

SEATTLE × *green factor*

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Seattle is the first city in the United States to adopt a “green factor” to encourage new development to become more ecologically sustainable. Seattle’s Green Factor provides developers and architects with a toolbox of landscaping options in order to reach a target set by city planners.

The Seattle Green Factor was developed as part of the City of Seattle’s Neighborhood Business District Strategy and supports Mayor Greg Nickel’s Climate Action NOW initiative to combat global warming.

www.seattle.gov/mayor/climate

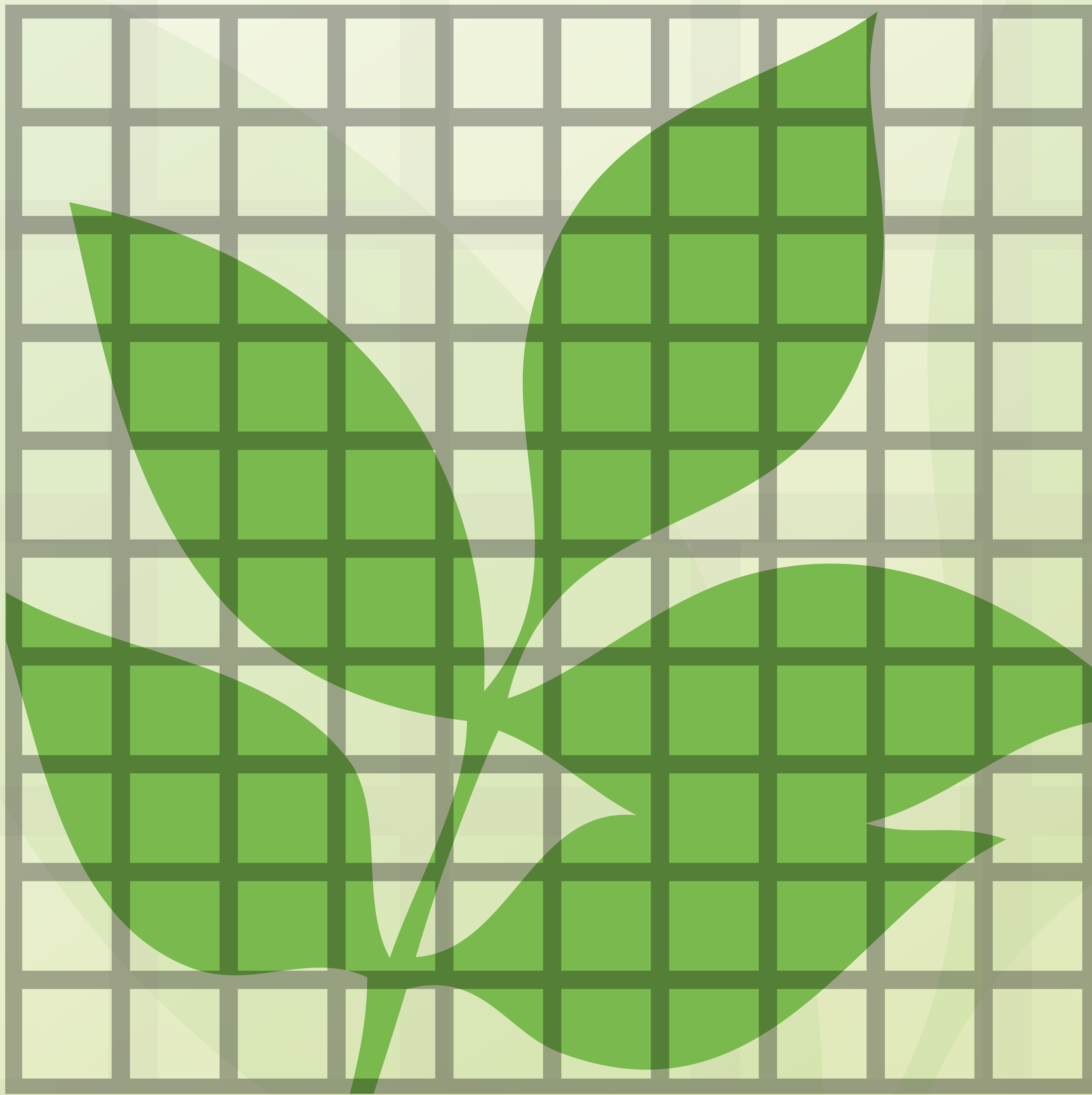
special thanks

This exhibit was made possible in part by the generous support of Magnusson Klemencic Associates.

