ENVIRONMENTALLY SMART GREEN ROOF SYSTEMS

Life on Roofs

Company Overview

Leadership and Innovation

ZinCo Group is an international pioneer in designing and manufacturing green roof systems for high density urban areas. Since our inception in 1957, we have led the industry‘s growth and advancement by developing environmentally smart solutions that reduce urban heat island effect and improve storm water management.
Our award winning products and systems help clients develop stunning landscapes that are earth-friendly by conserving energy and producing cleaner air and water in urban areas.
ZinCo is fully committed to maximizing the economic, environmental and public health benefits of green roof systems. Our holistic approach to promoting green roof utilization includes: technical and horticultural research, developing standards in partnership with industry associations and sponsoring annual international conferences to build public awareness and education.

Based in Germany, ZinCo has offices in over 30 countries all over the world. We install over 15 million square feet of green roof systems annually on commerical, residential, industrial and institutional buildings. Our lightweight, durable green roof systems leverage German-engineered technology to imitate the beauty of nature and deliver superior environmental and economic benefits to building owners and communities all over the world.

Award Winning Products and Services

2012
Connecticut ASLA Design Award

2011
Award of Excellence, Green Roofs for Healthy Cities Conference, Philadelphia, PA

2010
IGRA Green Roof Leadership Award

2009
The Highline, The Highlight of Green Architecture 2009, New York

2006
4 Awards of Excellence, Green Roofs for Healthy Cities Conference, Boston, MA

2005
2 Awards of Excellence, Green Roofs for Healthy Cities Conference, Washington, DC

2004
Award of Excellence, Green Roofs for Healthy Cities Conference, Portland, OR

2003
2 Awards of Excellence, Green Roofs for Healthy Cities Conference, Chicago, IL, Innovation Award for Solar Green Roofs

Based in Germany, ZinCo has offices in over 30 countries throughout Europe, Asia and the Americas.

History of Firsts

Industry firsts

ZinCo leads the green roof industry in setting industry design and technical standards:

- Developed the first lightweight green roof system for pitched roofs.
- Initiated industry change from traditional rock and gravel roofs to technologically advanced green roof systems.

1974 Developed Floratherm®, the industry`s first thermal insulating extensive System Build-up.

1980 Developed Floradrain®, the industry`s first drainage layer that can be used for intensive, semi-intensive and extensive System Build-ups.

1988 Developed the industry`s first mineral recycling growing medium based on crushed bricks.

1994 Developed Elastodrain®, the industry`s first recycled rubber drainage layer for heavy duty applications.

2000 Developed Georaster®, the industry`s first drainage layer for steep pitched System Build-ups.

2001 Developed the industry`s first penetration-free safety device for maintenance work on roofs.

2002 Developed the industry`s first penetration-free solar panel support base for green roofs.

2004 Developed Stabilodrain®, the industry`s first drainage layer for hybrid roofs that combine vegetation and heavy trucking on roofs.

2007 Developed Fixodrain®, the first multifunctional drainage layer for extensive green roofs, protection layer, drainage layer and filter layer, all-in-one product.

2008 Developed Protectodrain®, heavy duty drainage layer for hybrid roofs that combine vegetation and heavy trucking on roofs.

2012 Developed Aquatec, the world‘s first drainage layer for low maintenance green roofs with capillary irrigation

Why Build a Green Roof?

Green roofs provide both tangible and intangible benefits to building owners and the general public. Their designs vary in scope and scale, and are as unique as the buildings, climates and communities that support them.

Green Roof Benefits

- Extend Roof Life: Green roofs help reduce roof maintenance by protecting the membrane from the harmful effects of solar radiation.

- Maximize Real Estate Investment: Green roofs help communities turn underutilized roof space into an asset for building owners and the public.

