Turning Green

A GUIDE TO BECOMING A GREEN DESIGN FIRM

ASID | American Society of Interior Designers

Associates III

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Table of Contents

Foreword iv

Acknowledgements v

Getting Started 1

“Greening” the Office 3

Collaborating with Consultants, Clients, Contractors and Architects 5

Fixed Specifications Guidelines 6

Paints/Coatings/Adhesives Worksheet 10

Electrical Worksheet 11

Tile/Masonry Worksheet 12

On-site Recycling Efforts 13

Furniture Specifications Guidelines 14

Appendix I: Manufacturer’s Environmental Sustainability Questionnaire 16

Appendix II: Useful “Green” Web Sites 19

Foreword

This guide was developed to assist interiors designers who want to integrate sustainable design principles into their firms' business principles and practices. It encapsulates the knowledge and insights of the 13 designers and team members at Associates III, a residential and hospitality interior design firm in Denver, Colo., who decided about five years ago that sustainability needed to be not just a part of their design practice but a guiding philosophy underlying their approach to every design project they undertook. Since there were no books at that time to guide them on how to go "green," they set about collecting as much information as they could and created a green manual for their firm.

One of Associates III's guiding principles is to share their knowledge with others in the design community in the hope of increasing sustainable practices and thereby furthering the goal of a healthier planet and healthier environments for all. This guide is one result of their generous spirit and deep commitment. ASID is deeply grateful to Associates III for their willingness to work with us to publish this material so that all designers may benefit from their pioneering efforts. It has been a pleasure and an inspiration to collaborate with them on this guide.

Acknowledgements

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the staff of Associates III

Getting Started

You have made the decision to go "green." Good for you! Your choice will have far-reaching consequences for the near and the distant future. Indeed, your choice will help to ensure that there *is* a future.

Like many others who have headed down this path before you, you are probably wondering, "what now?" While we do not claim to have the formula for transforming your interior design practice into a successful green practice, we do have some suggestions to help get you started. They are based on our own experiences and on the best practices of others who have been kind enough to share them with us.

Establish Environmental Principles

A good place to start is by reviewing and reaffirming your and your firm's environmental goals and principles. To what extent is your firm ready to go green? Does your commitment extend to the products you purchase, to the vendors and professionals you are willing to work with, to your own office environment and culture? To what extent are you willing to educate and seek to influence others?

A good place to start is with the Seven Rs.

REDUCE	REUSE
RECYCLE	RECOVER
REPAIR	REMOVE
RESPECT	

What can you do or change in your business to apply these practices everyday, in every project you take on?

On the next page you will find the statement of environmental principles developed by the staff at Associates III. It is not intended to be a template, only an example. Ideally, everyone in the firm will agree on the principles and they are set down clearly and concisely, so they can easily be shared with others.

Develop an Action Plan

Once you have clarified your environmental principles, you need to determine how you will embody them in your firm's business practices.

Make a list of the things you want to accomplish through this effort. For example:

Reduce solid waste
Increase use of recycled materials
Eliminate use of water-soluble toxins and contaminants
Lower energy consumption

Now, review your list and for each item ask yourself, How must I change my current business practices to achieve this?

If your firm is large enough, you might consider creating task forces to address various aspects of your plan. The templates and tips in this booklet can help guide you through this process.

Environmental Principles for Associates III

Who We Are	We are an interiors firm that embodies earth-sustaining principles.
What We Do	We do exceptional green design that is beautiful, practical, creative and life enhancing.
How We Do It	We create healthy sustaining environments that enhance quality of life.
Why We Do What We Do	This is our commitment to future generations and the long-term health of our planet.
How We Influence and Interact With Others	We lead the market by continuing to learn, exemplify and influence others through extraordinary, sustainable design.

To exemplify our Environmental Principles and our value of practicing sustainable living to impact our environment positively,

1. We will practice sustainable design, and it will be the single most important part of our interior design practice.

2. We will educate ourselves, our clients, our peers, and whomever we come into contact with about sustainability and its benefits. We embrace the role of educator, facilitator and catalyst to enlighten ourselves and others.

3. We will lead the way in challenging vendors and manufacturers to create new sources of products and services and to make them accessible, available and affordable.