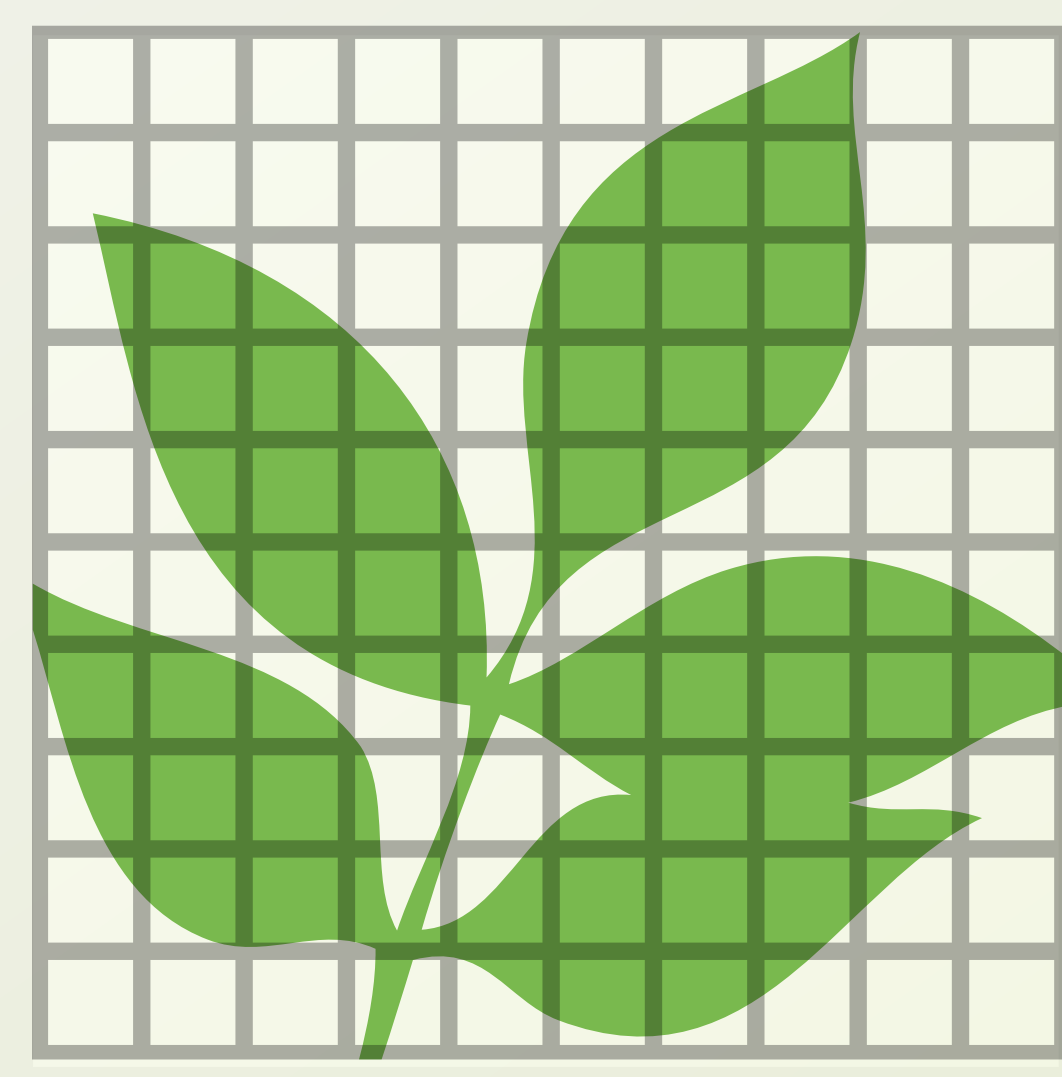
www.seattle.gov/dpd/greenfactor

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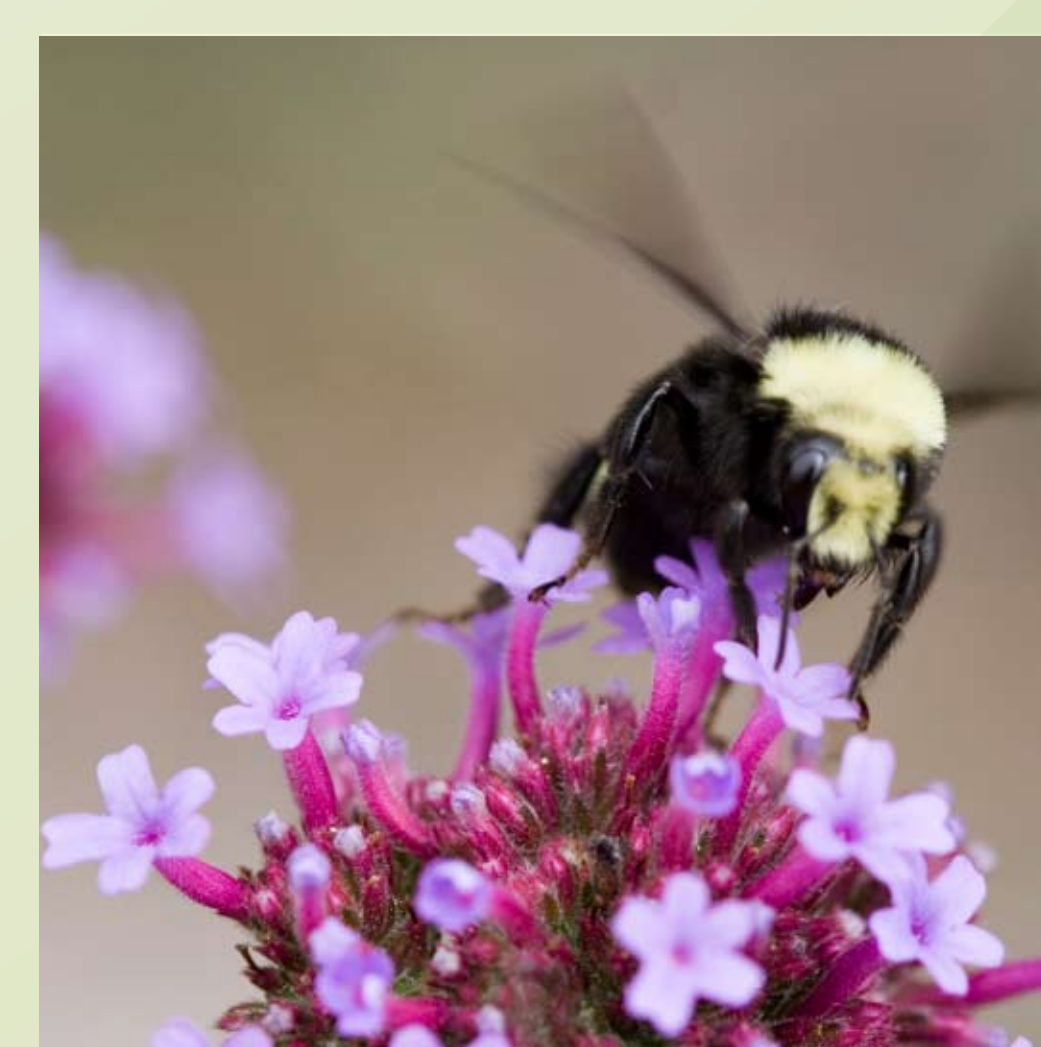
The Greening of Seattle

The Seattle Green Factor is a new menu of landscape strategies that recognizes that landscapes are more than just pretty. They bring natural processes back to the city, too.

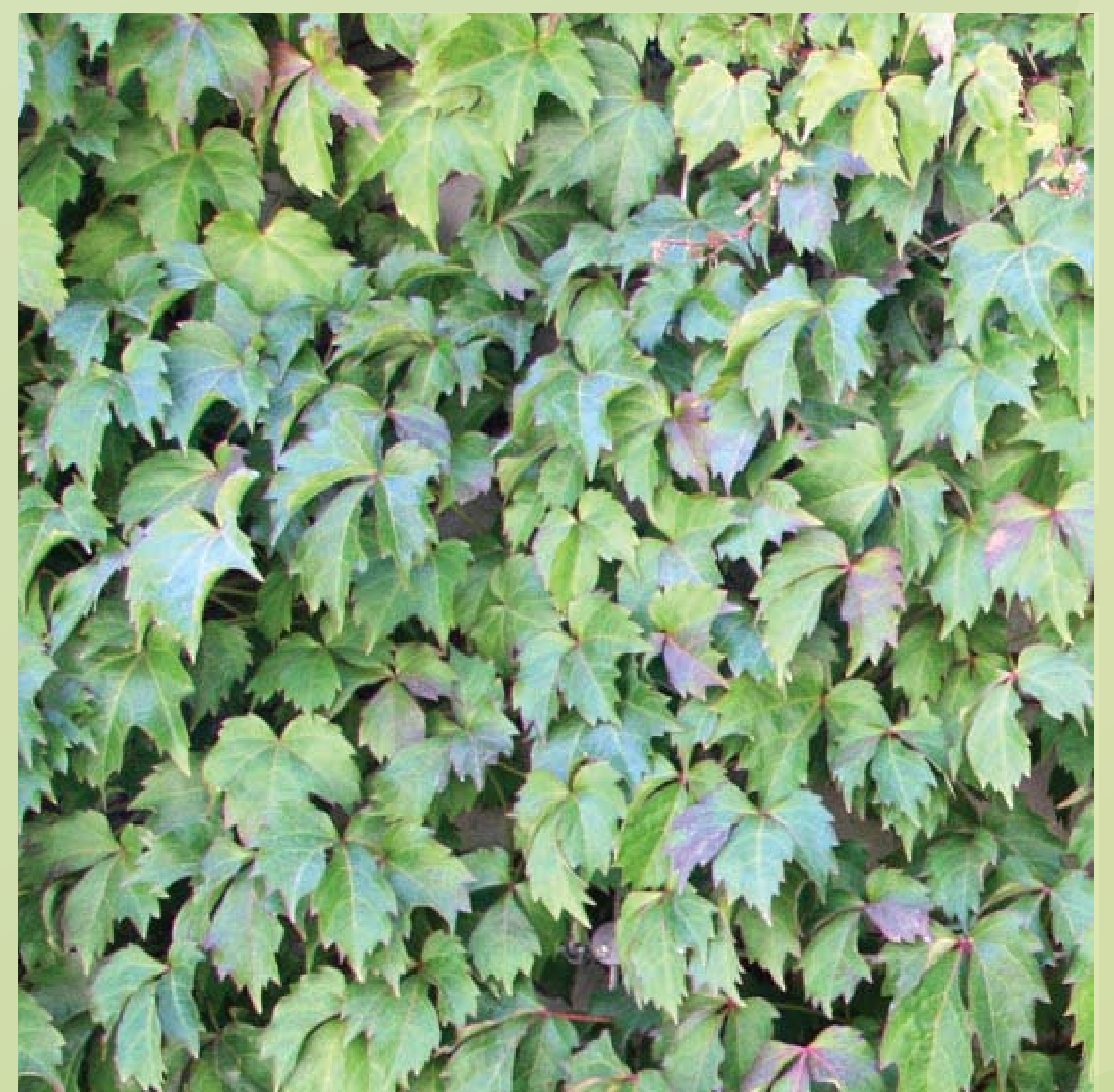
By adopting the Seattle Green Factor into Seattle's land use code, new development is helping to create a more sustainable urban environment for everyone to enjoy.

Green Factor strategies may be combined in a variety of ways and include:

