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From the Director

Thank you for your interest in the Wabash County Solid Waste Management District's Green Building Program. The Green Building Program developed out of a realization that there were numerous public projects being considered in Wabash County, and no organized local effort existed to address issues of environmental concern for these projects. There were no concerted efforts to minimize construction waste or use quality recycled content building materials.

In 1998, Wabash County disposed of approximately 8,500 tons of construction and demolition (c/d) waste in Indiana landfills. A far greater quantity of c/d waste is annually buried as "fill" material. Since 1996, the volume of c/d waste being disposed in landfills has increased by at least 16%, and as much as 25%, each year. The Wabash County SWMD is committed to minimizing the volume of construction and demolition waste being generated by public building projects in the Wabash County.

In addition, Wabash County's economic well being is based, to a great extent on the success of our many recycling-related industries. Local and national recycling efforts can only be sustained with stable markets and strong businesses that use recyclable materials as feedstocks for their products. The Wabash County SWMD has committed to supporting these local industries, and the many other companies that represent the recycling industry. The Wabash County SWMD Green Building Program supports the use of recycled content products, as well as other environmentally preferred products, in the construction of public buildings. It is the hope of the Wabash County SWMD that the strategies implemented in participating public projects will represent examples of practices that will one day become common.

There are several components of the Wabash County SWMD Green Building Program.

- The guidebook or toolkit containing:
 - an overview of green building principles;
 - resources for further research into green building concepts, techniques and materials;
 - a sample product guide that illustrates the vast array of products and materials that are currently available to the construction industry;
 - guidance on "greening" Wabash County public project's specifications
 - the Wabash County SWMD rating system.
- Technical consultation and support that may be provided to Wabash County public projects;
- Special financial consideration that may be awarded for greening public building projects;
- A variety of documents, manuals, videos and articles relating to green building that are available through the Wabash County SWMD's lending library;
- <http://www.slashthetrash.com>, the Wabash County SWMD's website, which promotes green building.

The Wabash County SWMD is convinced that many of the green building concepts discussed in the guidebook represent ways that we can minimize the impact on the environment that results from construction activity. In many cases these strategies will not significantly increase project costs.

I hope you will find the program to be helpful. In an effort to continually improve our programs and services to you, our patron, your feedback is encouraged. Please call, write or email at any time with comments or suggestions on how we can create a more effective program.

Steve Johnson, Executive Director

Wabash County Solid Waste Management District

January, 2001

Contents

Acknowledgements 4

Introduction 5

Principles 7

Process 10

Green Building Rating System 15

Conservation Strategies 21

Green Building Resources 22

 General 23

 Building Materials 30

 Indoor Environment 32

 Energy Conservation 34

 Solar Design 35

 Site and Landscape Design 36

 Land Use and Community Planning 38

 Internet Resources..... 40

Green Building Products 46

Sample Specification Language 99

Indiana Solid Waste Management Districts.....109

Epilogue 111

Glossary 112

DISCLAIMER

The material in this binder was prepared in late 1999 and the first quarter of 2000. The business of green building continues to evolve rapidly. We have done our best to ensure the accuracy of information and product availability, but must take this opportunity to note that the Wabash County Solid Waste Management District and CSO Architects Engineers & Interiors make no warranty, expressed or implied, or offer any endorsement through the inclusion of specific products in this Guideline. It remains the sole responsibility of the user to determine how best to employ the resources and products presented here.

NOTE:

If you are not familiar with architecture, construction or common terms in the world of environmentalists, we have included a glossary at the end to help explain as many unfamiliar terms as possible.

If you would like to obtain a copy of these guidelines contact:

Wabash County Solid Waste Management District at (219) 563-7649.

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Wendy Machmuller was consistently enthusiastic and provided solid research to flesh out the sections on green building resources and products. Thanks also to Kim Kultgen and Jan Mathews for graphic design and support. Finally, all of us thank you, the reader, for your interest in this timely and vital topic. As you study the subject, the challenges become more real, the subject more complex and the imperative for action more urgent.

