

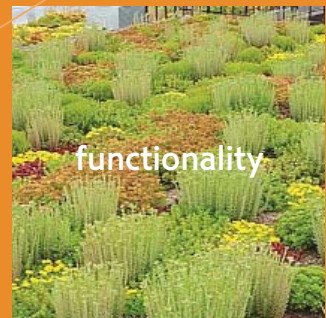
Garland ■ Sustainable Roofing Solutions



Versatile. Watertight. Responsible.



# responsible design



## sustainable roofing for high-performance buildings

Garland Solutions

**StressPly®**  
fiberglass-reinforced  
polymer-modified bitumen  
systems<sup>2</sup>

**VersiPly®**  
fiberglass-reinforced SBS-  
modified bitumen systems

**R-Mer™**  
architectural and structural  
standing seam roof and  
wall systems<sup>3</sup>

**R-Mer Lite®**  
insulated steel roofing  
systems<sup>4</sup>

Incorporates Recycled Materials	■			
Is Recyclable			■	■
Extends Service Life	■	■	■	■
Promotes Resource Conservation	■		■	■
Uses Renewable Energy				

<sup>1</sup>LEED® Buildings and Leadership in Energy and Environmental Design® are trademarks of the U.S. Green Building Council (USGBC). The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a voluntary, consensus-building national standard that was initiated by the USGBC for developing high-performance sustainable buildings. <sup>2</sup>Includes StressPly EUV eco-responsible UV-resistant SBS/SIS-modified bitumen membrane with Starburst™ mineral or FR Starburst mineral surfacing, as well as StressPly EUV SPF FR Mineral and StressPly Plus SPF FR Mineral, which are SBS-modified bitumen membranes with factory-applied ENERGY STAR qualified coatings



## Primary Benefits of Rooftop Solar Cells

- Generation of energy from a natural, renewable resource.
- Productive use of under-utilised space
- Reduction of energy consumption
- Reduction of life-cycle costs
- Conservation of natural resources
- ENERGY STAR® qualification
- Contribution to LEED Buildings certification points



photovoltaic

**Rooftop photovoltaic (PV) systems save energy by substituting the natural energy of the sun - the ultimate renewable resource - for the energy derived from fossil fuels. Garland PV solutions use pre-engineered modular designs and are available for low-pitch applications, metal roofing, and a variety of specialty configurations.**

There are two major categories of rooftop solar roofing:

- 1 Crystalline silicon PV cells use a single crystal or a polycrystalline slice of silicon to provide optimum energy efficiency and reliability.
- 2 Thin-film PV cells create a lighter-weight solar grid by using a transparent layer of very thin semiconductor material, deposited on a protective surface, and shaped and sized to order to provide very good efficiency and reliability. Since thin-film PV cells are laminated directly to the roof fascia or panels, they offer a more aesthetically pleasing alternative for larger, more visible roof areas.

All Garland solar roofing solutions require minimal maintenance and provide reliable performance during peak energy demand.



- This crystalline silicon SolarGrid rooftop photovoltaic system is helping its owner turn back the meter on energy costs, by actually producing energy from the sun. Such systems meet California Title 24 energy code requirements and can contribute as many as three points towards LEED BUILDINGS certification, depending upon the amount of energy generated.

Sustainability is rapidly moving from the edge of high-end design towards acceptance as a fundamental principle of design, as integral to the ordering of built environments as form, order, and functionality. In short: Sustainability is not a style... it is nothing less than a revolution in how we design, construct, and operate buildings.

sustainability

In roofing, sustainability can be accomplished in any of five ways:

- 1 Through the use of recycled materials
- 2 Through the use of materials that are, in themselves, recyclable
- 3 Through extended service life
- 4 By promoting the more efficient use of energy and other natural resources
- 5 By using a renewable energy source, such as sunlight

The Garland portfolio of high-performance roofing solutions features innovative products and systems in all these categories, including roofing solutions that provide sustainability in multiple ways. Garland sustainable roofing solutions contribute valuable LEED®<sup>1</sup> Buildings certification points to your new construction, renovation, and restoration projects.