- Improve Building Operations: Green roofs absorb significant amounts of solar radiation and storm water. The vegetation reduces heat flow through the roof, thereby reducing the amount of energy required to cool the building`s interiour. By helping to absorb and evaporate water, green roofs reduce the amount of storm water returning to city sewer systems and the burden on treatment facilities.

- Cost Savings: In addition to cost savings from energy conservation and lower storm water taxes, building owners and developers can take advantage of financial incentives such as rebates, tax credits and grants in some cities an states.

- Environmental Benefits: Green roofs improve air and water quality by reducing storm water runoff and urban heat island effect.

- Restore Ecosystems: Green roofs help restore the natural habitats of flora and fauna displaced by paved, sealed surfaces.

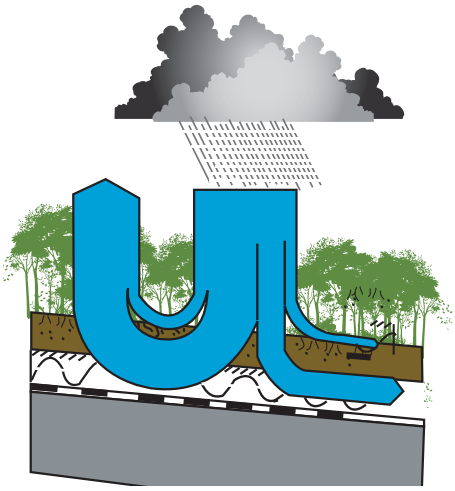
- Noise Reduction: Green roof systems and plants help reduce noise and block sound transmissions.

- Social Good: In addition to the aesthetic value of roof beautification, green roofs improve quality of life by creating healthy living spaces.

Environmental Benefits

The loss of green space greatly impacts storm water management and natural habitats, and contributes to noise, air and water pollution.

Storm Water Management



Green roofs reduce the amount of peak storm water runoff into sewer systems by 50-90 % and improve the quality of water that flows into rivers and streams.

Urban Heat Island Effect

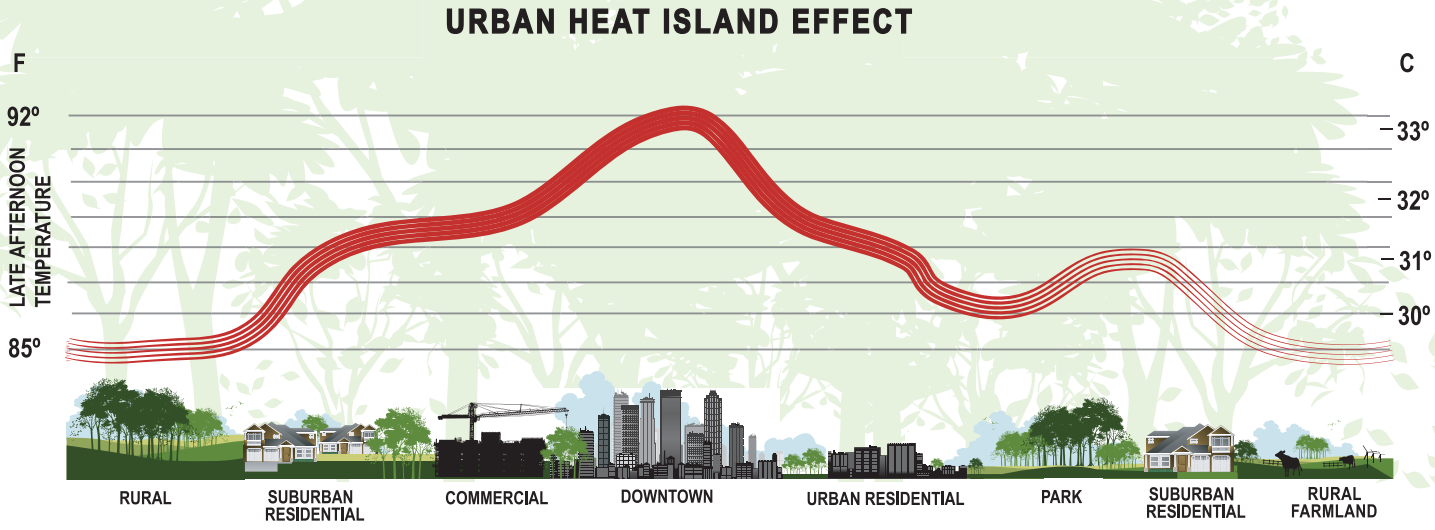
In the summertime, the air temperature in urban areas is typically several degrees higher than in rural areas. This is known als Urban Heat Island Effect (UHIE), and is due to the significantly greater amounts of dark roof and road surfaces that absorb heat. The collective increase in cooling demand requires more energy from power plants. The power plants burn fossil fuels that release pollutants into the air. The urban heat island effect increases the overall temperature of the atmosphere, thereby perpetuating the demand for air cooling systems.