Sam F. Miller, AIA

INTRODUCTION

Buildings are everywhere: we take them for granted. They give us shelter; keep us warm in winter and cool in summer. Buildings are essential for our survival.

A new building is welcomed. We anticipate new jobs, new opportunities and new business in our communities. Construction, in its own way, tells us that our communities continue to grow and prosper.

Of all humanity's activities, our buildings use significant amounts of material and energy. Here are three significant findings:

- ✿ 55% of timber cut for non-fuel use finds its way to construction.
- ✿ 40% of energy and materials goes to make or operate buildings.
- ✿ 30% of new construction or renovations suffer from Sick Building Syndrome causing building users to experience negative health effects from poor air quality, biological contaminants or polluted indoor air.¹

From the above it is clear that construction has a huge, ongoing environmental impact, locally and globally. In addition, as a result of Sick Building Syndrome, human health and quality of life is compromised in one out of three buildings.

In an effort to ground this discussion, a definition of green design is appropriate to frame our thinking. Elizabeth Coles offers the following:

Green design is an approach to the design of either new or renovated spaces that are residential, commercial or industrial and are designed, constructed, operated and demolished in an environmentally responsible and energy efficient manner.²

The purpose of this document is to lay the foundation for what, in essence, is a revolution in how we make our buildings. The great thing about this particular revolution is that there are no losers. In the pages that follow you will find access to ideas, tools and products that will allow you to improve our built environment. For example, Amory and Hunter Lovins in the Harvard Business Review observe:

If everyone in America integrated (premium-efficiency motors and electronic auto-dim ballasts) into all existing motor and lighting systems in an optimal way, the nation's \$220 billion- a-year electric bill would be cut in half.³

The previous possibility is only one example among many. Knowing how much room exists for improvement is the primary reason for this guideline. The following sections are divided into five major headings including:

- ✿ Principles and Process
- ✿ Green Building Rating System
- ✿ Green Building Resources
- ✿ Green Building Products
- ✿ Sample Specification Language.

The part devoted to principles explains seven ideas to help focus our thinking about how to reduce the impact of buildings on the environment. The second part of this section discusses what a designer often calls process. This is a way to think about what happens, step-by-step, from the time design starts, through construction and then use or occupancy. There are great opportunities along each step of the way to reduce energy and resource use.

The section devoted to the rating system is unique to this manual. The unusual feature is that the entire process of making a building is considered and strategies are identified for each phase. Also, a separate

rating may be assigned to each phase, so a three-part rating of design, construction and use is typical when the system is applied to a proposed building.

The rating system is intended as a guide to set the level of effort appropriate to a project: the higher the rating, the greater the benefits to the environment, owner and users. Wabash County building owners may also be interested in the possibility of incentives under consideration by the Wabash County Solid Waste Management District. Such incentives may take the form of grants, in-kind services, consultant support, publicity and/or marketing materials to give voice to the green features of a new building. Given the scale of commercial and institutional building projects, and the unique nature of most projects, incentives shall be negotiated on a project-by-project basis directly with the Wabash County Solid Waste Management District.

The following two sections zero in on resources and products. In a culture literally awash in information, finding access to useful knowledge becomes an increasing challenge. Using the resources section will give you access to the latest thinking on green design in all media, from books to the World Wide Web. The section devoted to products provides contact information on hundreds of materials now available that make a positive difference environmentally.

The final section discusses sample specification language. This is information to include in the design documents, telling a builder what is expected to create a green building strategy during construction. Architects, builders and contractors will be the interested parties here, but an owner will benefit from a working understanding of the material as well.

In closing, we hope you find this a useful tool to advance your understanding of green design. Many options are available as a building is contemplated, designed, built and put into service. We have the opportunity, through our buildings, to make a human world that needs much less and remains prosperous into the foreseeable future.