Rain Gardens



Green Roofs & Walls

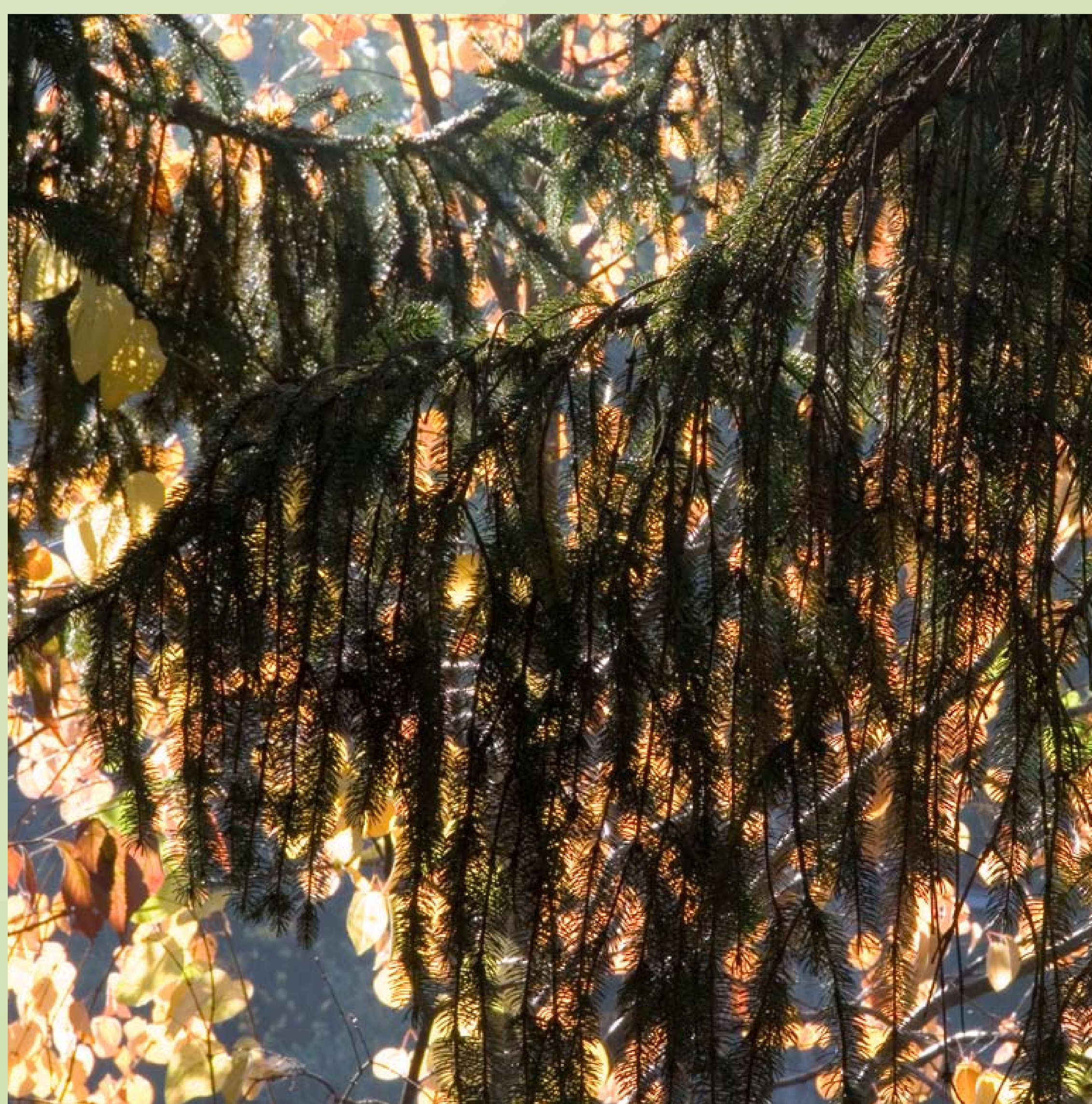


Layering of Plant Materials

Xeriscaping for Drought Tolerance

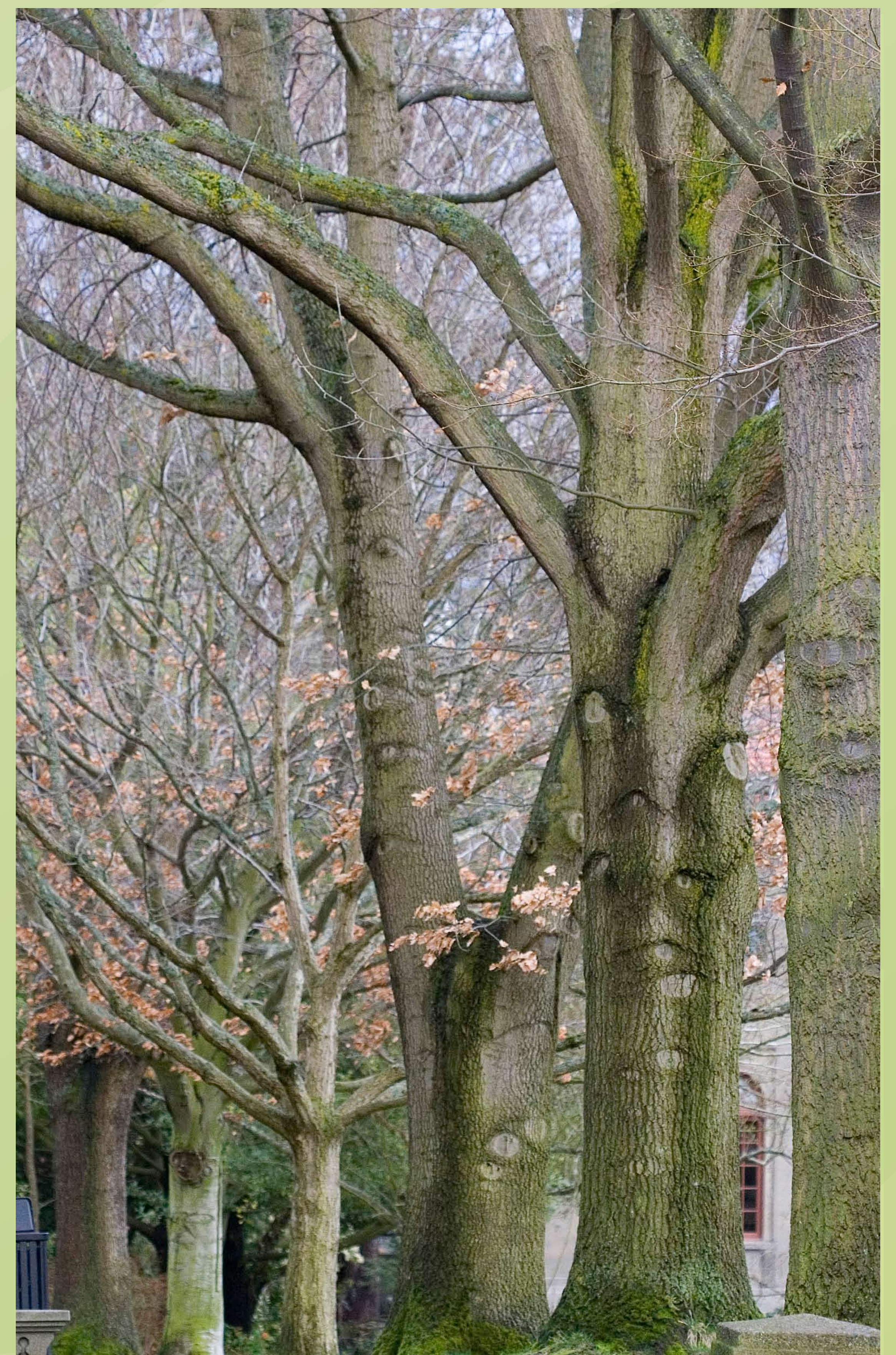


Rainwater Harvesting



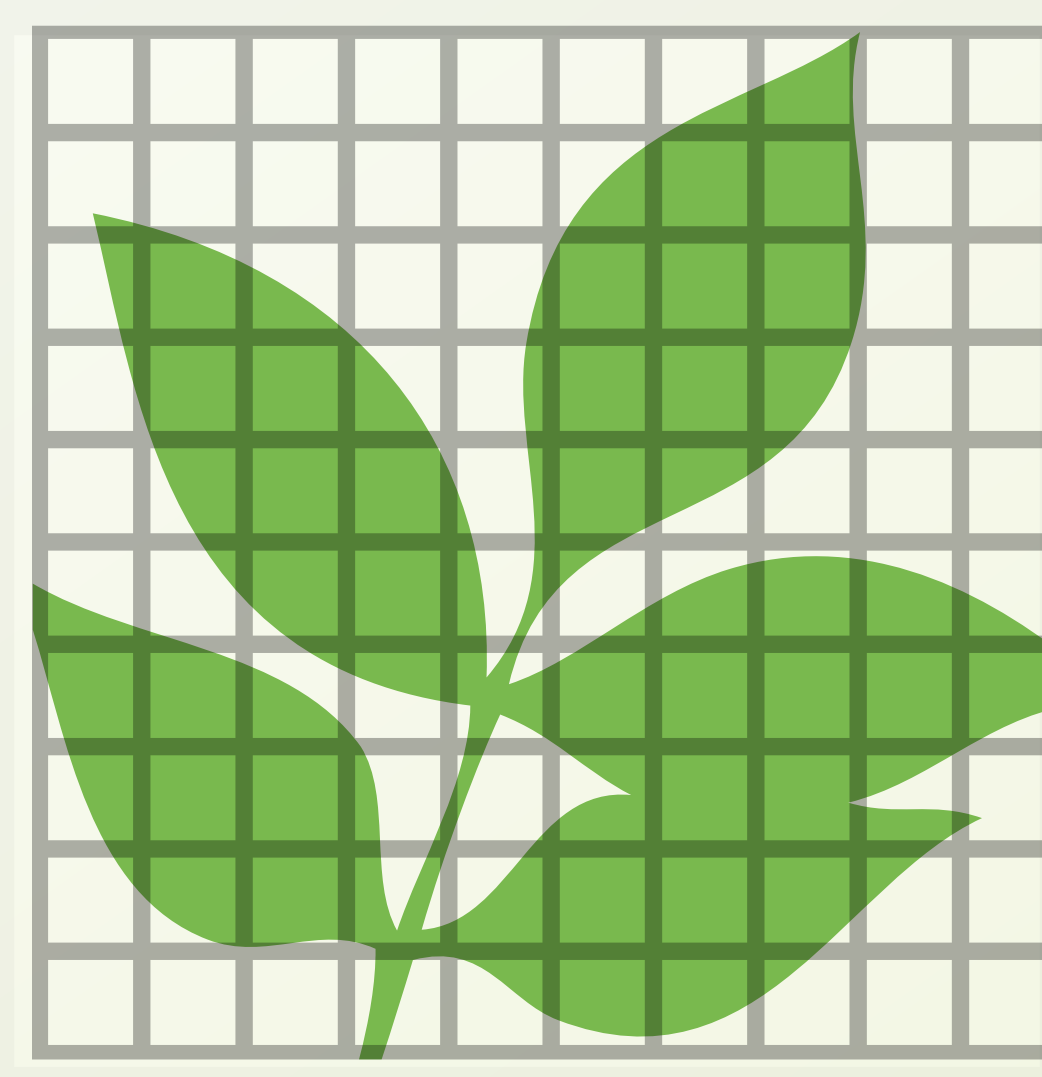
Permeable Paving

Tree Preservation & Use of Larger Trees



Landscaping Visible to the Public

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The Urban Landscape: More than Aesthetics



Alcyone Apartments in Seattle, Washington demonstrates many of the features and functions of Green Factor landscaping.

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- 🌿 Increase layers of plantings
- 🌿 Increase tree canopy
- 🌿 Absorb carbon, release oxygen
- 🌿 Capture urban dust, help clean air
- 🌿 Muffle sounds
- 🌿 Provide habitat for birds and bees
- 🌿 Increase property values
- 🌿 Cool buildings with shade
- 🌿 Cool cities by decreasing urban heat island effect
- 🌿 Insulate buildings

