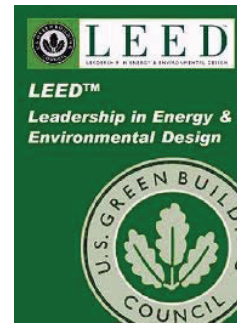
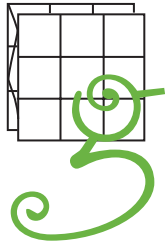


greenscreen®



greenscreen® considers environmental conservation, preservation and protection to be consistent with our overall corporate goals and values as well as an important consideration in our total business activities. It has been and will continue to be a critical **greenscreen®** policy to conduct business in an environmentally conscious manner that aims to reduce our impacts and conserves the maximum natural resources. As a company, **greenscreen®** believes that it is important to identify and promote key initiatives that will help to bring about an awareness of the larger issues of sustainable design, green infrastructure and policy development. To this extent, we are in complete support of the USGBC's *LEED 2009 for New Construction and Major Renovations Rating System* (updated July, 2010) and the *Sustainable Sites Initiative™: Guidelines and Performance Benchmarks* (November, 2009) and will use them as discussion points to promote the incorporation of these standards into best building, management and policy development practices.

As a product manufacturer, **greenscreen®** supports the commitment and vision of design professionals to incorporate low impact, environmentally sensitive building practices and promote sustainable design principles. **greenscreen®** will also continue a long term corporate commitment to these national organizations as they push forward with sustainable agendas:

- U.S. Green Building Council (USGBC)
- American Institute of Architects (AIA)
- American Society of Landscape Architects (ASLA)

In addition, **greenscreen®** recognizes that the local chapters of these organizations are the foremost coalition of leaders from all across the building industry working to promote building and landscapes that are environmentally responsible, profitable and healthy places to work and live.

The **greenscreen®** modular, green facade/green wall trellis system is designed to be an adaptable design component that can contribute to solving multiple sustainable program requirements, such as improving energy efficiency, reducing urban heat islands effects, increasing wildlife habitat and restoring native vegetative biomass.

GREENSCREEN®

**LEED® 2009 FOR NEW CONSTRUCTION AND MAJOR RENOVATIONS
RATING SYSTEM - JULY 2010**

SECTION

SUSTAINABLE SITES

SS Credit 5.1 (1 point)

Site Development-Protect or Restore Habitat

intent

To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity

product compatibility

greenscreen® strongly supports the Case 1 site selection requirements and promotes a conservation approach to existing natural areas. In the Case 2 requirement, greenscreen® realizes that the selection of appropriate native plant material is critical in the restoration of previously disturbed sites. Native vines are an integral, and often overlooked part of a native plant community. Climbing or vining plants can have high environmental tolerances, add wildlife value, provide habitat connectivity and can be incorporated successfully in a designed landscape. In the case of riparian, wetland and shoreline ecological systems, vines have been recorded as thriving in bog-swamp conditions with poorly drained soils and a wet to wet/mesic moisture gradient. According to *Native Trees, Shrubs and Vines for Urban and Rural America*, when measuring flood tolerance, 8 indigenous vines are classified as being VERY TOLERANT which indicates generally lowland wet species surviving when flooded or exposed to high water table more than 40 percent of the growing season. 6 native vines are designated as TOLERANT (Hightshoe 1998).

According to the *Landscape Restoration Handbook*, there are 46 woody vines and 43 herbaceous vines listed as part of ecological or native plant communities (Harker, Libby, Harker, Evans and Evans 1999) and when used within a holistic, designed landscape vines can play an intrinsic part in the restoration of these ecosystems. greenscreen® also recommends the design and use of geomorphological and vegetative methods within environmentally sensitive areas and will mutually explore engineering issues such as minimal footer design and other alternative construction techniques.