4. We will create projects that exemplify sustainability wherever possible. We will exceed design expectations by creating healthier homes and by using green cutting-edge technology and practices. We will showcase these projects to share the information and what we have learned.

5. We will seek out “like-minded” project teams to further increase our ability to make a substantial impact.

6. We will be conscious of the impact we have by being more efficient with resources and energy.

7. We will set an example of embodying sustaining practices. Our team members will reuse and recycle, reducing waste in our offices and on our projects, as well as in all aspects of our lives.

8. We will do our part for sustaining life on earth for the benefit of future generations. This is embraced by our whole company at all levels and implemented in each area of our professional and personal lives. We give back to the earth through supporting environmental causes in as many ways as possible.

Greening the Office

Practicing sustainability begins at the office. Creating a "green" culture within the workplace involves communication and instituting business practices that reinforce your environmental principles.

Consider starting the conversation with an all-staff meeting, a lunchtime forum or a retreat. Follow up with e-mails, verbal reminders, even posters to emphasize the importance of everyone doing his or her part. At Associates III, we have added a specific area on our bulletin board to share new information, product news, articles and reminders on how we can make a difference.

A next step is to inventory the products and processes you currently use in the office and determine where changes can be made. Some areas to consider are

- *Cleaning Supplies* – Switch to biodegradable soaps and cleaners and paper products with high recycled content. (See following page for a list of products we use at Associates III.)

- *Office Supplies* – Use copier/fax/printer paper with a high recycled content. Copy back-to-front as much as possible. Go "paperless" as much as possible, e.g., use a PDA instead of a paper day planner. Stock washable, reusable plates, glassware, flatware, cloth napkins and table cloths for everyday use. Employ services that are environmentally conscious; for instance, UPS uses 100 percent recycled fiber with 80 percent post-consumer content for its envelopes, compared to FedEx, which uses 30 percent recycled fiber.

- *Electrical* – Add skylights, if and where possible, to take advantage of natural light. Multiple-task lighting allows individuals to turn off lights at their desks or other sections of the office when not needed.

- *Energy* – Use energy-efficient light bulbs and rechargeable batteries. Install sensors that turn off lights when not in use. Consider updating to a heat exchange system. This system provides continuous fresh air filtration and utilizes the cooler outside air at night to cool the office on summer days. It is more energy efficient, provides a more comfortable environment and reduces energy costs. Upgrade appliances, such as refrigerators, dishwashers, copiers and computers, to those that are Energy Star® rated. Make sure faucets and toilets are water efficient.

- *Recycling* – Recycle all paper and paper products possible, as well as cans, bottles, plastics and cardboard. Make sure your trash collection service keeps recyclables separate and delivers them to a recycling center. Recycle or reuse packaging materials.

Environmentally Friendly Cleaning Supplies

Type of supplies	Suggested products	Where to find
Hand Soap	Members Mark anti-bacterial liquid soap, 1 gallon	Sam's Club
Auto Dishwasher Soap, Dishwashing Liquid	Seventh Generation, 64 oz. powder or 22 oz. liquid Wave, 22 oz. or 64 oz. liquid Electrasol with baking soda, 85 oz.	Grocery Store
General Cleaning	Bi-O-Kleen deodorizer & glass cleaner, 32 oz. Mountain Green all-purpose eco cleaner, 16 oz. Mountain Green degreaser eco cleaner, 16 oz. Mountain Green glass eco cleaner, 16 oz. Orange Plus all-purpose cleaner, 22 oz. concentrate Orange Plus furniture polish, 22 oz. Orange Plus, window & glass cleaner, 22 oz. Seventh Generation all-purpose cleaner, 32 oz. Seventh Generation toilet bowl cleaner, 32 oz. Simple Green all-purpose cleaner, 20 oz. & 140 oz. Wave toilet bowl cleaner, 16 oz. Wave cream cleanser, 16 oz.	Grocery Store
Toilet Paper	Green Forest, 280/2-ply Seventh Generation, 500/2-ply and 260/2-ply	Grocery Store
Tissues	Green Forest, 175/2-ply Seventh Generation, 100/2-ply Natural Value	Grocery Store
Paper Towels	Green Forest Seventh Generation Natural Value	Grocery Store

Website Sources: www.greenlinepaper.com

Collaborating with Consultants, Clients, Contractors and Architects

One of the most difficult aspects of doing "green" interior design is getting others involved in the project to go along with you. Our advice is, do what you can. On the other hand, by taking a bit of time to educate clients and collaborators, you may be surprised at what you can do.