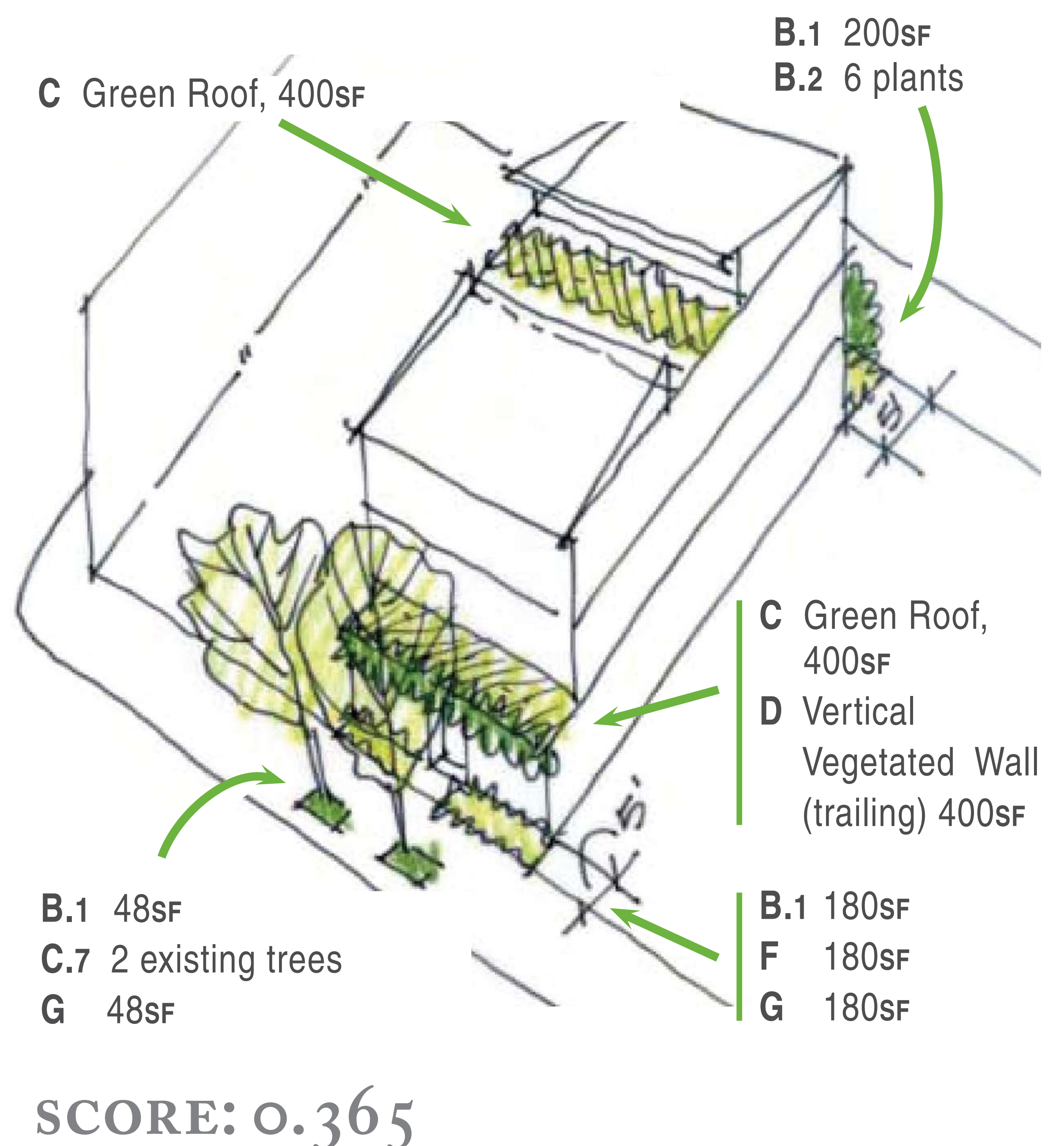
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How it Works

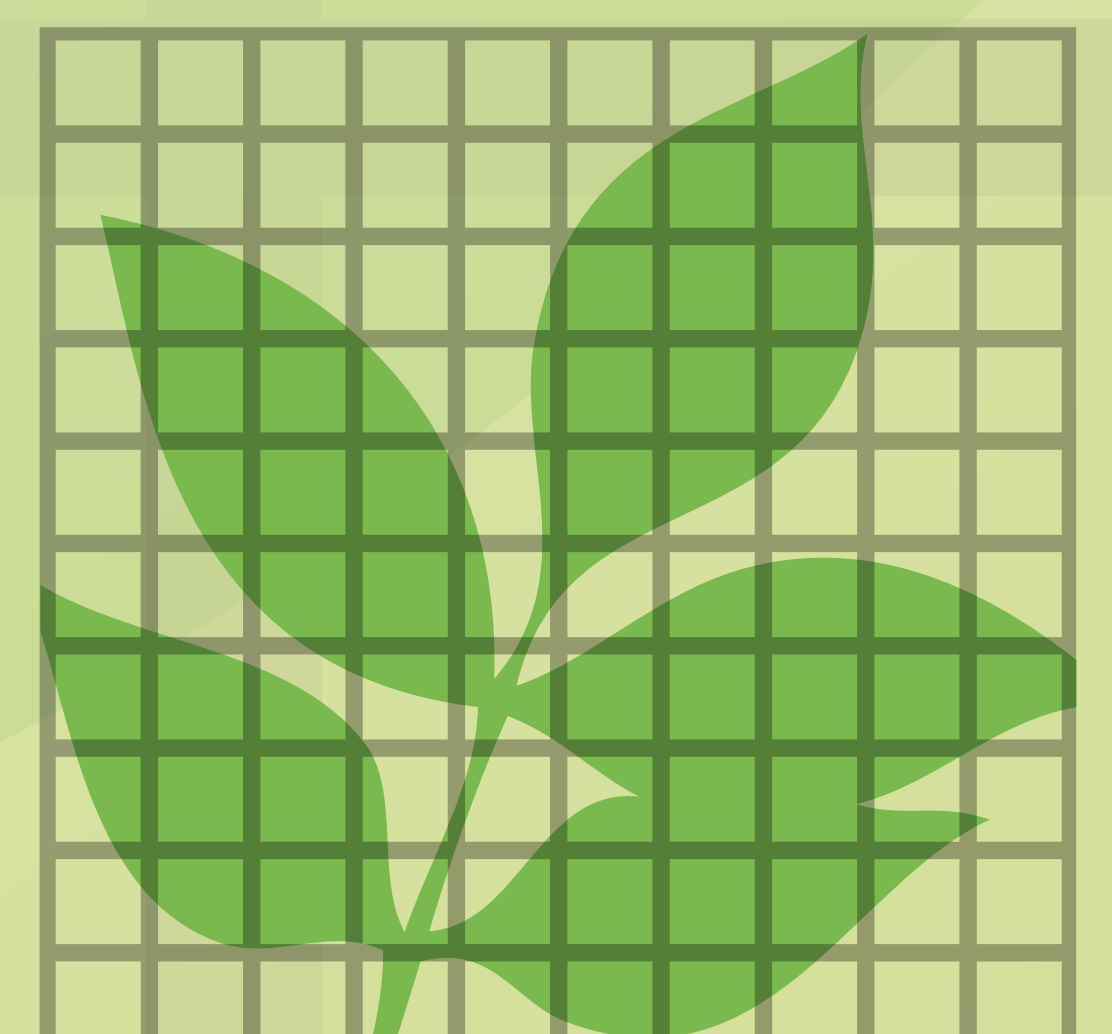
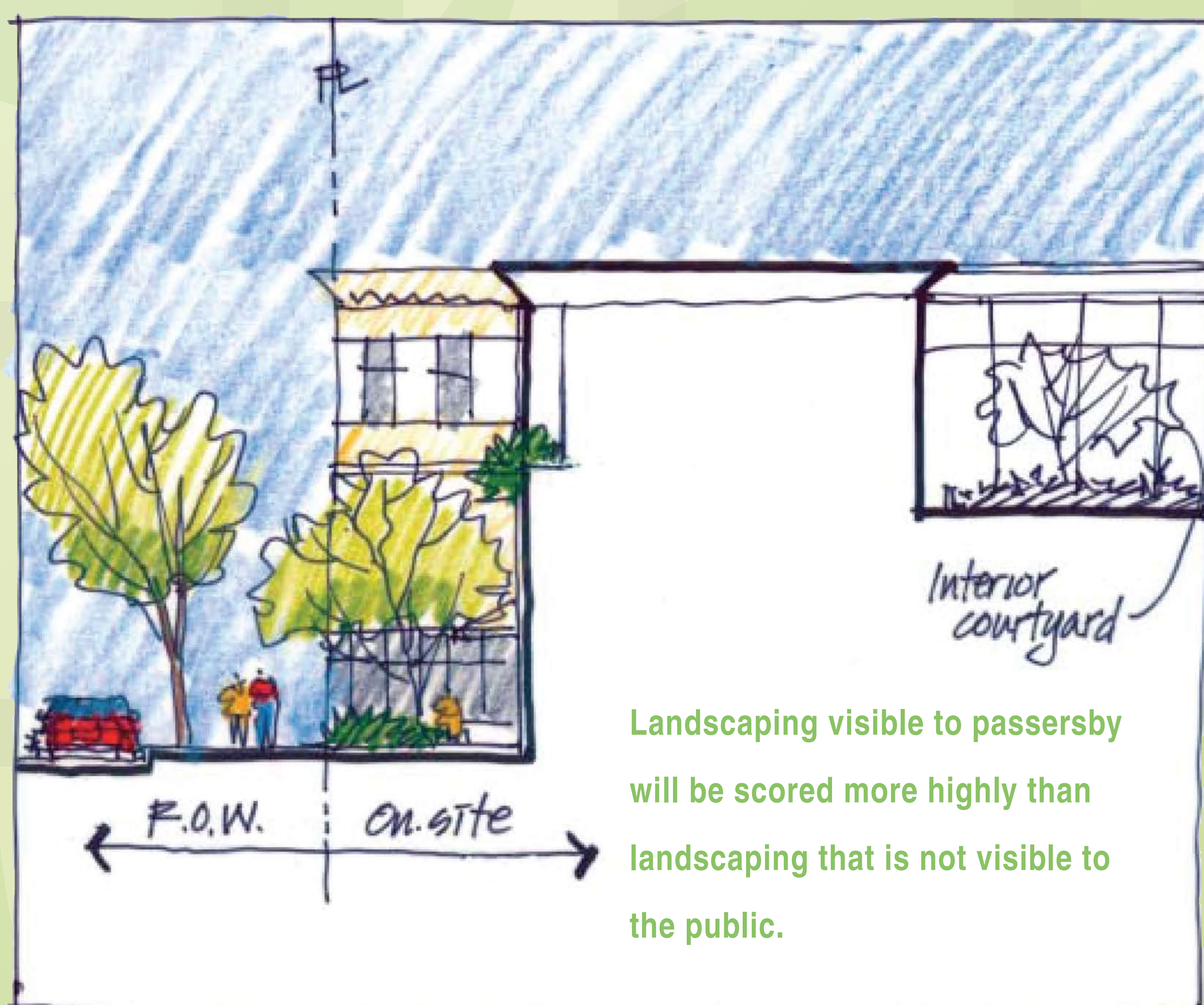
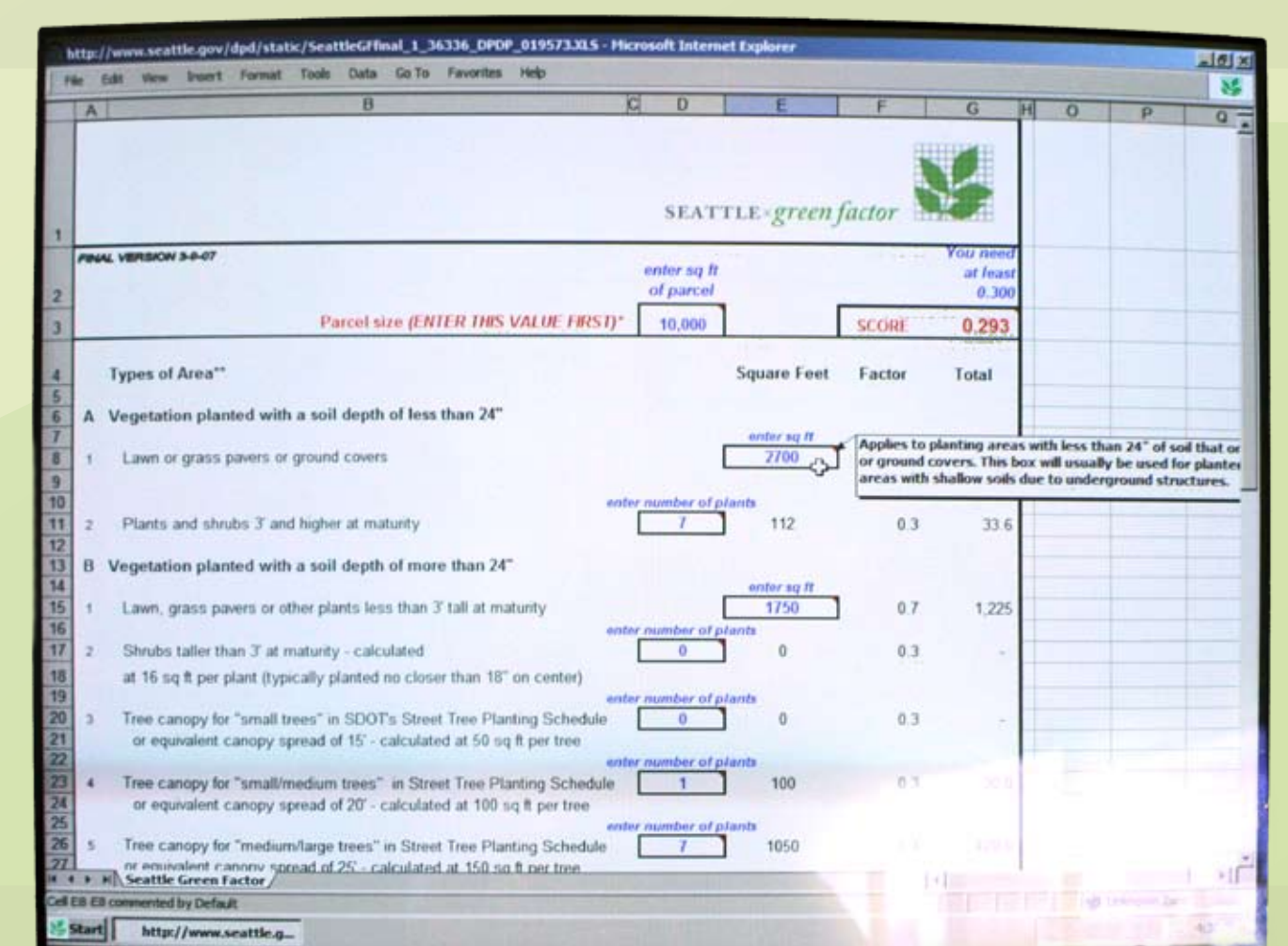
When a new project is proposed for development in Seattle's commercially-zoned areas, the designers must demonstrate how they intend to meet the Seattle Green Factor landscaping requirement. An electronic worksheet is available online to help designers calculate the score and decide which mix of options will work best on the project.