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1. A Building Revolution: How Ecology and Health Concerns Are Transforming Construction by David Malin Roodman and Nicholas Lenssen, *Worldwatch* Paper 124, 1995.
 2. *Designing Green Interiors*, E.A. Coles, Tichenor Publishing, Bloomington, Indiana, pg. 10.
 3. A Road Map for Natural Capitalism, Amory Lovins, Hunter Lovins and Paul Hawken, *Harvard Business Review*, May-June 1999, pg. 149.

PRINCIPLES

INTRODUCTION

Whether we are owners, engineers, designers, builders, or tenants, sooner or later we find ourselves involved in building design of one kind or another. Buildings have many different uses and their appearances, layouts and materials are a direct result of this variety. In this section of the guideline, we hope to bring the many benefits of green design more into focus.

Below are seven general principles to help you think about design choices, building products, and construction activity. Later in this guideline are listings of specific actions or activities that can be environmentally beneficial. The variety of owners and designers suggests that a list of how-to's will always fall short, so we intend the following principles to help guide the thought process where a specific course of action is not immediately apparent.

Principle 1: We Vote With Our Money

Of all these ideas, the power of money is central. When we buy anything, we “vote” with our money.

Connecting the idea of voting and money may seem odd. Our buying habits influence the success or failure of businesses making thousands of products.

There are big challenges in making purchases that support the environment, particularly in a global economy. One problem is that our method of delivering goods makes a product's manufacture invisible. By “invisible” we mean the activity of these companies is not typically on view. We cannot see working conditions, how materials are harvested or mined, the energy expended to create and deliver goods, or the specific manufacturing processes resulting in the product. Typically, the only information available is the country of origin. Given this system, our primary information source is advertising. We rely on the media to present the main message of the goods and services we buy.

Without knowledge of whether an item is good, bad or indifferent to the environment, it is difficult to find out if the things we buy make a difference, one way or the other. As a result, included in this *Guideline* are sections on *Resources* and a section on *Products* to provide you with access to information to help choose green building products and techniques. Retailers will respond by stocking green products if the buying public creates demand.

Principle 2: Close The Loop

Our current system of production, use and disposal follows a straight line: “cradle to grave”. For example, wood is cut from a forest, milled into lumber and shipped to a lumberyard. The wood is purchased by a contractor and used in a house. Years later, the house is demolished, the wood tossed in a dumpster and buried in a landfill (the “grave”).

Everything in nature is cyclical: “cradle to cradle”. Here is a brief explanation using what is called the Water Cycle. Most of the Earth's water is found in the oceans. This water constantly evaporates into the air and forms clouds circulated endlessly by prevailing winds. The clouds move over the land and give up their water causing rain. The rain drains to streams and rivers, flowing to the ocean. When the water returns to the ocean, the cycle is complete and begins again. This brings us to our second principle: Close the loop; complete the cycle. Nature does a wonderful thing. All “waste” is food for another process or living thing. Ecosystems use the same principle. The reason it is successful is that relationships like these represent the highest efficiency for any group of living things. The idea of eco-industrial parks was originally pioneered in Europe.¹ Examples now exist in the United States. How do they work? The “waste” from one industry becomes “food” for another. Factories are located in close proximity and designed to support relationships between different processes. For example, waste steam from one process is piped to a facility that makes electricity. “Reduce, Reuse, Recycle” is an important phrase that describes a group of interrelated ideas, each with environmental benefits. We move in this direction

by using recycled or recycled content products. Most materials can be recycled a limited number of times prior to ending up in a landfill. Some materials make many trips (metals), some fewer (paper). The result is that the final resting place of our products and packaging is only delayed. Reclaimed, disassembled or refurbished products required less energy and resources than recycling. To reduce or eliminate unnecessary parts of a product (reusable packaging, for example) creates an even greater environmental benefit than recycling or reuse. “*Close The Loop*” is what we’re looking for. In fact, closing each and every loop should be our goal.