According to the Environmental Protection Agency website, the EPA defines native plants as plants that have evolved over thousands of years in a particular region. They have adapted to the geography, hydrology, and climate of that region. Native plants occur in communities, that is, they have evolved together with other plants (EPA 2008). These guidelines further define native as plants that are native to the EPA Level III ecoregion of the site or known to naturally occur within 200 miles of the site. Naturally occurring hybrids, varieties and cultivars of species native to the ecoregion are acceptable (Omernik 1987). Native vines can play a large role in helping to increase coverage of the vegetated area to maximize point totals and make designed landscapes more layered, biologically diverse and sustaining. Native plants are typically more drought tolerant, disease resistant and are more conducive to an Integrated Pest Management (IPM)

approach than introduced species and cultivars. Additionally, greenscreen® is dedicated to partnering for research and providing information to designers that pertains to native vines, so that they can be maximized in planting schemes. To date, greenscreen® is involved in multiple scholarly research projects and will provide relevant data when available. Additionally, greenscreen® will continue to foster partnerships that help to provide long term documentation on the beneficial role that plant material plays within the greenscreen® system. For example, to determine which plants would be best for the greenscreen® installations for the Valley Metro Light Rail project in Phoenix, AZ, A Dye Design organized a nine-month study to observe a variety of plants in different areas of the city. *The Vine and Vertical Shade Research Study*, which received the 2006 ASLA Merit Award, provided the team with a substantial list of plant species to use with the greenscreen® systems. Specific species could then be selected based on which plants flourished in which station areas.

The benefits of incorporating native plant material into a designed landscape, especially previously developed, graded or otherwise disturbed sites, are well documented. The overarching benefit of using native vines within the greenscreen® system increases the surface area of vegetated area calculation to achieve credit. The greenscreen® system increases the percentage calculations for all sites when measured by surface area of vegetated area, using estimated vegetated cover within 10 years of installation.

Just as importantly, native vines have a high wildlife benefit that includes many species of butterflies, birds and hummingbirds. Many vines species also provide fruits, seeds, leaves, twigs bark stems and roots for many kinds of wildlife (Hightshoe 1988). Two indigenous grape varieties, (*Vitis labrusca* and *Vitis riparia*) are identified as having Very High wildlife value with 50 wildlife users or more. Wildlife value can be extremely important when trying to provide habitat corridors connecting to off-site natural areas or buffers adjacent to off-site natural areas for migrating fauna. This option applies to habitat for species of concern within your region as identified by state Wildlife Action Plans, state wildlife agencies, federal wildlife agencies, or other entities.

SS Credit 6.1 (1 point)

Stormwater Design - Quality Control

intent

To limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff and eliminating contaminants.

product compatibility

Successfully managing stormwater is a multiple pronged approach and vegetation can be a very important aspect of that approach. Research studies have shown that plant material can intercept between 7% and 25% of the total amount of rainfall that hits an impervious surface. In addition, leaf surface can be an important factor in an environment's overall evaporation rate (David, Gash, par. 3 2010). Recent studies in Santa Monica and Sacramento, CA (Xiao, McPherson 2002) have shown that plant material can contribute to stormwater management by affecting the aspects of gross precipitation, free throughfall, canopy drip, stemflow and evaporation. greenscreen® realizes that plant material and multilayered plantings can play a significant role in successful stormwater management especially when incorporated into a Best Management Practices (BMP) approach. As a design solution, greenscreen® can help to increase Leaf Area Index (LAI) and can easily provide design solutions for vegetated swales, biofiltration planting areas and other Low Impact Development (LID) design models.

greenscreen®

SS Credit 7.1 (1 point)
Heat Island Effect - Nonroof

intent

To reduce heat islands' to minimize impacts on microclimates and human and wildlife habitats.

product compatibility

Trees and vegetation lower surface and air temperatures by providing shade and through evapotranspiration. According to the EPA, shaded surfaces, for example, may be 20–45°F (11–25°C) cooler than the peak temperatures of unshaded materials. Evapotranspiration, alone or in combination with shading, can help reduce peak summer temperatures by 2–9°F (1–5°C) (EPA 2008). In addition to trees, some suggested strategies to increase shading include the use of shade trellises, green roofs, green facades and green walls. On a hot, sunny, summer day, pavement surface temperatures can be 50 to 90 degrees higher than ambient air temperature (Berdahl and Bretz 1997). The incorporation of vegetation, shade structures and green walls to shade surfaces and cool the air in urban spaces has been used for hundreds of years. Green facade wall technology and greenscreen® can play a major role in helping to abate the Urban Heat Island Effect when used in combination with other vegetative technology such as urban forestry and green roofs. Additionally, greenscreen® can incorporate the use of deciduous plant material that allows for a summer cooling, shading benefit and a winter heating, passive solar gain benefit. Qualitative and quantitative data on the contribution that green walls can have towards cooling urban spaces will be very beneficial. To this end, greenscreen® will continue to be proactive in helping to foster, underwrite, present and make publicly available research in this area.