Green Roofs and Biodiversity

Green Roofs are very often built in densely populated areas where urban green is not overly present. They influence building performances and storm water management. But Green Roofs are also very beneficial when it comes to biodiversity.

Natural Habitats in towns and cities play an important role in providing living space for flora and fauna. The microclimates of the different green roofs with its ever changing exposure to sun, wind and rain in urban developments can result in excellent habitats for protected species.

The design of the Green Roof and the maintenance thereafter certainly are important aspects when it comes to the support of diverse ranges of animals and plants.



The Green Roof Revolution

Green roofs cannot solve our city`s air and water quality problems. However, they provide significant economical, environmental and health benefits over black top roofs. Recognizing these benefits is revolutionizing the way new buildings are being constructed all over the world.

Incorporating green roofs into the urban infrastructure brings the aesthetic beauty of nature back into the city and mitigates a multiplicity of environmental problemes caused by urban heat island effect.

In addition to improving the aesthetic value of their surroundings, green roofs:

- Reduce Storm Water Runoff
- Improve Air and Water Quality
- Insulate Buildings against Solar Radiation
- Provide Additional Recreational Space
- Restore the Natural Habitats of Flora and Fauna

- Green roofs reduce the negative effects of urban heat island effect by increasing the vegetative cover that provides cooler ambient air.
- Green roofs remove ozone, particulate matter and other pollutants from the air through physical and biological processes
- Green roofs provide food and shelter for flora and fauna by restoring their natural habitats.
- Green roof systems retain rainwater for plant irrigation that is eventually evaporated back into the air through vegetation.

Partnering for Success

From Seattle to Singapore, Amsterdam to Buenos Aires, ZinCo works closely with architects, developers, roofers, designers and landscape contractors to develop customized green roof systems that maximize environmental benefits and long-term cost savings for a variety of design and building needs. Over the last 50 years, our licensed partners have installed over 200 million square feet of green roof systems worldwide, providing clients and communities with an environmentally smart solution for urban heat island effect and storm water management.

Since 1996, ZinCo has worked with U.S. professionals to implement green roof systems for commercial, residential, institutional and industrial applications.

German-engineered Technology

ZinCo´s green roof systems are light-weight and durable, providing licensed professionals with the flexibility they need to develop customized solutions that imitate the beauty and benefits of landscape designs on the ground.

ZinCo green roof systems can store 50-90 % of annual rainfall, transpire and evaporate it back into the atmosphere. The actual percent varies by climate, time of year and green roof build-up.

Products and Services

ZinCo green roof systems have a proven durability of over 30 years.

ZinCo`s advanced green roof systems use innovative German-engineered technology to meet the most challenging requirements for flora, space, utility, roof slope and load bearing capacity. Our lightweight, durable, aesthetically appealing systems are easily scalable and can be customized to provide clients with a cost effective, environmental solution to maximize roof space, manage storm water runoff and reduce urban heat island effect.