Principle 3: Make Things That Are Harmless

Our third idea is creating materials and processes that are harmless or benign. Technology continues to evolve, becoming more complex every day. With the incredible growth of production capacity over the last two hundred years, industry became the villain because of chemical spills, poisoned water, nuclear accidents, acid rain and other offenses. The reason was simple: the by-products and often the products themselves were dangerous. The original response was to try to control pollution. Michael Royston explains the difficulties:

Pollution controls solve no problem; they only alter the problem, shifting it from one form to another, contrary to this immutable law of nature: the form of matter may be changed, but matter does not disappear . . . What emerges is an environmental paradox. It takes resources to remove pollution; pollution removal generates residue; it takes more resources to dispose of this residue and disposal of residue also produces pollution. ²

Clean technology uses minimum or no-waste manufacturing systems and design to conserve energy and resources.³ The environmental benefits of clean technology have become the focus for redesign and reengineering of manufacturing processes worldwide. Also, with thoughtful design, the negative environmental impact of the products themselves can be minimized.

Principle 4: Get The Most Out Of Energy

There are two aspects of energy to consider. The first is the energy source. The second is energy efficiency. Petroleum and coal are the principle power sources in the developed countries and despite massive reserves of both, are finite. Efficiency is the rate at which energy is used. Petroleum and coal are transformed into useable energy through combustion, thus causing pollution. If efficiency increases, then cost decreases. Benefits beyond reduced cost include lower demands on resources and reduced greenhouse gas emissions.

Energy efficiency became a big deal with the oil shocks of the 1970s. Enjoying an economic upturn in the 80’s, energy efficiency faded into the background. Renewable energy industries such as wind power and solar cells were born as a result of the oil shortage. Many fledgling ventures in wind and solar power perished, but several are now thriving enterprises.

Of course, high initial costs were a barrier to these new technologies. But with the support of the federal government (since removed) and a steady research effort, what were fringe technologies now are either competitive with established energy systems or nearly so. Particular success is seen in solar power to produce electricity, called photovoltaics. In fact, for electricity needed in areas where power lines are not available, photovoltaics are less expensive, sometimes dramatically so.

Photovoltaics are particularly attractive for buildings. They have long service lives (typically 20 to 30 years) and make power for free. Also, the cost of photovoltaics continues to decrease as demand rises, production increases and manufacturing techniques improve.⁴

Wind energy is another renewable energy resource with strong growth. The Global Wind Energy Market Report observes, “. . . Estimates indicate that during 1999 more than 3,600MW of new wind energy generating capacity were installed worldwide, bringing total installed capacity to the 13,400MW range. This total represents an increase of more than 36% over the 1998 total installed capacity of 9,751MW, and the largest worldwide addition to capacity in a single year.”⁵

This is a remarkable achievement, representing investment at the scale of major utilities. Small wind turbines are also available to produce what is called micro-power for homes and small buildings. Wind power has some applications in Indiana depending on locale and microclimate characteristics. A good source for information is local experience and the Wind Energy Resource Atlas of the United States. This book is available from the American Wind Energy Association.

Besides power, another part of thinking about energy is within the building itself. We need light, ventilation, heating and cooling. A building with a more efficient skin uses less energy, saving money for its owner. Greater efficiency in the enclosure of a building usually costs more than “average” construction at the outset, but pays for itself and beyond over the life of the structure.

Lighting is another example. Compact fluorescent lighting saves money through long life (10,000 hours). In addition, a 75-watt compact fluorescent bulb saves the need to purchase 10 incandescent bulbs and 560 kilowatt-hours of electricity over its lifetime.⁶ Compact fluorescents also give off less heat than incandescent lighting. A building using compact fluorescents has lower cooling needs.

Mechanical equipment uses motors of various sizes typically. High efficiency motors and variable speed motors save money, too. In summary, we need to think about our energy sources, building skin efficiency and building systems like lighting to get the most out of the power we use.

Principle 5: Support The Locals!