SS Credit 7.2 (1 point)
Heat Island Effect - Roof

intent

To reduce heat islands' to minimize impacts on microclimates and human and wildlife habitats.

product compatibility

Installing high albedo and vegetated roofs are integral design components for reducing ambient air temperatures on roof surfaces. In addition, vertical vegetation can help to lower surface and air temperatures by providing shade and through evapotranspiration. According to the EPA, shaded surfaces, for example, may be 20–45°F (11–25°C) cooler than the peak temperatures of unshaded materials. Evapotranspiration, alone or in combination with shading, can help reduce peak summer temperatures by 2–9°F (1–5°C) (EPA 2008). In addition to high albedo and vegetated roofs, green facade walls can help to achieve a 100 percent shade requirement of all HVAC units within 10 years and the shading requirements of roof surface areas and walls. HVAC units that are shaded typically operate more efficiently and have greater durability than units that are exposed to the sun's rays. Typically, utility mechanicals are placed in areas that are not especially conducive to vegetative shading or an undersized lot can provide difficult space challenges. greenscreen® can provide a vertical vegetative facade or wall that can help achieve the maximum points for this credit.



WATER EFFICIENCY (WE)

WE Credit 1 (2-4 points)

Water efficient Landscaping

intent

To limit or eliminate the use of potable water or other natural surface or subsurface water resources available on or near the project site for landscape irrigation.

product compatibility

The flexibility and verticality of greenscreen® can allow for the design exploration of drought tolerant vegetation in a relatively confined footprint. Also, greenscreen® can increase planting area square footage and Biomass Density Index (BDI) in small, difficult locations to provide additional opportunities for potable water reduction through alternative irrigation methods. For example, the modular characteristics and design flexibility of greenscreen® make it suitable to be placed in close proximity to or screen rainwater harvesting cisterns which would allow for gravity fed drip irrigation to be incorporated. Additionally, the lightweight advantage of greenscreen® is conducive to rooftop or at grade applications that could easily incorporate low demand vegetation design and the capture/reuse of air conditioner condensate. Additionally, greenscreen® strongly recommends the use of potential technologies and strategies set forth by SITES to include the use of low-water-demand vegetation (xeriscaping), native plant material, high efficiency equipment including SMART irrigation technology and proper horticultural maintenance to limit the use of potable water demands for landscapes.

MATERIALS AND RESOURCES (MR)

MR Credit 1.1 (1 point)

Building Reuse - Maintain existing Walls, Floors and Roof

intent

To extend the lifecycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

product compatibility

Through a diverse range of design possibilities and a flexible assortment of mounting applications, greenscreen® is an ideal retrofit or clip-on opportunity to retain existing structures and amenities. *Clip-On Architecture: Reforesting Cities*, an on-line article for the Urban Omnibus blog recommends looking at building retrofit as a way to reforest urban environments. "By integrating more trees and photosynthesizing plants within the fabric of our existing cities, we harness the power of plants to absorb carbon from the atmosphere. The surface area of buildings multiplies the ground footprint of the city many times over, making vertical gardening and the integration of growing walls into our buildings an interesting practical solution. The roofscape of most cities is an area that is often forgotten but that could easily be used for the application of green technologies beneficial to all. greenscreen® is a type of metal structure that can be attached to existing walls or used to create freestanding growing walls" (Keith 2010). Clip-on systems can help to provide aesthetic and environmental benefits while maintaining the existing form of the amenity. Retrofitting allows for extending the lifecycle of an amenity, the conservation of resources and the reduction of waste.

greenscreen®

MR Credit 2 (1-2 points)
Construction Waste Management

intent

To divert construction and demolition debris from disposal in landfills and incineration facilities. Redirect recyclable recovered resources back to the manufacturing process and reuseable materials to appropriate sites.

product compatibility

greenscreen® is manufactured from 14 gauge galvanized wire which can easily be diverted from landfills and incinerator sites for recycling. If this credit is to be achieved, the panels can be cleaned of all vegetative growth, sorted and categorized as nonhazardous construction and demolition debris.