When a new project is imminent, attempt to be involved as early on as possible so that you can broach the subject of sustainability at the onset, hopefully in the schematic design phase. Address the subject with the client, the architect and the contractor. Try to get full team buy-in and then work with however much buy-in you get.

We offer the following guidelines for developing goals and action steps:

Smaller is better; optimize use of interior space to keep overall building size to a minimum.
Design an energy-efficient building: e.g., high level of insulation, high performance windows and tight construction.
Design using renewable energy: e.g., passive solar heating, daylighting.
Design for durability and long life: e.g., a building with a durable style and timeless design will more likely realize a long life.
Design for recycling: e.g., provide for storage and processing of recyclables.
Design for future reuse and adaptability.

Education can take many forms. At Associates III, we have suggested seminars presented by environmental consultants to our contractors, so that their carpenters and other trades people might learn new, healthier and better ways of doing things. We have had brown bag lunches with team members from construction firms to share ideas, and we are continually asking if there is a better, more sustaining or healthier way to build.

As you begin to work this way, you will identify those architects, contractors and others within your network who also are caring of the environment. Together, you can seek out opportunities to collaborate.

If your experience is like ours, you will find some professionals, and some clients, are more interested in sustainability than others. Do not be discouraged. We have adopted the attitude that at the very least we have voiced our convictions and perhaps educated others. Often, it turns out we are able to specify materials that are environmentally sound anyway.

Most important, by following this process we have been able to make a contribution with several clients who were most amenable to our using materials that not only would sustain the environment, but also, in so doing, provide a healthier home for their families and all who come to call. Each such success brings us closer to our goal.

Fixed Specifications Guidelines

As the schematic design and research phases begin, explore product options. The following questions can help guide you:

- What type of long life, durable products and materials will work?
- Are there recycled, reclaimed or salvaged products or materials that you can use?
- Are there materials with low embodied energy that are still durable that you can use?
- What local materials can you use? (Regional materials require less energy/resources to transport to job sites.)

From asking ourselves these questions, we have developed some guidelines for the types of products to specify or not specify. (*Also refer to the manufacturers sustainability questionnaire provided in Appendix I.*)

Dos and Don'ts

The following recommendations are provided to assist in the selection of "green" products. They derive from lessons learned in practice and are not intended to be comprehensive nor even most critical. We encourage you to add to this list and to share with others what you learn through your own practice.

Metals

- Use products with recycled content and recycle all construction site waste.
- When possible use domestic products.

Doors

- Avoid Lauan plywood; it comes from non-sustainable rain forestwood.
- Avoid hardboard made with urea-formaldehyde.
- Avoid solid wood from old growth forests.
- Use woods from certified, well managed forests: *Ask for third-party certification to verify environmental claims such as Scientific Certifications Systems and the Rainforest Alliance (Smartwood).*
- Design for recycling: e.g., provide for storage and processing of recyclables.
- Design for future reuse and adaptability.
- All forestry certification should be accredited by the internationally recognized Forest Stewardship Council. Provide a copy of the lumber invoice with the FSC or SW number.
- Use only tropical hardwoods from certified sustainable sources.
- Stain and seal with water-based or low volatile organic compounds (VOCs) finishes.

Windows

Specify energy efficient windows; for residential use, low-/e glass and ½-inch air space.

Consider the project's climate: for hot climate use, coatings that transmit less solar gain; for cold climate use, glazing that transmits more solar energy gain on the south side.

Ensure durability of the edge seals and spacers that separate the layers of glass.

Ensure proper installation through weather stripping and caulking.

Finish/Trim Wood

Use woods for interior finish and trim from certified, well-managed forests.

Ask for third-party certification, such as Scientific Certifications Systems and the Rainforest Alliance (Smartwood), to verify environmental claims.

All forestry certification should be accredited by the internationally recognized (FSC).

Use only tropical hardwoods from certified sustainable sources.