Designers then submit with the worksheet a plan showing landscape areas and a chart calling out planting areas to show how the score was achieved.

Typical landscape sketch calling out green factor



The electronic worksheet available on the City of Seattle's website.



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Scoring Green

Vertical Green Walls

× 0.7

Open Water Feature

Green Roofs

Plantings under 3' with deeper soils

Permeable Paving

× 0.6

Exceptional Trees

× 0.5

Medium to large Trees

× 0.4

Taller Shrubs

× 0.3

Small to Medium Trees

× 0.2

Lawn

Groundcover

Grass Pavers

× 0.0

Asphalt

Concrete

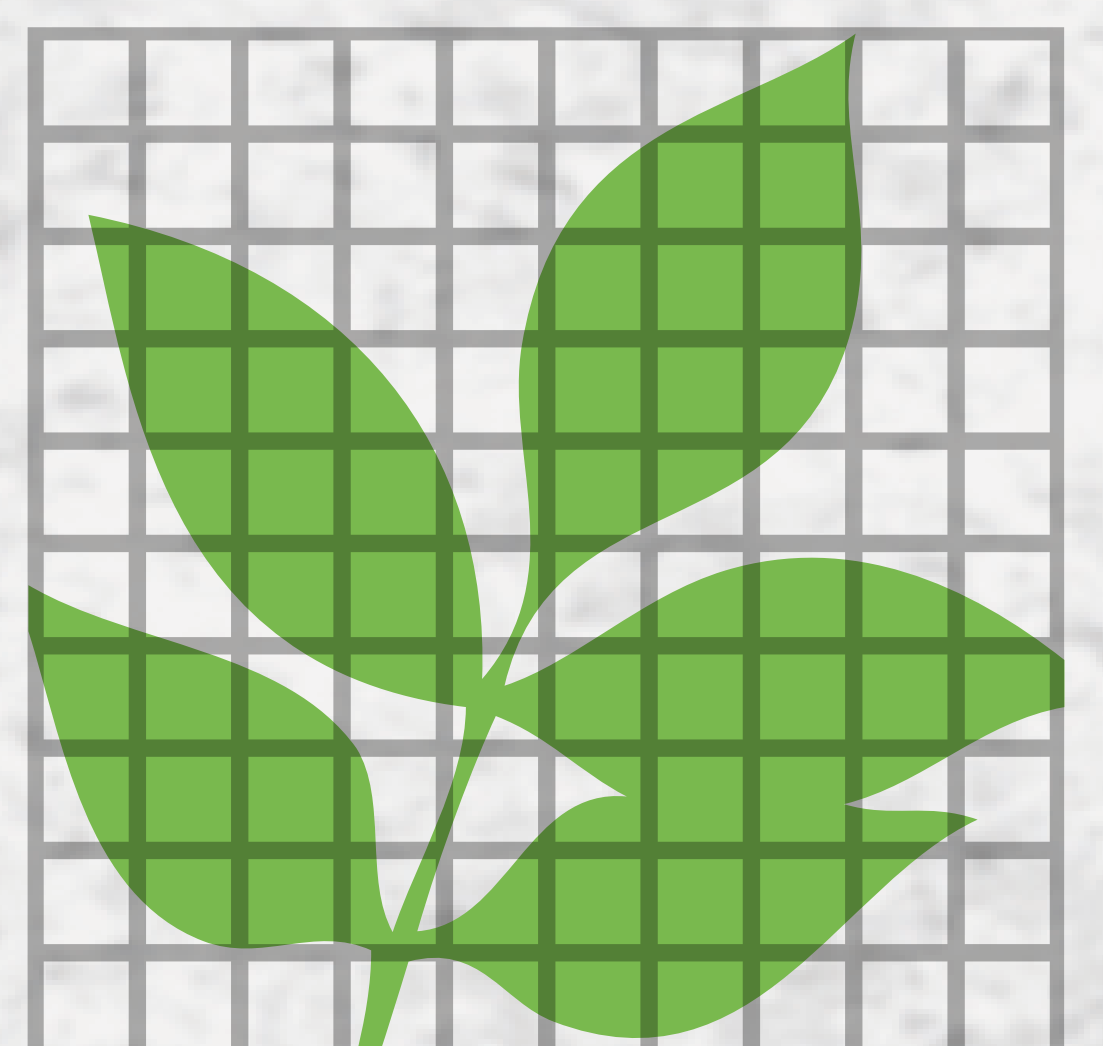
Conventional Roof

The elements are given a factor based upon their environmental benefit.

The higher the benefit, the greater the score.

Applicants get a bonus for drought tolerant landscapes and for landscapes visible from the right-of-way.