All Garland high-performance roofing solutions can be used individually, or in combination, to achieve varying levels of sustainability.

Ultra-Shield™ White fluid-applied white roof coating for metal roof restoration <sup>5</sup>	Pyramic™ ENERGY STAR® <sup>6</sup> qualified white, fire-resistant acrylic coating	White-Knight™/ White-Stallion® ENERGY STAR qualified multipurpose urethane restoration waterproofing	GreenShield® vegetative roof system	SolarGrid™ rooftop photovoltaic system
			■	
			■	
■	■	■	■	■
■	■	■	■	■
				■

<sup>3</sup> Includes R-Mer Regal White CR, Sandstone CR, Natural Patina CR, Portland Stone, Sahara Tan, Sierra White CR, Heritage Red CR, Terra Cotta CR, and Taupe highly reflective cool roofing systems <sup>4</sup> Includes R-Mer Lite white highly reflective cool roofing systems <sup>5</sup> Includes Ultra-Shield ENERGY STAR qualified highly reflective cool roofing systems <sup>6</sup> ENERGY STAR® is a registered trademark of the U.S. government. The ENERGY STAR Program represents a voluntary partnership between businesses and organizations and the federal government to promote energy efficiency and environmental activities.



longevity

- High-performance roofing solutions such as this R-Mer Span structural standing seam roof system are expected to last at least 30 years. With subsequent refurbishment, roof life can easily be extended an additional ten years or more. In comparison, the average life expectancy of a commercial low-slope roof is less than 17 years.<sup>1</sup>

<sup>1</sup>The 2003 Roof Longevity and Replacement Report, funded by the Roofing Industry Alliance for Progress.

**natural**

**multifaceted**

**Green**

**vital**

Green roofing solutions, are the pinnacle of sustainable roofing, combining the widest range of ecological benefits with aesthetic versatility, extending the architect's palette to encompass a variety of natural landscapes. Green roofing systems significantly improve the natural environment while enhancing the well-being of people in and around the building.

There are two categories of green roofing:

- 1 Extensive green roofs, which use lighter-weight soils and thinner soil depths and can feature sedums, grasses, herbs, and other smaller plants. Once designed and installed, such roofs can typically be maintained by existing building maintenance staff.
- 2 Intensive green roofs, which use heavier-weight soils and thicker soil depths to accommodate the planting requirements of woody vegetation, shrubs, and even small trees. These roofs may require the ongoing attention of landscape professionals, in addition to existing building maintenance.

Garland has spent over a decade perfecting its green roof design and manufacturing process. Every Garland green roof is flood-tested on site to guarantee watertight integrity.