Stain and seal with water-based or low VOC finishes.

Provide documentation certifying that products are from salvaged wood sources if salvaged woods are used.

Interior Walls

Use formaldehyde-free particle board and Medium-density fiberboard products.

Use environmentally friendly drywall with 100 percent recycled paper backing and natural gypsum. Note that some manufacturers use by-product gypsum from fossil fuel emissions rather than virgin gypsum; avoid this product.

Finish drywall with integral colored plaster; it is beautiful, long lasting and environmentally sound.

Use natural compounds for texture.

Use natural pigments for color.

Decorative Wall Treatment or Coverings

Consider custom-painted designs on integrally colored plaster.

Use biodegradable papers with a recycled content of paper or fiber.

Avoid vinyl wall coverings. These are manufactured from polyvinyl chloride (PVC) which creates toxic by-products during manufacturing and results in intense off-gassing from VOCs.

Stain and seal with water-based or low VOC finishes.

Use low VOC paints, coatings and adhesives.

Properly dispose of all unused paint/stain.

Wood Flooring

- Consider using reclaimed wood, such as pine and hemlock from fences or old barns.
- Purchase new lumber from managed/certified sources and in shorter planks, which result in less waste.
- Avoid formaldehyde used in processed wood.
- Consider bamboo wood flooring manufactured with environmentally safe adhesives. It is 25 percent harder than red oak, 12 percent harder than rock maple but more dimensionally stable. Derived from managed growth areas, it grows quickly after being cut and is harvested every four years.

Wood/Wood Floor Finishes

- Use water-based urethane or other water-soluble finishes.

Paints/Coatings/Adhesives

- Use only silicone sealants in interior areas.
- Use low VOC paints, coatings and adhesives.
- Guard against VOCs emitted during curing that may become attached to other surfaces in the space, especially fabrics. Painting should be done with a minimum of soft surfaces exposed, and maximum direct ventilation should be provided until the coating is dry and off-gassing is reduced.
- Consider milk-based paints. They are ideal and come in a spectrum of colors.

Carpet/Flooring

- Use a substrate such as recycled-newsprint-and-paraffin-product. Avoid Lauan plywood or any tropical hardwood.
- Specify natural fibers (jute, cotton, wool). Note: Avoid imported wools, which typically are treated with pesticides; opt for domestic wools.
- Consider alternate fibers containing recycled plastic from bottles. These have lower embodied energy than nylon or virgin plastics particularly if the carpeting is made domestically.
- Check into carpet products with recycling programs, where the manufacturer takes back the carpet at the end of its useful life and recycles it to make new carpet.

Tile Flooring

- Use an underlayment for tile of recycled content, formaldehyde-free and gypsum-based.

Tile

- Use water-based or silicone sealer to finish.
- Consider using recycled glass tile where appropriate.

Stone Flooring & Baseboard

- Use C-Cure grout.
- Seal with silicone or water-based penetrating sealer.
- Mason to reclaim all unused stone whenever possible.
- Use minimal packing on stone shipments.
- Choose locally manufactured products wherever possible.

Appliances

Ensure that all residential equipment meets U.S. Department of Energy minimum efficiency standards. Most manufacturers have models that out perform minimum standards. Look for Energy Star® rating.

Plumbing

Specify water-efficient equipment, such as water conserving toilets and low-flow showerheads, faucets and aerators.

Lighting

Work closely with lighting designers.

Consider fluorescent lighting, now suitable for home use and four times more efficient than incandescent lighting.

Explore use of fiber optics.

Incorporate daylighting wherever possible.

Paints/Coatings/Adhesives Fixed Specifications Worksheet

Client Name/Residence _____ Date _____

Location of Project _____

Item	MFG	Specification	Areas Applicable
		Description: Finish: Size: Notes:	

PLEASE NOTE:

