Medium

Designers can count on SOILMatrix to be predictable, stable and highly dependable for the duration of the greenroof. The planting media mixture will vary depending on the climate region, application, aggregate and types of plantings specified. **For optimal results it is essential to consult with the SOILMatrix supplier during the design phase of the project.**

Sedums flourishing in extensive SOILMatrix blend

2 views of greenroof at LDS Conference Center, Salt Lake City, UT

SOILMatrix is readily available throughout the United States and Canada, and is sold under various trade names. For additional information and technical support contact the local supplier or

**GREENROOF**

**SOILMatrix™**

**GIVES YOUR GREENROOF THE LIGHTWEIGHT ADVANTAGE**

Expanding Shale, Clay and Slate Institute
2225 Murray Holladay Road, Suite 102 • Salt Lake City, UT 94117
801-272-7070 • Fax 801-272-3377
www.escsi.org

Publication # 8621
4/2005