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Landscape Design Track

GREEN + DESIGN + BASICS

BASIC + GREEN + DESIGN

DESIGN + BASIC + GREEN

Green Landscape Design SMART HOME and SMART GARDEN

Questions Where can we see Green Landscape Design? A local/regional example is the Museum of Science and Industry **Smart Home** and **Smart Garden**.

Design Process The project includes a **team effort** including an Architect, Landscape Architects, Open Lands representatives, and Restoration designers/suppliers, Landscape Contractors, Hardscape Contractors, Landscape Suppliers and Landscape Nurseries. Also Master Gardeners, and a multitude of suppliers and volunteers.

Designers the team worked with the Museum staff to construct a **working home, landscape and garden**. The focus was the client needs a working exhibit and then the applications of **green and sustainable practices and products**.

Within the professions the **collaboration** was a growing effort to result in a stellar example of **green and sustainable, smart and simple design**. The planning, design and artistry of the project is evident in the final results the living and growing Smart Home and Smart Garden.

Utilizing the **landscape design basics** the project development took the commitment and cooperation of the team members to accomplish the green and smart project.

In the process the **design services** were to service the site, client and goals of smart design and green/sustainable goals.

The project is **functional and attractive** yet **green and sustainable**. Green and sustainable is not a style but an organizational and choice management view within good design.

Smart Home Green and Wired 2008/2009

Guiding Principles for Smart and Simple Design

- 1) Smart Design
- 2) Materials efficiency
- 3) Energy efficiency
- 4) Water efficiency
- 5) Health/Environment

The planning, design and development of the Smart Home was based on **“living on the land within in climate and site environment”** The project is functional and or a form that is real, **livable and sustainable**. It is based on **“design big” not build big** concept. The project identifies, teaches, exhibits, conveys and communicates design that is green and sustainable.

The project utilizes **technology** to audit and compare energy use, production and costs. Heating, cooling, electric and water use is monitored and recorded.

The HERS index, (home energy rating system) is used to compare costs of this project with average home costs in these categories. A zero rating would represent a home that either consumes no energy or consumes no energy than it supplies to the grid. Smart Home has a HERS rating of 51 as compared to new construction a rating of 100 and a Chicago Bungalow of 126 points.

Costs include Smart Home \$837 for heating, \$125 for cooling and \$1,977 for all energy consumed. The solar cells reduce the bills by \$264. The average Bungalow costs are \$2,021 for heating and \$3,230 for all energy uses. Smart Home saves \$1,253 per year.

Smart and simple design collectively includes choices and products. Home and landscape choice include green and sustainable choice with purchases, replacements, prices, and the process we use to think about utility and changes in our living environments. Products can consider and should work towards sustainable, recycled, reused, repurposed and repositioned options.

Sustainable design is an ethic not science. Fostering awareness about the environment and its sustainability is the goal. To enhance environmental sustainability, a balance needs to occur in the design, economy of resources and life cycle of projects. Seek solutions for each site rather than look to a given set of rules/solutions. Specific design solutions compatible with a given design problem will emanate these green and sustainable principles.

Eco-tips and Landscape Design

Smart Design look at, consider and help utilize **natural light** for interiors and outdoor spaces , **plan and plant** to encourage summer breezes for cooling, plan and plant for winter passive solar gain inside/out, utilize porous pavements and surfacings , consider and apply **plant selection** that fit the site, client and microclimate of the project. Native and naturalized planting have an economy and effectiveness to sustainable design. Look at the **function, forms and green advantages** within the context of client needs, wants and understandings. A few selected options that are green and sustainable are better than none.

Materials Efficiency recycles materials used on the site such as paper, aluminum, glass and plastics. Look at **existing landscape materials** (plants and construction materials) as an opportunity to **reuse, repurpose and relocate** within the landscape or other site design. **Compost** to reduce garbage and increase the environmental benefits from the use of compost. Consider **vintage, recycled and resale** option for material needs and sources. **Donate** unused goods. **Use what you have** as a base to what you want in design and developments.

Energy efficiency considers energy use in the **operation and selection** of materials and appliances. When replacement is considered, or a choice, look at **the energy costs** and potential **savings in upgrades**. **Replace** light bulbs with CFL, hold heating temperatures to a median and use wraps/blankets more when extremes dictate. Use energy saving **opportunities in the placement of trees for shade, buffering winter winds** and the use and harvest of water on site. Native and naturalized plants utilize less energy. All **plantings take energy and resources to establish** them in a landscape.

Water efficiency think, use **water wisely**, save water in site applications with select fixtures that **conserve water** and that are efficient. Reuse water if possible with any opportunity that can be applied. Use existing conditions and green practices that help manage and maintain water and runoff on site.

Healthy Environment grow locally, plant vegetables you like to use and plants that work for you in your site situation. **Consider composting** , recycle, **plant and plan** for outdoor living and enjoyment, **ride public** transportation when possible and **walk**. The landscape can be a physical and spiritual enhancement to you life and the environment, take the opportunity to maximize the benefits and minimize the liabilities of your situation.

Vocabulary:

Green is beneficial to the environment, looking at actions that support the local, regional and global environment. Protection and conservation of natural resources.

Sustainable the benefits generated by the cooperation and application to be capable of sustaining an environment long term with minimal additional resources.

