

Hardscapes for Sustainable Landscapes

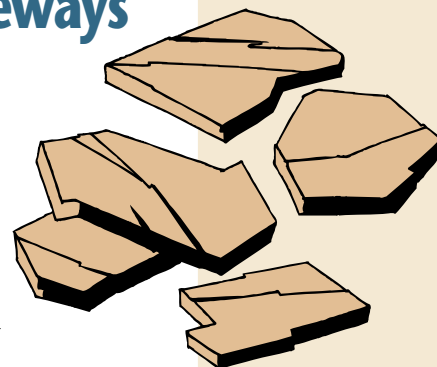
Patios, Decks, Walkways, and Driveways

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Most residential landscapes include a combination of hardscapes (patios, decks, walkways, and driveways) and ornamental plants. As you think about the design, construction, and maintenance of your landscape, consider how sustainable each component is and how it could be modified to be more sustainable.

As it relates to hardscape materials, sustainability includes three key factors:

- * How well does the material incorporate the principles of “reduce, reuse, recycle”?
- * What is the product’s impact on the environment once installed?
- * What are the material’s maintenance requirements?



Reduce, reuse, recycle

Use fewer virgin materials in your landscape. Reuse existing materials when possible or select recycled products. A number of new recycled landscape products are available in a variety of textures and colors. Many combine recycled plastics with wood by-products. These materials require almost no maintenance and last longer than wood. They can be used for decks, fences, benches, and planters.

Environmental impact

Hardscape materials vary in their effect on the environment. For example, pavement prevents water from soaking into the soil, thus increasing runoff, which can carry contaminants into streams. Porous materials, on the other hand, allow water to soak into the soil.

Maintenance

It often is easier to evaluate the initial cost of construction materials than their long-term costs. However, the long-term maintenance costs of some building materials can be significant. Before choosing a product, research its initial and long-term costs as well as its recommended uses. Using a product improperly not only might be dangerous, but likely will increase your overall construction and maintenance costs.

The hardscape options listed below vary in their sustainability and short- and long-term costs. For specific information, consult a landscape construction reference or a landscape contractor. Detailed information is available in *Sustainable Landscape Construction: A Guide to Green Building Outdoors* by J. William Thompson and Kim Sorvig.

Always check local building regulations to make sure the product you select is approved for use in your area.

Sustainable hardscape materials

Porous paving

This material can be used for driveways, walks, or patios. It allows water to pass through to the soil, while providing a solid surface for human and vehicular traffic.

Bricks

Bricks are durable, and almost 100 percent of fired brick is usable. Factory seconds and used brick can be crushed and recycled for mulch or for pathways. When bricks are laid on a sand base, rain and irrigation water can pass through the joints, preventing runoff. Bricks are relatively easy to install and most homeowners can tackle small installation projects. Long-term maintenance cost is low if the bricks are installed properly.

Concrete pavers

Pavers share many of the advantages of bricks. They are durable, easy to install, have minimal maintenance costs if installed properly, and allow water to pass through the joints if laid on a sand base. They come in a wide range of colors and shapes and can be used for drives, walks, patios, and even sunroom or porch floors.

Concrete slabs

The setup for pouring a concrete slab can be labor intensive, but concrete itself is relatively inexpensive. However, the slabs are susceptible to cracking and are expensive to repair. For most homeowners, concrete pavers are a viable alternative to a concrete slab.

Soil cement

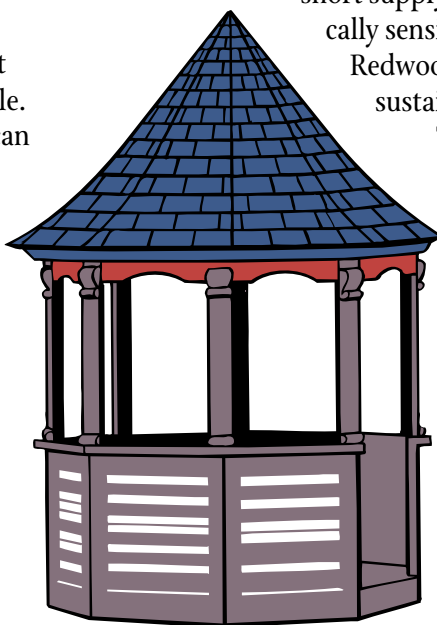
In this relatively new process, a small amount of Portland cement is mixed with native soil on site. It has about two-thirds the compressive strength of ordinary concrete, but is suitable for walkways and patios. In naturalistic landscape designs, it has an aesthetic advantage over pavers, bricks, or concrete slabs. Generally this product needs to be installed by a professional, so initial costs might be higher compared to others.

Wood

Decay-resistant species such as redwood are in short supply, generally harvested from ecologically sensitive forests, and often expensive.

Redwood salvaged from other structures is a sustainable choice.

Treated landscape lumber is readily available and, if maintained properly, can last 15–20 years. The safety of wood preservatives has been a subject of much controversy, particularly relating to disposal, accidental burning of the wood, and leaching of preservatives into the soil. The methods and chemicals used to treat landscape lumber vary, and you should compare options before purchasing a product.