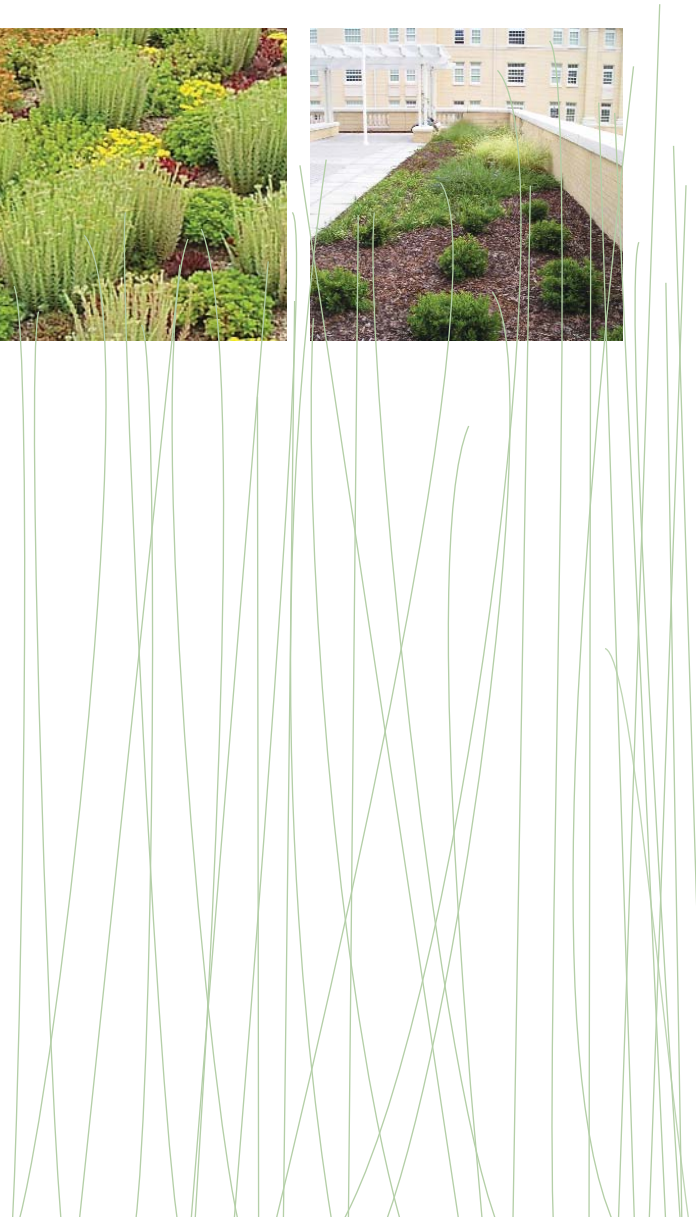


## green roof

- This GreenShield extensive vegetative roof has an anticipated service life of 40 years or more.

### Primary Benefits of Vegetative Roofing

- Reduction of stormwater run-off
- Reduction of urban heat-island effect
- Improvement of oxygen levels and air quality
- Extended roof service life
- Reduction of carbon monoxide
- Improvement of the well-being of people using and viewing them
- Contribution to LEED Buildings certification points
- Decrease in noise pollution
- Conservation of natural resources



## Primary Benefits of Longevity

- Greater life-cycle return on capital investment
- Conservation of resources used for roof-related materials
- Reduced landfill waste
- Fewer disruptions to building operations and occupants
- Decreased maintenance requirements



integrity

performance

survival

longevity

The fundamental principle underlying all sustainable design solutions is longevity. When it comes to roofing, there is a direct relationship between the survival of our planet and the survival of a roof: the longer the service life between roof replacements, the lower the impact on our environment.

Since our founding in 1895, roof life extension has been the driving force behind Garland's product research and development. We were one of the first to introduce high-performance modified bitumen roofing solutions and among the first to invest in green roofing systems, the ultimate in rooftop integrity and aesthetic versatility.

Today, we are among a handful of full-service roofing manufacturers to offer rooftop solutions in every category of sustainable design. Our high-performance roofing solutions, supported by our proactive Dry Zone™ preventive maintenance programs, are designed to last the life of your buildings.

# reflectivity



□ Reflectivity upgrades, such as this single-ply roof restored with a partially reinforced White-Knight restoration waterproofing system, typically help building owners reduce energy costs by 40 percent, in comparison with dark roofs.



## Primary Benefits of Reflectivity

- Reduction of energy consumption
- Reduction of life-cycle costs
- Conservation of natural resources
- Improvement of rooftop appearance
- Protection against UV degradation
- ENERGY STAR® qualification
- Contribution to LEED Buildings certification points
- Incorporation of products rated by the Cool Roof Rating Council (CRRC)