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Native Seattle

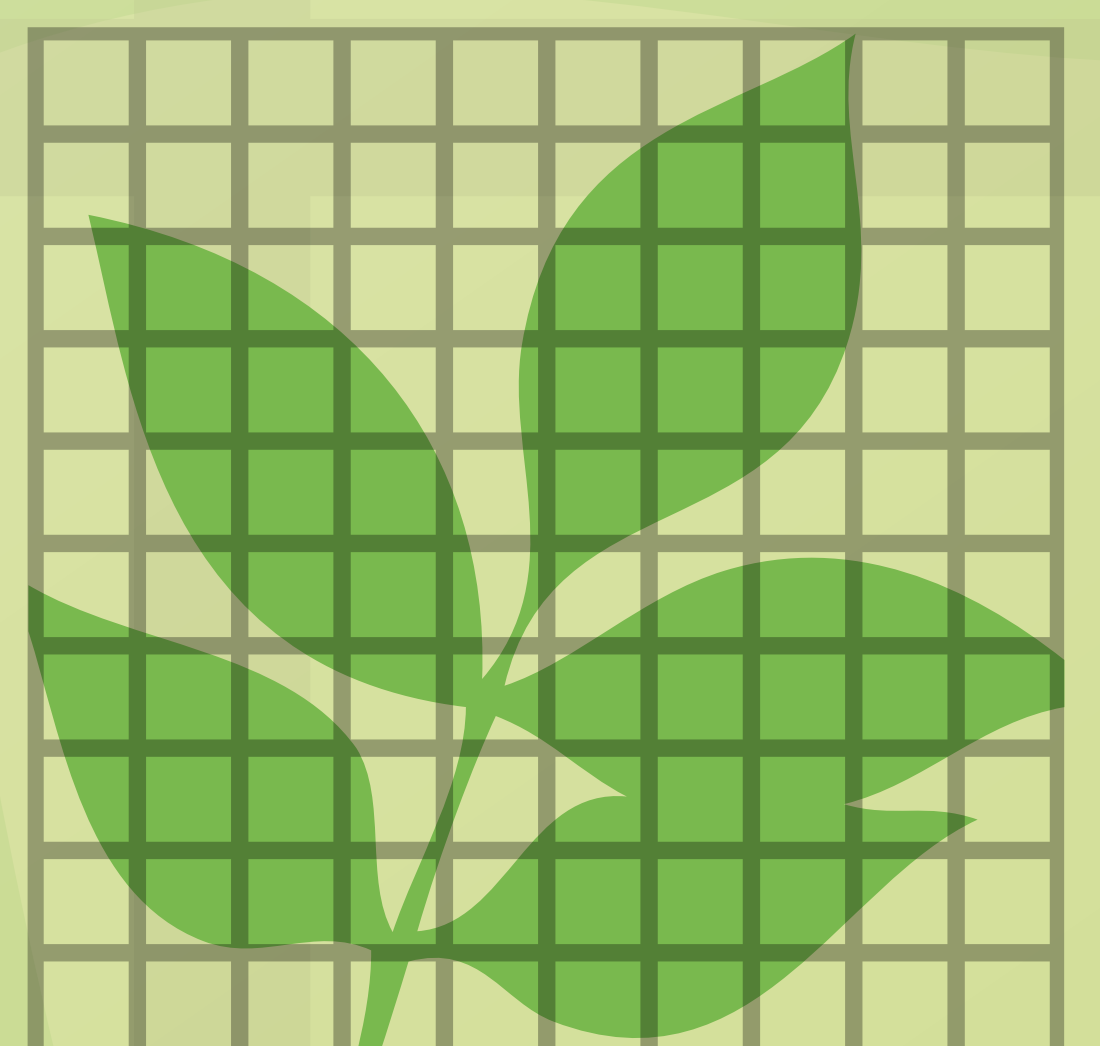


leaves soft
evaporation layers

NATURAL FORESTS IN THE
PACIFIC NORTHWEST ABSORB
30 DAYS OF RAIN BEFORE
PRODUCING SURFACE RUNOFF

alive habitat
complex surfaces

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Built Seattle

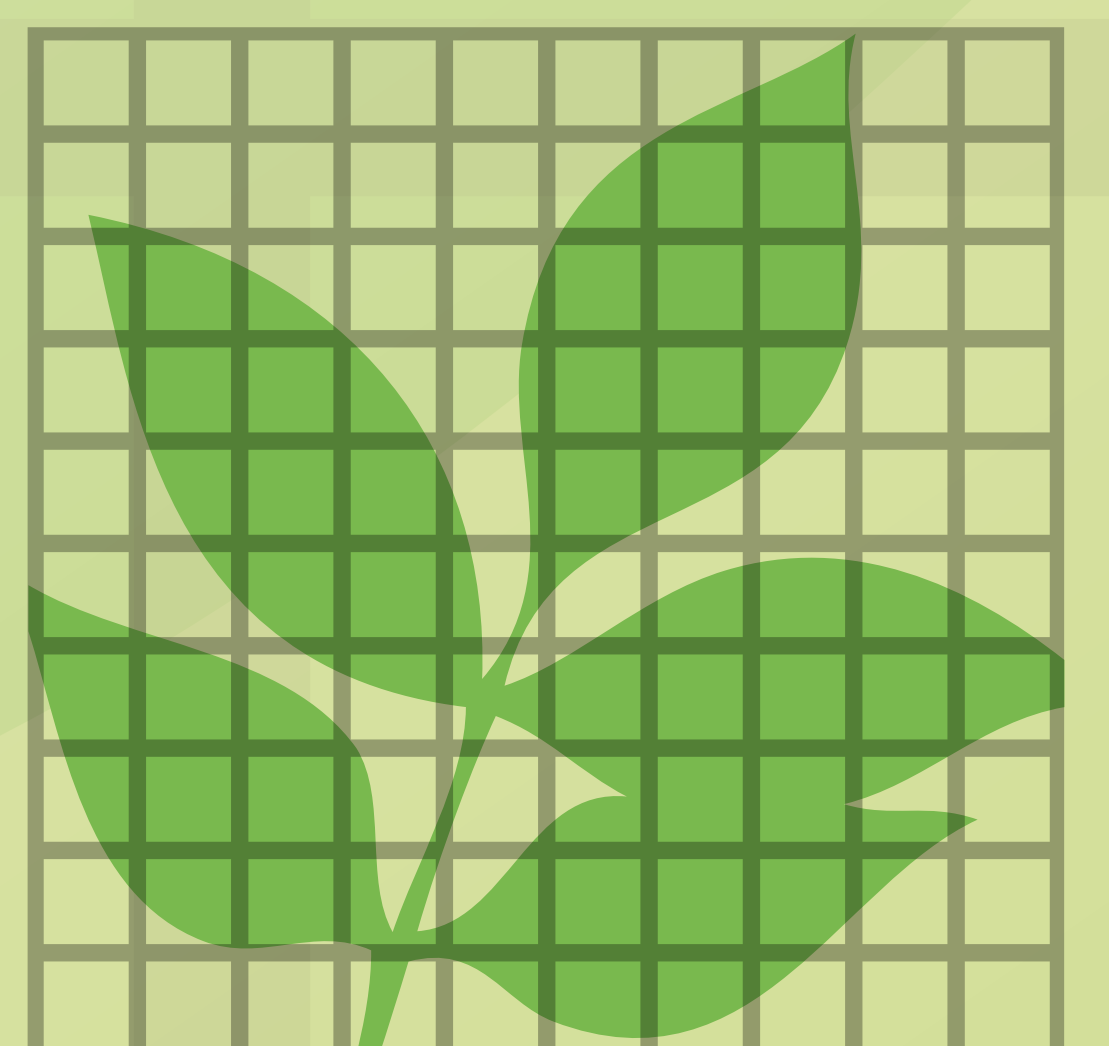


*hard asphalt
runoff pollution*

PAVEMENT AND BUILDINGS
CAN ONLY ABSORB 3 MINUTES
OF RAIN BEFORE PRODUCING
SURFACE RUNOFF

*automobile habitat
pavement
simple surfaces*

www.seattle.gov/dpd/greenfactor



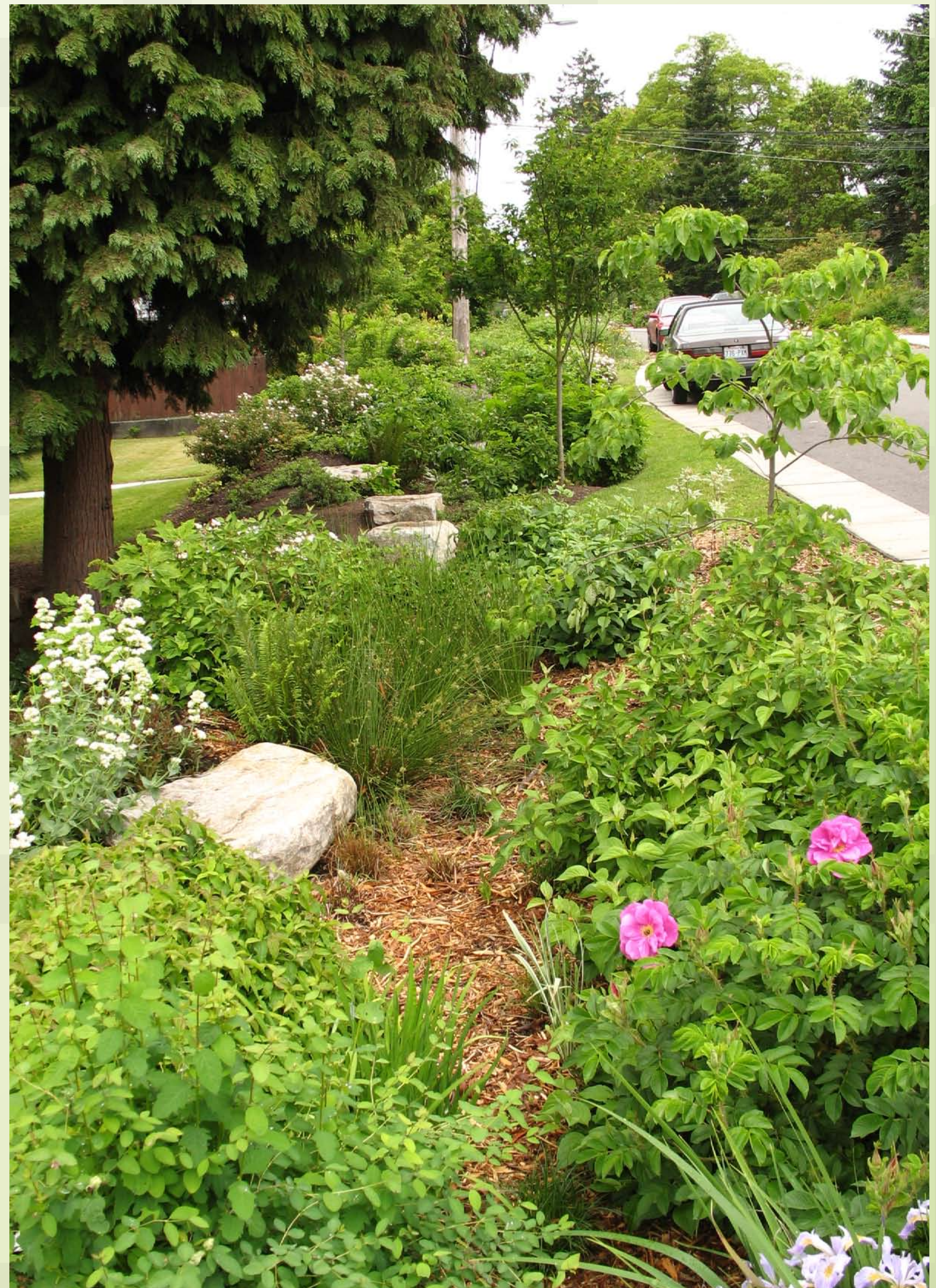
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Rain Gardens

Rain gardens are landscaped, shallow depressions that act like native forest — they allow storm runoff to slowly soak into the soil. Deeply amended with compost, the soil and plants can soak up and filter runoff before it reaches our storm systems and natural waterways. Many native plants as well as ornamentals thrive in these gardens.