- Use only silicone sealants in the interior areas.
- Use low VOC paints, coatings and adhesives.
- Consider using natural or alternative paints in interior applications where possible, following the manufacturer's instructions for application. This includes casein paints made from milk protein.
- High-performance acrylic paints are a low VOC option that generally outperforms alkyd paints in terms of durability and abrasion resistance. A small premium will be paid for the acrylic paint; however, the life cycle cost should be less.
- For general interior and exterior applications, use water-based, zero- or low-VOC (<10g/1 for interior paints, .50 for exterior) latex paints and primers. Water-based paints generally contain low levels of solvents such as glycols and alcohol. VOC levels are significantly lower in latex paints than in other paint types.
- Water-based paints must not be formulated with aromatic hydrocarbons, formaldehyde, halogenated solvents, or mercury or mercury compounds; nor should they be tinted with pigments of lead, cadmium, chromium VI and their oxides.
- Consider special orders and deliveries of fresh paint to minimize the need for in-can preservatives and freeze/thaw protection.
- Contractor to coordinate proper disposal of all unused paint/stain.
- VOCs emitted during curing may become attached to other surfaces, especially fabrics, in the space. Painting should be done with a minimum of soft surfaces exposed, and maximum direct ventilation should be provided until the coating is dry and off-gassing is reduced.

Electrical Fixed Specifications Worksheet

Page _____ of _____

Client Name/Residence _____ Date _____

Location of Project _____

Item	MFG	Specification	Areas Applicable
		Description: Finish: Size: Notes:	

PLEASE NOTE:

- Choose lighting fixtures with high efficacies, greater than 65 percent if possible.
- Interior lighting: Specify fluorescent rather than incandescent lighting. Compact fluorescent lamps typically use 75 percent less energy and last 10 times longer than incandescent bulbs. CFLs are particularly useful in wallwashers and downlights.
- Exterior lighting: Specify metal halide or high pressure sodium lamps for general purpose exterior lighting. Both types of lamps are generally more efficient than fluorescent lighting, although low-temperature fluorescents may be suitable for some applications.
- Consider solar-powered exterior lighting wherever possible.
- Lighting controls: Utilize timers or sensors with lighting systems that operate eight hours per day or longer, such as office lighting. Sensors may respond to movement of occupants or to overall lighting conditions, which vary with daylight.
- Lighting waste disposal and recycling: Choose lamps that are accepted by a recycling program. Venture Lighting, a metal halide lamp manufacturer, has a lamp recycling program for both its own lamps and those made by others.
- To reduce the need for disposal of lamps as toxic waste, choose lamps that pass the Toxic Characteristic Leachate Protocol (TCLP) test for lead and mercury. Philips and GE both manufacture low-mercury fluorescents; Philips also makes low-mercury and lead-free HPS lamps. Lead content in exterior lighting depends upon whether the lamp base uses a lead-based solder, uses a lead-free (silver) solder or is welded.

Tile/Masonry Fixed Specifications Worksheet

Page _____ of _____

Client Name/Residence _____ Date _____

Location of Project _____

Item	MFG	Specification	Areas Applicable
		Description: Finish: Size: Notes:	

PLEASE NOTE:

- Use an underlayment for tile floor that is of recycled content, formaldehyde-free and gypsum-based.
- Use C-Cure Grout, # _____ .
- Avoid sealants formulated with aromatic solvents (organic solvent with benzene ring in its molecular structure), halogenated solvents, fibrous talc or asbestos, formaldehyde, mercury, lead, cadmium, hexavalent chromium or their compounds.
- Seal with silicone or water-based penetrating sealer such as Enviro Seal from Chemrex Inc., Safe Coat Hard Seal (Planetary Solutions) – fine for porous tile, Safecoat Mexeseal – a total replacement for high solvent content floor sealing systems (multiple coats will build a gloss finish), or Weather Bos Sealer from Weather Bos, Inc.
- Mason to reclaim all unused stone whenever possible.
- Use minimal packing on stone shipments.
- Choose locally manufactured products wherever possible.

On-site Recycling Efforts

During the project, take steps on-site to minimize waste and encourage recycling. For example

Centralize cutting operations to reduce waste and simplify sorting.
Mark bins clearly for different types of usable wood scraps, such as kindling, sawdust for compost and materials for art projects.
Identify in advance where different materials can be taken for recycling.
Educate the work crew about recycling procedures and emphasize that this is an environmentally friendly effort.
Donate salvaged materials to needy groups, such as Resource 2000, low-income housing projects, Habitat For Humanity, theater groups and schools.
Minimize packaging waste: Ask suppliers to avoid excessive packaging or leave packaging at the point of purchase.
Manufacture products from recycled materials when possible. This requires less energy than if made from virgin material, plus it lowers the initial costs and the savings can be passed on to the client.