For our purposes here, we will use local as it applies to building design and economics. For buildings in particular, we focus on the site and nearby surroundings. As we think of local economics we entertain a broader view, the community as a whole and surrounding area. Defining the exact limits of a local economy may vary somewhat from project to project. Some think of “local” as statewide or regional while others would limit “local” to the surrounding county or town. For the sake of our discussion, we will think of local economics as including the entire State.

Architects use the term “site” to describe the land where a building sets, and limit the area to the property lines shown on the survey. Typically, a building is placed to face the street and designed with little thought to the land, prevailing winds and sun. Carefully considering the characteristics of a site yields tangible results in economy and quality. Later in the Process section, a description of specific ideas will make the results of thoughtful site design more clear. The primary environmental benefit to using local materials is reduced transportation cost, including a corresponding reduction in fossil fuel use and related pollution. On the other hand, it may be argued that large material suppliers are more efficient, control pollution better and create less waste. To give fair hearing to these concerns, specific study of a proposed local material is suggested.⁷

Another factor in local thinking is economic. Buying local services and products keeps money in the community. There’s a cascade of benefits. The people working at or owning the patron business take their income and distribute it through the community to other businesses. The money then moves again to pay those employees and they redistribute the money yet again. What we see is a loop that supports the economic vitality of the community.

Principle 6: Accumulate Knowledge

To be environmentally responsible, we need useful information to make informed choices. As such, accumulating knowledge and finding trustworthy sources are essential. Unfortunately, a 60-second commercial does little to tell us what we need to know in this context. On the positive side, with the explosive growth of the Internet we have access to more information, more quickly than ever before. It is a matter of finding out about what’s useful and constructive, versus what may be useless, unethical and destructive.

In response to this concern, a growing movement exists to provide environmental information on products. Organizations such as Green Seal, originally founded in Europe, provide labeling to indicate a product’s environmental friendliness.

Green Seal is a nonprofit environmental labeling organization that awards the “Green Seal of Approval” to products that cause less harm to the environment than other similar products. Before a product gets the Green Seal, it must pass rigorous tests and meet...stringent environmental standards.⁸

Green Seal focuses on consumer products and, unfortunately, not on construction materials. The organization continues to grow and their label is respected as a guide for the purchase of environmentally friendly products.

Loss of forests worldwide is another major concern. In an effort to slow the global timber harvest, environmental certification for managed timber harvesting has grown to seven organizations under the oversight of the Forest Stewardship Council.⁹ The criteria for judging the sustainability of timber harvesting practices for certification include forest timber sustainability, care of the forest ecosystem, and the linkage between economic and cultural considerations. Accumulating knowledge is assisted through the section on Resources, found later on in this guideline.

Principle 7: Collaboration, Not Confrontation

Past encounters between people advocating the environment and builders or business usually erupted in conflict. The reason was that environmental advocates demanded costly changes believing that controlling pollution was the answer to environmental degradation.

“Principle 3: Make Things That Are Harmless” suggests using manufacturing systems with benign results. In so doing, we knock the wind out of the prime area of disagreement between environmentalists and business. Thoughtfully seek win-win solutions versus win-lose. To collaborate requires effective, continuing communication among stakeholders.

By designing manufacturing processes using clean technologies, collaboration becomes reality. Admittedly, there are still technologies that do not immediately yield to benign manufacturing design. Where benign solutions are available, a business’ bottom line is improved by removing the enormous regulatory and economic burden normally associated with the treatment and disposal of waste.

PROCESS: DESIGN, CONSTRUCTION AND USE

INTRODUCTION

Everything we build follows a fairly regular pattern or process. In most cases, we don’t think about it much. A cautionary note: sometimes you will find it difficult to make decisions employing the principles previously outlined. It’s not that they’re flawed, but as a culture, we are in transition. For Europe of the 18th century and the infant United States prior to 200 years ago, it was generally accepted that nature was limitless. Thirty years ago, serious questions emerged over the effects of pollution and technology on the environment. In the last 15 years, we have come to understand that pollution now affects the earth globally. We are faced with the challenge of reinventing our civilization to ensure a prosperous future.