“Plastic lumber”

These products have only recently become available to homeowners, but have been commercially available for more than 15 years. Their composition varies, depending on the manufacturer. In general, they all resist rot and insects and can substitute for preservative-treated wood. They generally are not engineered for structural purposes.

Ornamental plants

Plants can be used to create “living” fences and walls, which often are more attractive—and sustainable—than fences made from wood or metal. However, plants should be chosen carefully to minimize the amount of fertilizer, pesticides, and water required to keep them healthy.

Selecting plants that don’t require extensive pruning to keep them in bounds can significantly reduce long-term maintenance costs. For example, to maintain a photinia (*Photinia x fraseri*) hedge 8 feet tall and 4 feet wide requires substantial pruning at least once a year, if not more. A better alternative would be an arborvitae (*Thuja occidentalis* ‘Emerald’) hedge since this plant naturally grows to about 8 feet tall and 3 to 4 feet wide. See *Plant Selection for Sustainable Landscapes*, EC 1534, for detailed guidelines on plant selection.

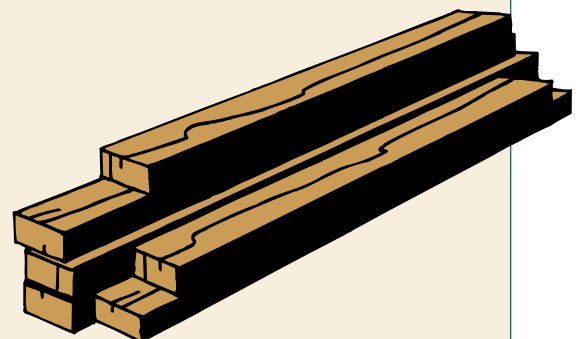
Conclusion

Thoughtful consideration of hardscapes and plants can significantly increase the sustainability of your landscape. Remember that a landscape is a long-term investment. You must consider up-front and long-term costs—both financial and environmental—when you design and construct your landscape.

Evaluating product sustainability

Before purchasing any hardscape material, be sure to evaluate it on a variety of criteria:

- ✦ What virgin materials were used in manufacturing the product?
- ✦ Does the product incorporate recycled or reused materials?
- ✦ Is the surface water-permeable?
- ✦ Was the product treated with chemical preservatives?
- ✦ Is the material aesthetically pleasing and appropriate for your landscape design?
- ✦ Does the product have adequate structural strength for your project?
- ✦ How long will the product last?
- ✦ How much maintenance will the product require, given your environmental conditions?
- ✦ What are initial product and installation costs?
- ✦ How difficult is installation? Can you install the product yourself, or will you need a contractor?
- ✦ What tools and additional materials are needed for installation?
- ✦ Is the product available in your area?
- ✦ Is the product approved for use in your area?



For more information

OSU Extension publications

Basic Design Concepts for Sustainable Landscapes,
EC 1553 (2001)

*Conserving Water in the Garden: Designing and
Installing a New Landscape*, EC 1530 (2001)

Improving Garden Soils with Organic Matter,
EC 1561 (2003)

*Plant Materials for Landscaping: A List of Plants
for the Pacific Northwest*, PNW 500 (1999)

Plant Selection for Sustainable Landscapes,
EC 1534 (2001)

Selecting, Planting, and Caring for a New Tree,
EC 1438 (reprinted 1997)

*Southwestern Oregon Tree Selection Guide for
Coos, Curry, Douglas, Jackson, and Josephine
Counties*, EC 1505 (1999)

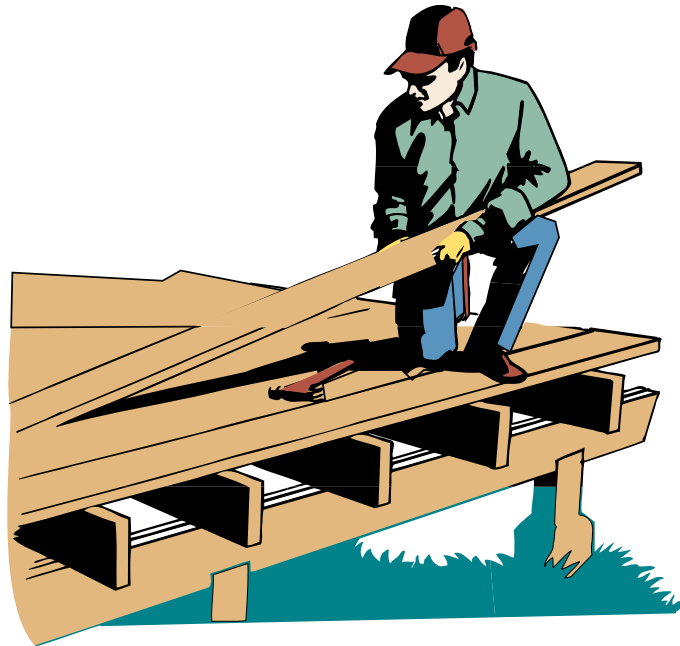
*Sustainable Gardening: The Oregon-Washington
Master Gardener Handbook*, EM 8742
(reprinted 2003)

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Other publications

Thompson, J. William and K. Sorvig. 2000. *Sustainable Landscape Construction: A Guide to Green Building Outdoors* (Island Press, Washington, DC).



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