Furniture Specifications Guidelines

When it comes to furnishings and fabrics, it can be challenging to find available sustainable product lines that are appropriate for residential projects. For commercial projects, there are more options available. The following guidelines for upholstery items suggest some simple things for manufacturers to consider in making their pieces more environmentally friendly and healthy. You may have better luck with smaller custom manufacturers who are traditional builders and already have some of these practices in place.

As with fixed specifications, the following questions can help guide you regarding furniture selections:

What type of long life, durable products and materials will work?
Are there recycled, reclaimed or salvaged products or materials that you can use?
Are there materials with low embodied energy that are still durable that you can use?
What local materials can you use? (*Regional materials require less energy/resources to transport to job sites.*)

(Also refer to the manufacturer's sustainability questionnaire provided in Appendix I.)

Component	Comments
Upholstery Frames	To be constructed from untreated kiln dried maple.
Woods	Use solid, low odor woods where possible. Use only formaldehyde-free particle board. Use local, sustainable wood suppliers where possible.
Glues and Adhesives	Use only water-based glues to assemble the frame.
Finishes	Use natural waxes and oils when possible. Use low VOC, water-based finishes.
Bases and Springs	Use uncoated steel bases and springs.
Foam	Use natural latex “pin-core” foam.
Batting	Use organic cotton batting, grown and processed without pesticides, chlorines, toxic agents, finishes or glues.
Encapsulation	Upholster in barrier cloth, a tightly woven muslin/sail cloth type fabric, to encapsulate the foam.
Upholstery Fabrics	Whenever possible, wash fabrics in excessively hot water followed by a final wash in warm water with baking soda and vinegar. Care should be taken that previous materials laundered in the machine do not contaminate these fabrics.
Manufacturing Process (if client is chemically sensitive)	Extreme care should be taken that the environment in which manufacturing and upholstering take place will not contaminate the finished piece through: • outdoor air problems that are drawn into the area through air intakes or dirty filtration • toxins brought in on workers’ feet • smoking • perfumes, hand lotions, personal body products worn by those working and handling the pieces • other fabric and products in the area
Shipping and Handling	Finished pieces should be wrapped in barrier cloth and cardboard (no plastics). Delivery, handling, uncrating and unwrapping process needs to be in an approved, controlled environment to ensure the “purity” of the piece.

Note: When you use antiques and collectibles, you are recycling, you eliminate a manufacturing process, and in some cases, incur less transportation.

Appendix I

Manufacturer's Environmental Sustainability Questionnaire

General Information

Manufacturer Information

Contact: _____

Street address: _____

City/State: _____

Zip Code: _____

Phone number: _____

Distributor Information

Contact: _____

Street address: _____

City/State: _____

Zip Code: _____

Phone number: _____

Environmental Awareness

- Does the manufacturer of this product have an environmental policy? If so, what is it?
- Is the finished product tested/certified by any environmental agency? If so, which one?

Materials

- How durable is the product? Life expectancy?
- Does the product contain post-consumer waste material? If so, what?
- Does the product contain post-industrial waste material? If so, what?
- Does the product contain renewable materials, such as agricultural products, by products or wastes? If so, what?
- Are these renewable materials harvested or extracted to ensure sustainability (if applicable)? Is the raw material renewable/recyclable? How?
- (If applicable) What is the recycled percentage of the product?
- (If applicable) Is the timber used recycled/reused from a plantation source or certified by the Forest Stewardship Council or another recognized reputable agency? If so, which one(s)?
- Does the manufacturer foresee likely innovations in the product that will lead to a lowering of its environmental impact?

- Provide the Material Safety Data Sheet and any other backup, such as the FSC certification, warranties, etc.

Manufacturing Process

- Is scrap material from the manufacturing process reused or recycled?
- Are any non-hazardous solid materials disposed of to landfill from the manufacturing process? If so, what are they?
- Is water used in the manufacturing process?
- (If applicable) Is non-potable recycled or wastewater from an external source of supply used?
- Have steps been taken to minimize the amount of water used in the manufacturing process either by water efficiency measures or waste water recycling?
- (If applicable) Have specific in-plant water efficiency or water re-use/recycling or filtration measures been implemented? If so, what are they?
- (If applicable) Does the manufacturer have specific plans in place to reduce emissions and/or waste from the manufacturing process as well as to reduce the environmental impact and strive towards zero pollutions? If so, describe.