- Gardens, Parks, Ponds and Playgrounds
- Driveways, Parking Lots and Underground Garages
- Flat Roofs, Pitched Roofs and Barrel Roofs

Our full range of services provide developers, architects and other industry professionals with a one-stop-shop for designing, developing and installing advanced green roof systems.

Full Range of Green Roof Services

Consulting:

- Horticulture and Ecology
- Materials Science
- Building and Landscape Architecture
- Roofing Membranes
- Landscape Contractors

Manufacturing and Design:

- Extensive Green Roof Systems
- Intensive Green Roof Systems
- Hybrid Roof Systems

Education and Training:

- Industry Speaking Engagements
- Ongoing Seminars, Symposiums and Workshops
- Contributions to Industry and Trade Publications
- Brochures, Datasheets, Product Samples, Design Layouts and Mock-ups

Innovative Product Features Deliver Results

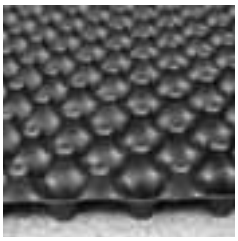
ZinCo manufactures green roof systems that are aesthetically pleasing and extend roof membrane life and utility by 10 to 20 years. Our green roof systems can be installed on a variety of roof membranes and customized to meet the unique needs of clients seeking a lightweight, durable, cost effective solution to reduce the negative effects of urban heat island effect and storm water management.

ZinCo`s green roof systems provide contractors and planners with the flexibility they need to accomodate a wide range of landscape designs, load bearing capacities and climate considerations. Our unique, compact, multi-layered designs minimize the height and weight of green roof systems, and simultaneously provide a root barrier, water retention, irrigation, excess water drainage and growing medium for thriving plants.

Proprietary Drainage Products Deliver Superior Solutions

ZinCo`s proven, proprietary products guarantee the longevity of our green roof systems and promote thriving vegetation.

Floradrain® – This drainage layer serves many functions such as: water storage, drainage of excess rainwater, irrigation through diffusion and aeration of root space. Floradrain® elements are light-weight, pressure resistant and stable, thereby reducing the total weight of the build-up while maintaining full drainage functionality.

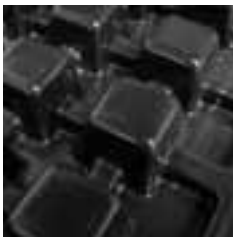


System with Floradrain®

Georaster® – This lightweight, highly stable grid drainage layer acts as both a protection and reinforcement layer for pitched green roofs and gravel pavements. Its significant load bearing capacity and shear strength prevent the substrate from sliding off the roof.

System with Georaster®

Stabilodrain® – This stable drainage layer is both pressure resistant and has a high drainage capacity. Stabilodrain® is used for intensive green roofs.



System with Stabilodrain®

Elastodrain® – This protection and drainage layer can manage extremely high loads for applications such as driveways and parking lots. Elastodrain® protects the roof membrane against excessive load forces caused by accelerating and braking vehicles.

System with Elastodrain®

ZinCo´s green roof systems can be customized to accomodate a variety of landscape designs, roof slopes, climates and maintenance needs. When designing the optimal green roof system, one of the most important considerations is the load bearing capacity of the roof. Intensive roof systems, for example, might include trees and playgrounds for public use while extensive roof systems typically have lower vegetation and can be built on sloped roofs, providing aesthetic pleasure only.

ZinCo Green Roof Systems

Extensive Green Roof Systems

Heights, weights and substrate colors of the relevant system build-ups may vary depending on project specific conditions.

- Sedum Carpet

Slope: 1/24 – 2/12
Height: 3.5 in
Weight: 21.5 lb/sqft

Slope: 0/12 – 1/24
Height: 4.5 in
Weight: 22.0 lb/sqft

- Ornamental Sedum

Slope: 1/24 – 2/12
Height: 4.0 in
Weight: 23.5 lb/sqft

Slope: 0/12 – 1/24
Height: 4.5 in
Weight: 24.0 lb/sqft

- Pitched Sedum

Slope: 2/12 – 8/12
Height: 5.0 in
Weight: 38.0 lb/sqft

Hybrid Green Roof Systems

Heights and weights of the relevant system build-ups may vary depending on project specific conditions.