Rain Gardens can:

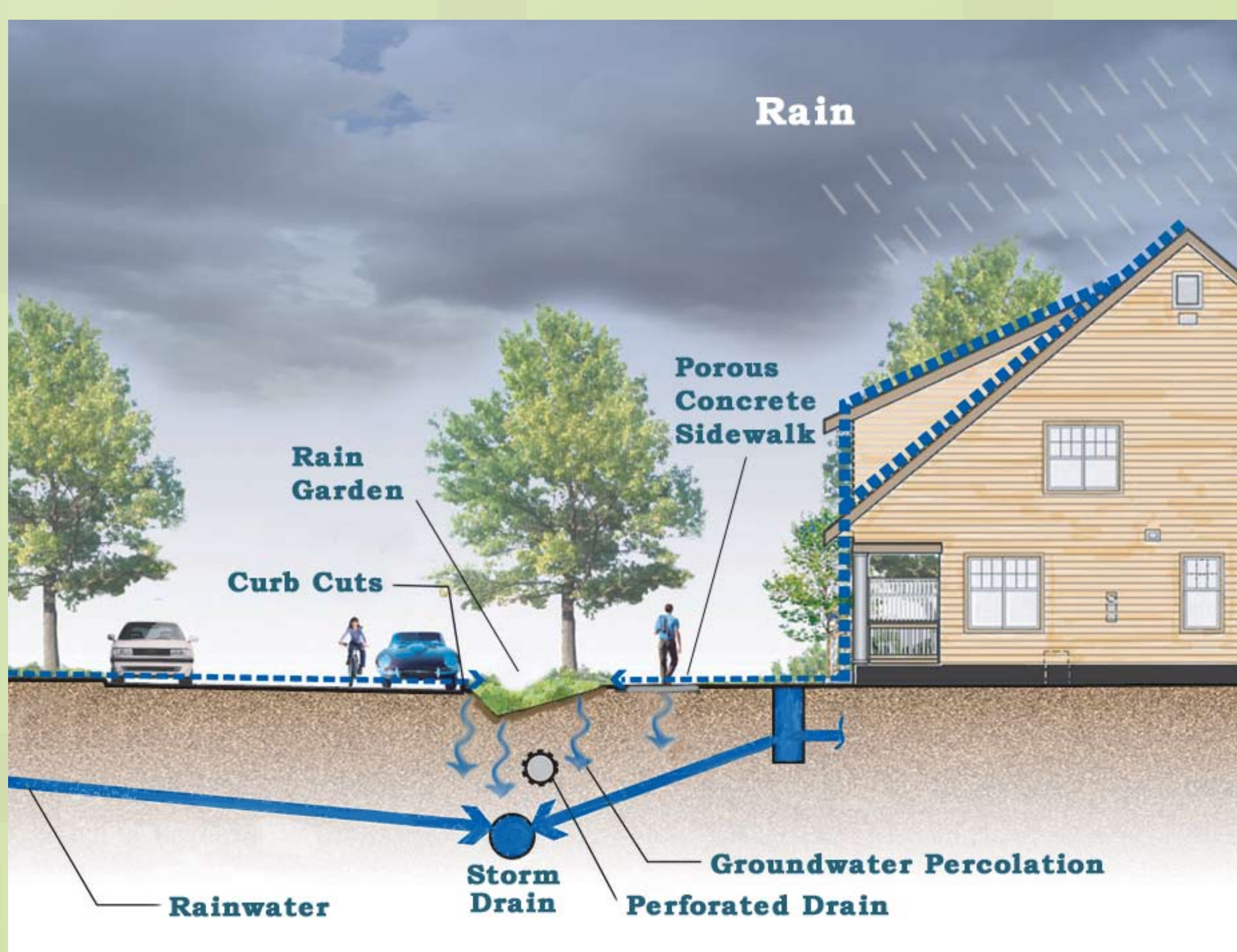
- help reduce pollution and erosion of our streams and lakes
- lessen flooding of neighboring properties and overflow in sewers
- help reduce pollution and erosion of our streams and lakes
- filter oil and grease from driveways, pesticides and fertilizers from lawns, and other pollutants reaching our streams, wetlands, lakes and marine waters
- provide habitat for beneficial insects and birds
- increase the amount of water that soaks into the ground to recharge local groundwater
- add interest and beauty



Above: Seattle's pilot Street Edge Alternatives Project 2001, aka SEA Streets, was designed to provide drainage that mimics the natural landscape prior to piped systems.

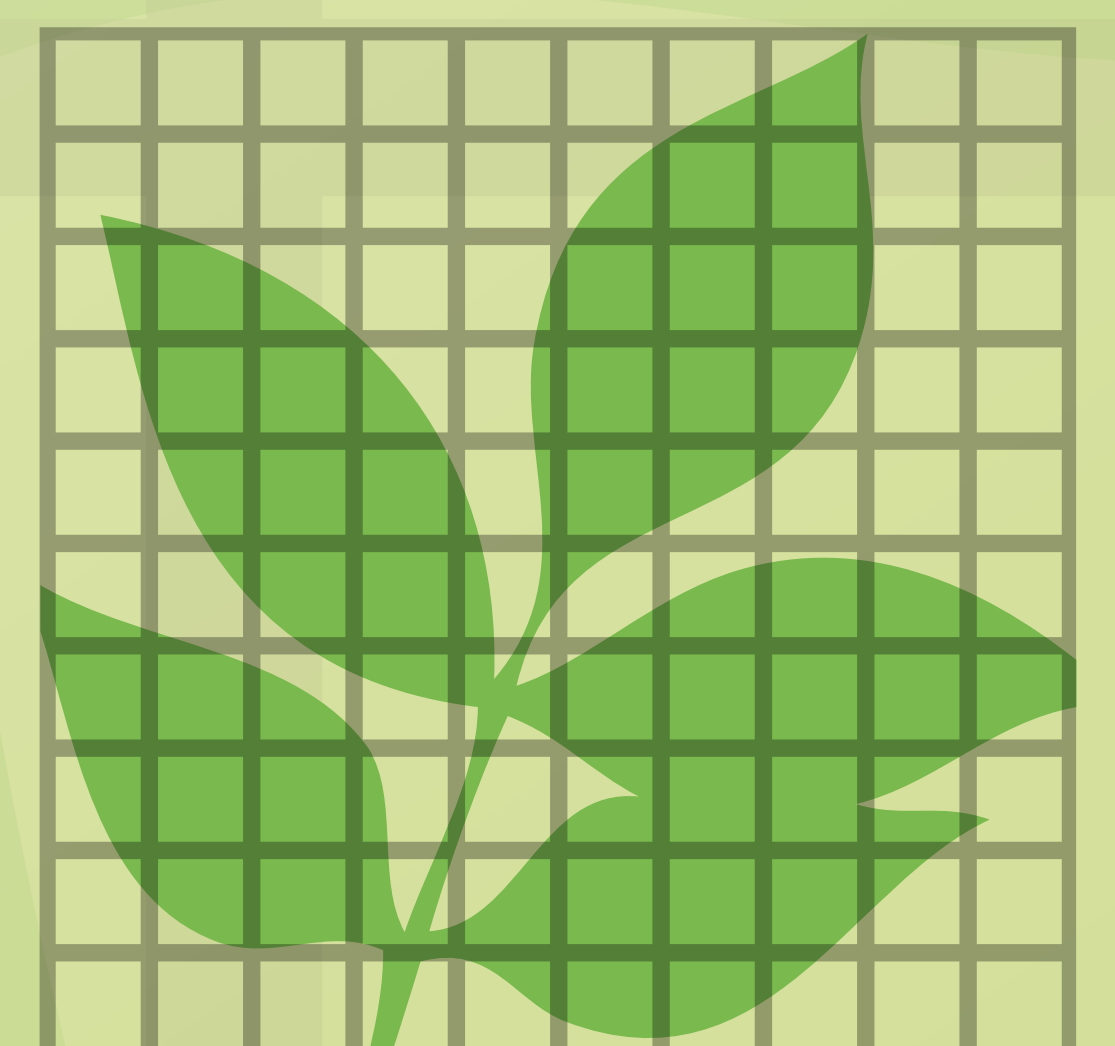


Above and Left: Vegetated Swales or Rain Gardens as implemented at the High Point development in Seattle (illustration by SvR Design).



Seattle Green Factor value of
 $\times 0.7$ *per square foot*

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Green Roofs

Green roofs, also called vegetated roofs or eco-roofs, are simply plants in a growing medium (special soil mix) installed on a rooftop with a waterproof membrane.

There are 2 kinds of green roofs. “Intensive” green roofs with a growing medium (special soil mixes) of 8 or more inches have larger plants, are often park-like and accessible. “Extensive” green roofs have only 2 to 6 inches of growing medium and have lower growing, drought-tolerant plantings.



Seattle's City Hall— all of Seattle's new civic buildings must be LEED certified and have become innovative examples of green practices.