In a time of change, many options and ideas vie for attention, each representing the perspective of a different interest group. Misinformation is common, sometimes called “greenwash”. We suggest care and a healthy skepticism when considering any new product or procedure.

The first step in the process of making a building is design: a building professional draws a project at the request of an owner. Commercial projects are complex and require a fair amount of time. The attitude of the owner toward green building is crucial to a successful building project. An owner defines a need on behalf of the community or as a result of business goals. To begin a commercial project, an owner engages an architect to discuss the type of building, its site, size, materials and cost. An architect will often call this phase of work “Programming.” Green building concepts need to be included as part of the initial programming effort. When the information is collected from the owner, the architect begins to give the building form.

An architect, in conjunction with mechanical, electrical, structural and civil engineers works through three design phases: Schematics, Design Development and Construction Documents. In each phase the level of detail increases. A good way to think of the process is to imagine making a piece of furniture. We start with rough sawn wood, then work and shape the material to a high level of quality in form and detail. The finished piece of furniture may be compared to a complete set of design documents.

The second step is construction. Often, the earth moving equipment arrives and strips the site. The new building and its landscaping completely replace the original life on the site. There's an incredible amount of activity as a building takes shape. Dumpsters arrive empty and leave full of waste bound for the landfill. Many trades work in concert to construct the building. Finally, a finished structure begins a long life in the community.

After the building is complete, the final step is occupancy: moving in and using the space or facility. Our choices have definite effects on the quality of what could be called the "human environment". What follows is a more detailed look at design, construction and use.

DESIGN

Designers use a tool called a program to provide detailed information on the number, relationships, use, size and character of the spaces needed in a building. A program usually includes information on the qualities desired in a structure as well. A program can incorporate cost scenarios or cost limitations and include examples of similar facilities or case studies. The program is the opportunity to identify green design goals and use these to measure success while guiding the design team as a building is designed, constructed and ultimately put into use. A program is a living document that evolves and changes over the course of design, particularly in complex buildings.

Designers, architects and engineers make drawings and specifications, collectively called contract documents. Drawings typically describe "how much" of something is needed for construction. Specifications cover the quality expected in a building. The client must tell the designer about what he or she expects from the design. Choosing a designer with a philosophy similar to that of the client helps assure a successful project.

We can think of design as a form of leverage. The return on investment is astounding. Design ideas may be made to fit together and reinforce one another. Here is an example focusing on improving energy efficiency. First, orient the building to the south to take advantage of the sun. Arrange deciduous trees immediately south of the building to provide summer shade. The deciduous trees lose their leaves in fall and allow winter sun to donate heat to the structure. If the design includes a sunroom, porch, lobby or any room with glass facing south, the winter sun will warm the space. Plant evergreen trees on the west to block winter wind and the western sun. Increase the insulation in the building skin.

Combining the above during building design allows the ventilation system to be smaller and less costly. This adds up to a lot of savings over time and saved resources as well. An additional advantage is gained when the owner decides to sell since he or she may offer a building that is less costly to operate, and thus more attractive to potential buyers. As a rule, the environmental and economic benefits are greater when these ideas are included in the initial design and construction than when applied later as a retrofit.

Here is a real example from Amsterdam in the Netherlands. The ING Bank was completed in 1987 using a variety of green design ideas. ING placed emphasis on the quality of the interior spaces. The resulting building uses one-tenth the energy of their prior headquarters. Reduced utility bills paid back the \$700,000 additional construction cost for these features in only 4 months.¹⁰

So we're faced with the question of just how far we want to go with green design ideas.

Everyone has financial limits, so take a few ideas and incorporate them. It's an old principle: learn to crawl, then walk, then run. When we express our preferences in the market, change begins to occur. Each concern, every request for new products, slowly turns an enormous industry in a new direction.