- Driveways

Slope: 1/24 – 1/12
Height: from 14.5 in
Weight: from 145.0 lb/sqft

ZinCo Green Roof Systems

Intensive Green Roof Systems

Heights, weights and substrate colors of the relevant system build-ups may vary depending on project specific conditions.

- Roof Garden

Slope: 0/12 – 1/12
Height: from 12.5 in
Weight: from 95.0 lb/sqft

- Recreational Park

Soft landscape:
Slope: 0/12 – 2/12
Height: from 12.5 in
Weight: from 95.0 lb/sqft

Hard landscape:
Slope: 0/12 – 1/12
Height: 13.5 in
Weight: 132.0 lb/sqft

- Perennial Garden

Slope: 0/12 – 2/12
Height: 7.0 in
Weight: 44.0 lb/sqft

Hybrid Green Roof Systems

Heights and weights of the relevant system build-ups may vary depending on project specific conditions.

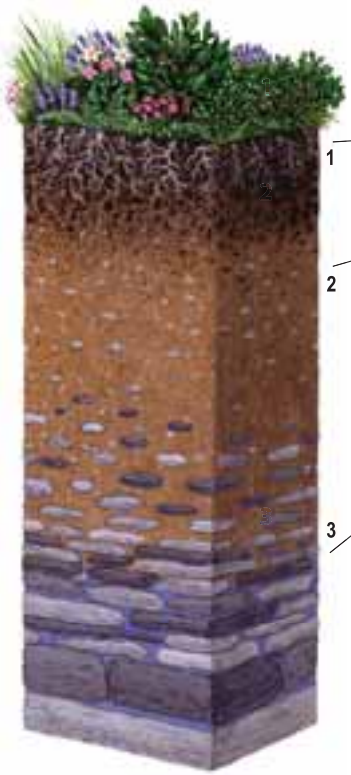
- Walkways

Soft landscape:
Slope: 0/12 – 1/12
Height: 6.0 in
Weight: 51.0 lb/sqft

Hard landscape:
Slope: 0/12 – 1/12
Height: 6.0 in
Weight: 51.0 lb/sqft

From Nature to ZinCo

Example: “Residual Soil”



1. Top soil with humus
2. Clay redistribution, process of rock wastage
3. Parent rock

Example: “Green Roof System Using Floradrain® FD 25-E”

1. Vegetation Level: Accomodates a variety of vegetation based on climate, landscape design, load bearing requirements and desired benefits to building owners and communities.
2. Growing Layer: Engineered growing media based on minerals and organic material.
3. Filter Sheet: Prevents fine particles from being washed into the drainage layer.
4. Drainage Layer: Retains rainwater for dry periods and drains surplus water.
5. Protection Mat: Protects the roof membrane from sharp objects and retains rainwater for plants.
6. Root Barrier: Prevents roots from penetrating the roof membrane if the existing membrane is not root proof.

ZinCo Advice and Engineering

Our long experience with green roofs has led to a substantial amount of technical information and technical drawings that aid the design process. For each green roof system, there are System Data Sheets, Specification Suggestions and Standard Architectural Details in dwg, dxf and pdf formats available on our website. These give detailed information about how to configure wall-connections, walkways, roof edges, ponds, trees, and various other features on roofs. This information is downloadable for free from our website, where the files are conveniently arranged by greenroof system. These files should contain all of the information that you need for a typical greenroof design or description. For additional information or special solutions you can always contact our engineers.

Visit our website *www.zinco-usa.com* and download the technical information that you need:

- System Data Sheets
- Specification Suggestions
- Standard Architectural Details in dwg, pdf and dxf format
- Product Data Sheets

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