efficiency

savings

convenience

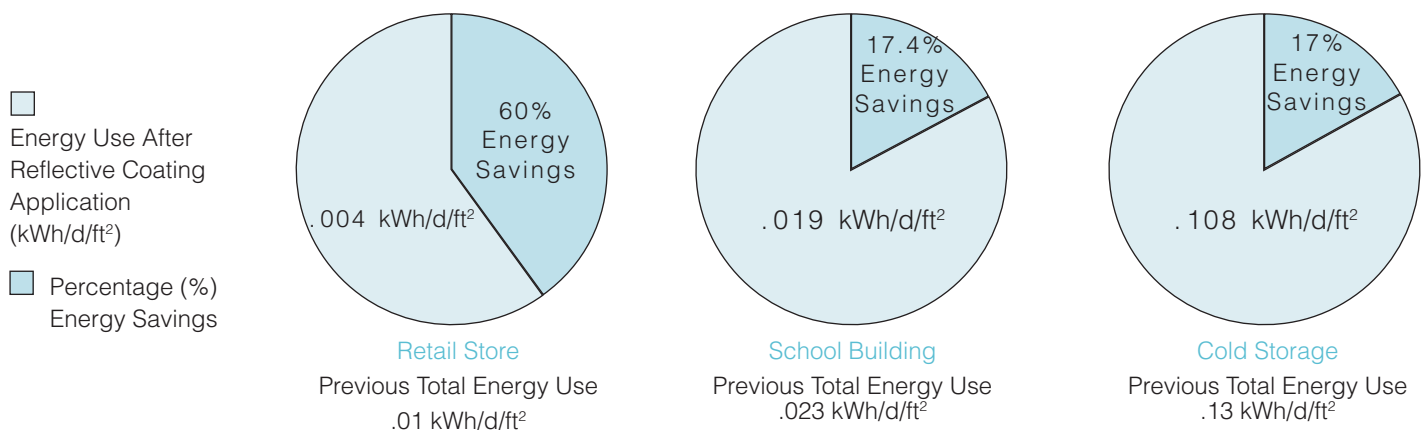
reflectivity

The second most significant contributor to rooftop sustainability is reflectivity. It is also among the easiest to implement, since it can be introduced during most stages of life, to nearly any category of existing roofing. Garland retrofit roof-surfacing solutions are available to upgrade the energy efficiency of almost any roof.

No two roofs are identical. Every aspect of rooftop performance, including reflectivity, is influenced by a multiplicity of factors, from location and UV exposure to building-specific considerations such as orientation, cooling requirements, and rooftop equipment. Although this makes measuring economic returns on reflectivity investments a challenge, many studies have shown that reflective roofs typically require 40 percent less energy for cooling than dark roofs in comparable locations.

Keep in mind that your Garland Regional Technical Manager can help you identify energy-saving incentive programs to help defray the initial costs of cool roofing solutions.

### energy savings after reflective coating application



□ In a July 2004 California Energy Commission report (P500-04-046) prepared by Lawrence Berkeley National Laboratory, rooftop reflectivity upgrades achieved average daily energy savings ranging from four to 50 percent, and peak demand savings ranging from six to 50 percent, depending on building parameters and conditions. In all cases, the buildings were single-story and the energy-saving upgrades consisted of white rooftop coatings.

## Over 100 Years of The Garland Company, Inc.

Founded by J.B. Wise in 1895, as a supplier of refining products, The Garland Company, Inc. has evolved from a local manufacturer and distributor of oils, greases, and paints to a worldwide leader in manufacturing high-performance roofing and building maintenance systems for the commercial and local authority markets. We've prevailed by remaining dedicated to our customers, continually developing innovative solutions to meet the ever-changing needs of a demanding market.

Today, the Garland network of Regional Technical Managers is servicing customers around the world with the same vision, enterprise, and integrity demonstrated by J.B. Wise back in 1895. Dedicated Regional Technical Managers remain the driving force of our success by serving the customer with an unwavering commitment to quality and a single-minded responsiveness to individual requirements. Strategically located throughout the United Kingdom, United States, and Canada, Garland Regional Technical Managers are ideally positioned to provide responsible, integrated facility management for single or multiple properties.

- High-performance built-up and modified roofing systems, both hot - and cold -applied
- Architectural and structural standing seam metal roof systems
- Sustainable roofing solutions, such as green roof and photovoltaic systems
- Metal wall panels
- Fluid-applied urethane and acrylic systems
- Maintenance and refurbishment products for bituminous, metal, and single-ply roof systems
- Computerized roof-asset management services
- Flooring repair and refurbishment solutions
- Engineering services, including shop drawings
- Design and build construction management
- Financing options
- Preventive-maintenance programs

For more information, visit us at: [www.garlandco.com](http://www.garlandco.com)

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