Green Roofs can:

- extend the life of roofing materials by blocking ultraviolet radiation and moderating temperature extremes
- slow stormwater runoff
- reduce building heating and cooling costs
- cool and clean the air
- provide habitat and attractive greenery in urban environments



Green roof adjacent to the WaMu Towers and above the Seattle Art Museum offers great views of downtown Seattle. Photo by Brice Maryman.

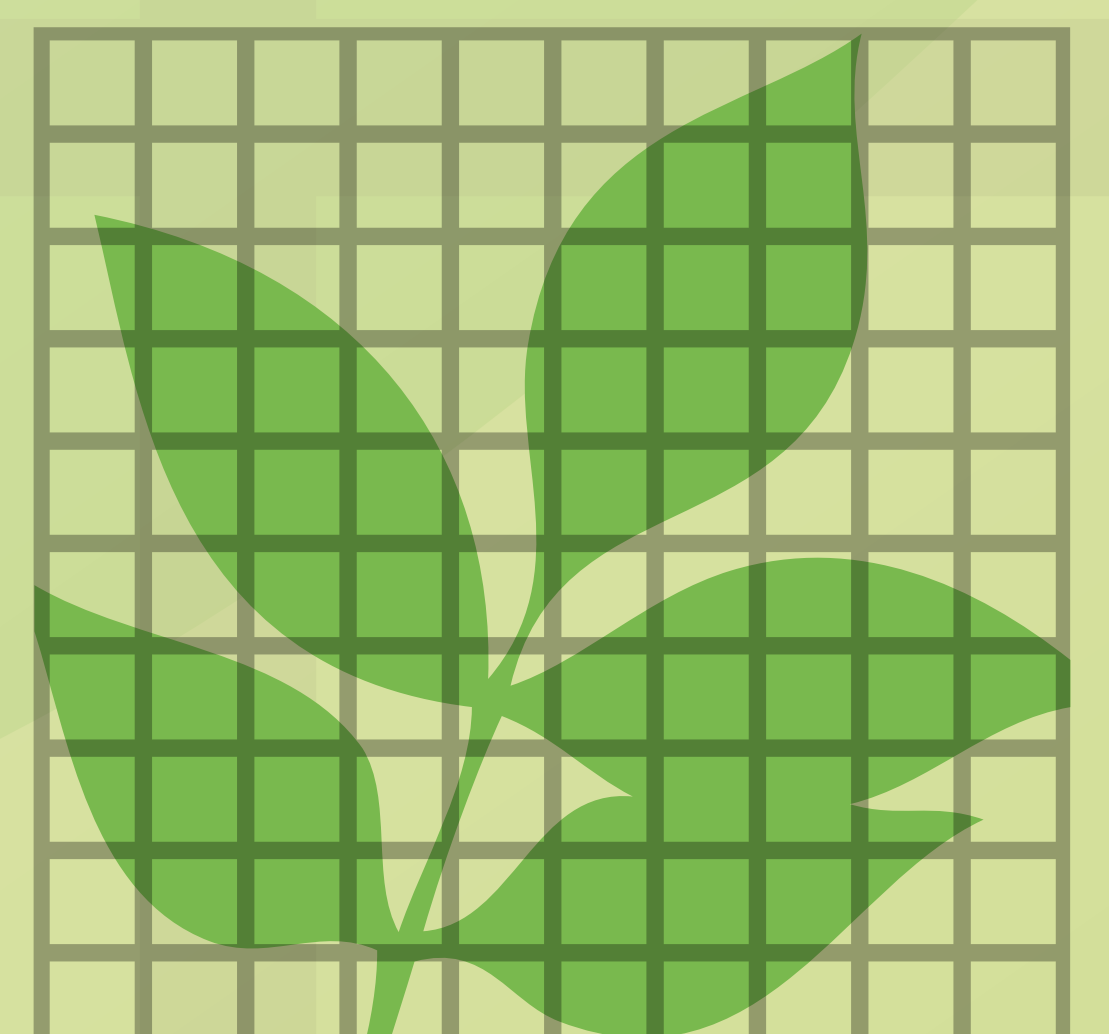


Top Left: Test roof garden with Space Needle in background. Top Right: Planting the rooftop of the Seattle Justice Center. Above: The Ballard Library in Seattle.



Seattle Green Factor value of
× 0.7 *per square foot*

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Green Walls

Green or Vegetated walls can cool buildings though the practice is fairly new in the United States. Green walls can either be attached directly to existing watertight walls, or part of a freestanding structure a few inches from the wall.

Green Walls can:

- provide insulation and natural cooling
- reduce the solar reflectance of a structure, thus reducing urban heat island effect
- absorb sound from noisy streets
- slow stormwater runoff and increase evaporation



Top: Seattle's Capitol Hill Library integrates the green façade into its overall design. Below: Trailing vines soften the appearance of Northgate North parking garage in Seattle.



Left: Seattle's Capitol Hill Library support structure.

Right: Living wall being assembled at the Vancouver Aquarium in B.C., Canada.

2 kinds of Green Walls

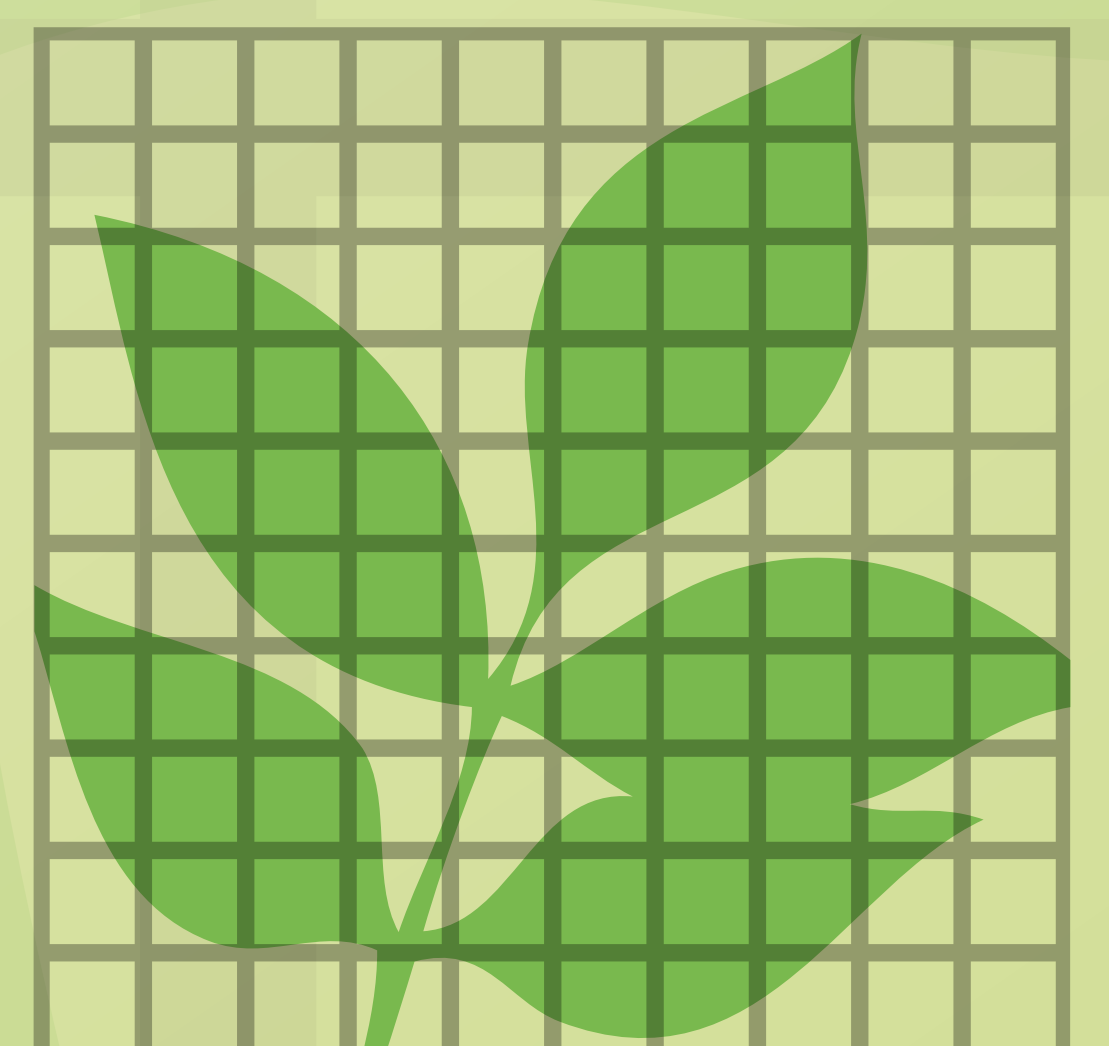
Green Façades are support structures on which to train climbing or cascading plants planted at either at the base or on the roof.

Living Walls are modular systems that hold growing medium and plants vertically. These support a wide variety of groundcovers, ferns, edibles and even low-growing shrubs.



Seattle Green Factor value of
 $\times 0.7$ *per square foot*

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Porous Paving

Permeable or porous paving are walkable and driveable surfaces designed to allow stormwater to soak into the ground. This reduces runoff than can pollute local waters.

Porous Paving can:

- improve water quality
- control water flow
- eliminate or minimize the need for costly treatment facilities
- optimize space within rights-of-way
- reduce temperature of runoff to streams
- reduce heat island effect
- benefits trees and landscaping
- provide paved surface for improved accessibility
- work well in freezing climates and can reduce ice formation



Ravenna Park, Seattle: Permeable paving was used for footpaths at the entrance of the popular nature walk along the ravine and it's recently daylighted creek.



Above Left: compacted gravel is part of an attractive entrance to retail stores in the Ballard neighborhood of Seattle.

Above: First porous pavement street in the state of Washington went in at Seattle's Highpoint community in 2006.

Left: One of many modular porous pavement systems available.



Seattle Green Factor value of
 $\times 0.6$ *per square foot*

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