Energy Consumption/Efficiency

- What types of energy sources are used in the manufacturing process? Please check those applicable: Electricity ____ Natural gas ____ Diesel ____ Other ____
- Have there been steps taken to reduce energy consumption and increase energy efficiency in the manufacturing process? If so, what are they?
- Does the product consume energy while functioning? If yes, describe rating system/efficiency measure and provide the product's performance statistics.
- Do the conditions in the operating environment (e.g., temperature, humidity) impose any restrictions on the performance of the product?

Air Quality

- Does the product have the potential to impact negatively on Indoor Air Quality (IAQ)?
- (If applicable) Have any tests been done to calculate the toxic emissions associated with the manufacturing of the product? If so, what tests? What percentage of emissions is produced in the manufacturing process?
- (If applicable) Have any steps been taken to reduce emissions from the manufacturing process? If so, what?
- Have ozone-depleting materials been eliminated from the production process?
- Does the product have the potential to impact IAQ?

Packaging

- Is packaging used to protect and deliver the material used in producing the product and/or the product itself? If yes, please describe.
- (If applicable) Please indicate which of the following types of packaging are used:

❑ Crates
❑ Pallets
❑ Cardboard
❑ Paper
❑ Polystyrene foam
❑ Plastic wrap
❑ Plastic containers
❑ Metal containers
❑ Glass containers
❑ Other, please describe: _____

_____

- Does manufacturer reuse any of the packaging?
- Does the packaging have post-consumer or post-industrial recycled content?
- If the packaging is re-usable/recyclable, does manufacturer have a system for collection and return of the packaging?
- Has the manufacturer taken any steps to minimize the amount of packaging materials or otherwise reduce their environmental impact? If so, what?

Transport

- How are the original materials in the product transported to the factory and how far do they travel?
- How does the manufacturer transport the product from the factory to a distributor or building site?
- Does the manufacturer use efficient shipping methods? Does the distributor?

Installation

- If scrap material is/may be generated during the installation of the product, can it be reused/recycled?
- If scrap material is/may be generated during installation, does the manufacturer provide information to purchasers to assist them to reuse/recycle the material? If so, what?
- Does the manufacturer provide a “take-back” service for scrap material associated with the product?
- Is the product specifically designed to minimize the generation of scrap material during its installation?
- Does the installation of the product require application of solvent-based products such as glues, primers or coatings at the point of use? If so, what are they? If yes, does the manufacturer recommend water-based or low VOC-based products?
- Is the manufacturer actively exploring measures to increase the reusability/recyclability of the product?

Waste Disposal/Removal

- What types of waste are produced from the manufacturing process?
- Are any of the wastes considered hazardous? If so, which, and how are they hazardous?
- Is the waste produced reused/recycled?
- If the waste is not recyclable, what type of disposal is required (sewer, landfill, storage facilities, etc.)?
- Can all or part of the product be readily removed for reuse with no or minor loss of quality?
- Can all or part of the product be readily recycled at the end of its useful life?
- Does the manufacturer provide end-users with information on the effective reuse or recycling of the product?
- (If applicable) What percentage of the material/component taken from reuse/recycling ends up as usable product?

Appendix II

Useful "Green" Web Sites by Category

Design & Construction

Affordable Building Systems – www.affordablebuildingsystems.com

Building Green.Com – www.buildinggreen.com

Built Green Organization – www.builtgreen.org

Center for Design at RMIT University – www.cfd.rmit.edu.au

Dauphin Furniture – www.dauphin.com

Edensaw (certified wood supplier) – www.edensaw.com

Efficient Lighting Fixtures – www.elflist.com

Environmental Home Center – www.environmentalhomecenter.com

Forest World – www.forestworld.com

Forbo Industries – www.forbo.com

Green Sage, Products for Sustainable Living – www.greensage.com

Green Business Centre – www.greenbusinesscentre.com

HOK Ten Simple Things – www.hoksustainabledesign.com/december01/feature/tensimplethings.html