Carbon Footprint all appliances, lighting, travel, heating, cooling, etc emit CO₂. The production of CO₂ impacts weather and climate. Shifts in the temperature and weather patterns, melting glaciers and increased severe storms are results of the impacts of carbon footprints. Check carboncounter.org for information and a calculator.

A typical home in the US has a carbon foot print of 11.16, mine in Indiana 10.73

A typical US car has a carbon foot print of 5.02 mine 5.27

Air travel, typical US carbon footprint .46 mine 24.57

Ecology the relationship between organisms and their environment From the Greek root meaning “house study” The study of relationships between plants, animals and their environments.

Quality an inherent or distinguished character, a trait, a measure of conformance of a product or service to a certain standard or specification, distinctive, element, degree of excellence.

Sustainable design a win-win solution that provides benefits to the environment, users and use. Economy of resources, life cycle design and humane design are three goals of sustainable design. Strategies then intend to foster an understanding of how people, products and things interact with the internal, local and global environments. (Introduction to Sustainable Design, University of Michigan 1998)

Humane Design the livability of all constituents of the global ecosystem, including plants and wildlife. The humanitarian and altruistic goal to respecting life and dignity of all living organisms. Environmental quality is intangible thus look to the performance factor in design. Preservation of natural conditions, Urban and site planning and human comfort are all strategies for Humane design and development. (University of Michigan)

An Introduction to Sustainable Design College of Architecture and Urban Design, The University of Michigan 1998

Smart Home and Smart Garden

The guiding principles in this green and sustainable landscape design is an **“eco-friendly aesthetic”**.

The landscape and garden work to be **sustainable and replenish the environment.**

Outdoor **living with less space, less energy and fewer materials**

A **blurring of the inside out** relationship, roof use and extended outdoor spaces

Minimize the environmental aspects of the site development while **maximizing the in/out utility**

Site **furnishings recycle, reuse, re purpose, sustainable** material production and **local** shipping.

Decks IPE and Trex with Gratedex surfaces ramps

Fire cube propane or natural gas

Plants and their locations to function and perform by shading in the summer yet allow sun light in and warm the winter

Plants that buffer winter winds yet allow summer breezes

Plants that are adaptable to site and microclimates

The site includes plants that are native and naturalized. Plants that help modify the climate (sun and winds), help manage on site water and recycles resources.

The vegetable garden, porous pavements, a bio swale, rain garden, rain barrels, green roofs, and the IPE deck are examples of green and sustainable design and development.

The **design and management principles** for the site are to **conserve and protect.**

Native plants with extensive root systems are more adaptive to the environment, add beauty and attract beneficial insects.

The **green roofs** reduce energy needs, reduce the heat island effect, help cool the air and reduce site runoff.

Porous pavements/rain garden and the bio-swale ease runoff and increase the opportunity for absorption of runoff into the soil on site

Rain barrels **harvest water** for irrigation and save potable water resources

Vegetables are local and fresh, available for immediate use, reduce the energy needed to grow produce and ship produce and allow for recycling through composting. Also personal enjoyment and pleasure in gardening.

Organic mulch, helps conserve soil moisture, reduces weeds, helps moderate soil/root temperatures and is clean

Space planning and design utilizes the horizontal and vertical aspects of the house and site thus economy and efficiency

Hand and **site managed** landscape reduced to no chemicals and added agents. Thus no runoff and transfer of chemicals into water and surroundings.

Exhibit Note:

The Museum of Science and Industry SMART HOME will reopen in March 2009 with new additions and changes in the exhibit. SMART GARDEN by the University of Illinois Extension will feature Garden Senses as the theme and garden features. Visit the site and see the changes to gardening and landscape design.

Summary:

Awareness + Applications + Actions

GREEN + DESIGN + BASICS be BASIC IN DESIGNING GREEN

Look to what you do, look to basic design skills with planning towards Green ends. Look at what and how you do it. Landscape design by process and products are green. In the evolution of the economy and ecology of landscape design always work to convey the best design, best practices and planning with green and sustainable possibilities.

Again, Sustainable design is an ethic not science. Fostering awareness about the environment and its sustainability is the goal. To enhance environmental sustainability, a balance needs to occur in the design, economy of resources and life cycle of projects. Seek solutions for each site rather than look to a given set of rules/solutions.

Specific design solutions compatible with a given design problem will emanate these green and sustainable principles. Basic landscape is green so be sustainable in you process, choices and options yet service and respect the client, site and environment. Green and sustainable is not a style but a sense of responsibility. Live and design green and sustainability.

Landscape Design Partners

University of Illinois Extension with Greg Pierceall Landscape Architect
Smart garden concept and implementation

JRA Jacobs/Ryan Associates MSI Campus Landscape Architects
Site design and detailing

Michelle Kaufman Designs Architecture

Illinois Open Lands Natives and Habitats
Bio swale and natives on berm

Green Roof by Green Grid Weston pre planed recycled modules

Christy Webber Landscape construction, plantings and management

Unilock with Clauss Brothers
Porous pavements and surfaces

Permaloc Corp pavement edging

Midwest Ground Covers plants and technical support

Kaneville Tree farms

GRO Horticultural Enterprises Inc Greg Ortman Burr Oaks and Spruce

JF New Nursery native plants, landscape, bioswale and berm

Possibility Place Nursery and Midwest Ground Covers

The Growing Connection Earth Boxes

Town and Country Landscape Co.

Lake Street Landscape Supply

Midwest Trading and Horticultural Supply soil and support materials