MR Credit 3 (1-2 points)
Materials Reuse

intent

To reduce building materials and products to reduce demand for virgin materials and reduce waste, thereby lessening impacts associated with the extraction and processing of virgin resources.

product compatibility

With proper care and maintenance, greenscreen® panels are an ideal candidate for deconstruction and reuse within a Design for Deconstruction application. The strategies of DfD and the greenscreen® system interconnect seamlessly. The lightweight, rigid panels are modular building components and help to maximize simplicity, minimize the number of components, minimize the number of fasteners, simplify connections and separate building layers. To expedite re-use and minimize labor hours to re-purpose greenscreen® panels in a Design for Deconstruction application, herbaceous plant material choices should be made in lieu of woody plants so that plant material can be removed more easily from the panels without causing significant panel damage.

MR Credit 4 (1-2 points)
Recycled Content

intent

To increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials

product compatibility

greenscreen® panels are made with steel wire containing post-consumer and post-industrial recycled scrap metal content between 30% and 70% (2007). The greenscreen® clips and trim are made from steel with a post-consumer and post-industrial recycled steel content between 30% and 75% (2007). The panels achieve the 10% and 20% point thresholds and also contribute substantially to a range of environmental, economic and performance attributes.



MR Credit 5 (1-2 points)
Regional Materials

intent

To increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

product compatibility

The greenscreen® modular system is manufactured in Fontana, CA 92337. A 500 mile radius from the manufacturing facility includes the major metropolitan areas of Los Angeles, San Francisco, San Diego, Las Vegas and Phoenix. Also, the lightweight, open grid characteristic of greenscreen® allows for lower shipping costs and the rigidity requires less packaging. An additional benefit of greenscreen® is that the system allows for the significant incorporation of local materials. A successful green wall system incorporates the components of structure, plants, soils and bulk materials (planting mixes, mulch, etc). The greenscreen® system allows for the majority of these components to be sourced locally.

INDOOR ENVIRONMENTAL QUALITY (IEQ)

IEQ Credit 4.2 (1 point)

Low - Emitting Materials - Paints and Coatings

intent

To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well being of installers and occupants.

product compatibility

greenscreen® panels are treated for durability and appearance with a thermally applied polyester powder coating in two processes and the higher solids content of powder coatings results in a lower volume of material needed for a given surface area. The combined VOC emissions from these are less than 1% of the powder material, according to the Paint and Coatings Resource Center (PCRC) maintained by the National Center for Manufacturing Sciences (NCMS). All mounting clips, posts, post caps and planter straps that require finishing also receive the same process. The greenscreen® manufacturing facility also adheres to and follows all regulatory requirements pertaining to water and solid or hazardous waste.

INNOVATION IN DESIGN (ID)

ID Credit 1 (1-5 pointS)

Innovation in Design

intent

To provide design teams and projects the opportunity to achieve exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System.

greenscreen®

product compatibility

In 2010, greenscreen® is undertaking two major initiatives to challenge the design community and allied product manufacturers to strive for and attain exceptional sustainable practices. greenscreen® has partnered with MindClickSGM to undergo a corporate sustainability audit that will incorporate the following:

- employee sustainability engagement
- target market sustainability performance
- Scope 1 and 2 carbon footprint measurement
- completion of EPA Waste Reduction Model (WARM) and voluntary reporting of GHC emissions
- measure, track and report energy and water consumption using the Energy Star Portfolio Management tool

Additionally, greenscreen® in partnership with MindClickSGM, is conducting a third party verified LifeCycle Assessment that will outline the life cycle environmental impacts of the product. This analysis will be based on ISO 14040 standards and the evaluation of performance will be relative to leading global standards and protocols (GRI, ISO, Carbon Disclosure Project, etc.). These two initiatives will help to identify sustainability performance gaps and recommendations for use in developing a long range corporate sustainability plan and Corporate Social Responsibility agenda. greenscreen® would advocate for examples of this type of innovation that is not specifically addressed by the LEED Green Building Rating System to be included within this credit.

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