Interior Concerns Resources – www.interiorconcerns.org

Milliken – www.milliken.com

Sustainable Building Source – www.greenbuilder.com/sourcebook/

Steelcase/Vecta – www.steelcase.com

Sustainable Design Resource Guide – www.AIAColorado.org/SDRG

Steel Recycling – www.recycle-steel.org

Global & Government

Austin, Texas, Green Building Program Page – www.ci.austin.tx.us/greenbuilder/

Berkeley National Laboratory – www.lbl.gov/

Building America Program – www.buildingamerica.gov

Energy Smart Communities Network – www.sustainable.doe.gov

EPA – www.epa.gov

Global Green USA – www.globalgreen.org

Green Maps – www.greenmap.org

Institute for Global Communications – www.igc.org

International Council for Local Environmental Initiatives – www.iclei.org

Marin Conservation League – www.conservationleague.org

National Park Service Sustainable Design and Construction Database – www.nps.gov/dsc/susdb/index.htm

National Resources Defense Council – www.nrdc.org

Ocean Conservation Efforts – www.coralreef.com/ocean.htm

Portland, Oregon's Office of Sustainable Development – www.sustainableportland.org

President's Council on Sustainable Development – es.epa.gov/cooperative/websites/pcsd.html

Rocky Mountain Institute – www.rmi.org

San Francisco Conservation Corps – www.sfcc.org/

US Department of Energy – www.eren.doe.gov/buildings

US Environmental Protection Agency – www.epa.gov

US General Services Administration – www.gsa.gov

US Green Building Council – www.usgbc.org

Firms, Organizations, Associations

American Institute of Architects (AIA) – www2.aia.org

American Society of Interior Designers – www.asid.org/green.asp

ARUP Environmental Consultants – www.arup.com

Earth Life Environmental Activists – earthlife.org.za

Eco Home Resources – www.ecohome.org

Electric Find (electrical industry) – www.electric-find.com

Environmental Building News – www.ebuild.com

Forest Certification Resource Center – www.certifiedwood.org

Healthy Building Network – www.healthybuilding.net

International Design Resource Institute – www.designresource.org

Green Seal – www.greenseal.org

Hardin Tibbs, Consultant – www.hardintibbs.com

HDR Consulting Firm – www.hdrinc.com

HOK – www.hok.com

Interface Research Corp. – www.ifsia.com

IS magazine – www.ISdesigNet.com

Lifecycle Assessment – www.cfd.rmit.edu.au/lca/cfd_2_11.html

National Association of Home Builders Research Center – www.nahbrc.org

McDonough Braungart Design Chemistry – www.mbdc.com

My House Is Your House – www.myhouseisyourhouse.org

OIKOS – www.oikos.com

Riverwatch, Hudson River – www.riverkeeper.org

Rocky Mountain Institute – www.rmi.org

Rose-Network – www.rose-network.com

Sim Van Der Ryn, Ecological Design – www.ecodesign.org

Smart Architecture – www.smartarch.nl/

Southface Energy Institute – www.southface.org

Sustainable Buildings Industry Council (SBIC) – www.sbicouncil.org

Union of Concerned Scientists (UCS) – www.ucsusa.org/index.cfm

What's Working Environmental Construction Consultants – www.whatsworking.com

Case Studies, Examples of Projects

1321 West Pratt Renovation Case Study – www.sustainabledesign.com/1321wp.htm

Center for Maximum Potential Building Systems – www.cmpbs.org

Corporate Sustainability Project – www.csp.uts.edu.au/index.html

Dewees Island – www.deweesisland.com

"Earth On Edge" PBS Program – www.pbs.org/earthonedge

Efficient Livable Housing/Sustainable Architecture – www.aloha.net/~laumana/elh.html

International Institute for Sustainable Development – http://iisd.ca/

Presidio Environmental Education – www.presidiotrust.gov

Sustainable Settlement / South Africa – www.sustainablesettlement.co.za

The Farmhouse Project – www.thefarmhouse.org

Other

Consumer Products – www.sustainabilitystore.com/?clicktrade=97904

Corporate Responsibility Reports – www.nikebiz.com

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