Besides new construction, there's the possibility of retrofit or remodeling of an existing commercial structure. Existing buildings have an environmental advantage in that the energy needed to produce and transport materials is already invested. This is called embodied energy¹¹ and often puts reuse well ahead of new construction envi-

ronmentally. Changing the use of a building often makes renovation more complicated than building new. This is true of older buildings, but a growing trend in new structures is to design them with potential reuse in mind.

Some older structures lend themselves to remodeling better than others. For example, an old hotel may convert to apartments with a fair amount of ease. If it is determined that an existing building must be demolished, consider the possibility of recycling and salvaging materials. Finish items like windows, carved woodwork, art glass, hardwood floors, light fixtures, doors, wood casings, timbers, brick and stone are just a few candidates. Salvage dealers in many cities will pay for building parts they consider valuable. If you are working on a 19th or early 20th century structure, contact a salvage dealer and invite them to visit your site. Also, consider how the salvage material may be incorporated into the new construction.

CONSTRUCTION

After the designers prepare their documents, builders work to make what is shown on paper become reality. An enormous industry, construction is typically conservative and slow to change, relying on established methods for delivering a project. However, the customer's demands shape the marketplace.

There are three ideas forming the core of a green building "curriculum". First, educate the builder on why the owner and designer are focused on green building. Explain what you hope to accomplish: reduced energy bills, healthy indoor environment and saved resources.

Second, stress that craftsmanship is pivotal to success. This is particularly important in areas of the building such as the skin. Poor construction increases air infiltration and reduces energy efficiency.

Third, explain the benefits of careful materials ordering to reduce waste, obtaining products with returnable packaging and working for efficient use of materials on site.

Lastly, make it clear that you will make sure the builder has held up his end of the bargain. You should explain your understanding of the tools at your disposal as an owner to ensure the builder complies with your wishes. Such tools include mechanic's liens, inspection services, retention money and, if necessary, withholding payment.

Several aspects of construction deserve attention. For a new building, the specifications may require that the land only be cleared to the extent necessary for construction. Also, construction waste may be recycled. In Indiana at the moment, construction recycling is not mandated. Some materials can be recycled, but on-site pick-up is frequently unavailable and construction waste must be hauled to the recycler. Site preservation and material recycling increase cost in each case.

Additional principles for the construction phase include, in the case of existing structures, selective demolition, salvage of materials and salvage of building systems. Other possible approaches include site environmental remediation (clean up of an urban brownfield), how energy is supplied for site work and use of local materials.

OCCUPANCY

The building is finally done. With much anticipation, the owner or users move in. The longest phase in the life of a building begins. The owner's part of the process now begins.

An owner may easily support the environment during occupancy. At an introductory level, the use of benign cleaning and maintenance products based on natural ingredients is suggested. This harks back to the "Vote with your Money" principle. The time needed to locate and source benign cleaning and maintenance materials will pay off in a healthier indoor environment.

Another policy with environmental dividends is a program of preventive maintenance. The result of working regularly on the systems of a building allows the various devices and components to work at peak efficiency, saving money over time. Like careful design, the leverage from preventive maintenance maximizes the potential of the building systems, increases reliability and as a result, reduces energy costs. Preventive maintenance of the

air handling system, including replacement and cleaning of air filters, helps ensure good indoor air quality and keeps the indoor environment at its best.¹²

For many of us, when we think of going green, recycling is the classic response. Yet, there is another level of sophistication beyond recycling. This approach goes to the root of discussions about durability and what are normally disposable products, particularly in the area of packaging.

The idea is to stop recycling completely, but no trash leaves the building with this change of policy. What would happen is this: All packaging would be reused. Vending machines would disappear or be redesigned. Paper towels in the bathrooms become cloth. Utensils change from plastic to metal. Plates change from plastic and paper to ceramic. Some of this is relatively easy and simply suggests the elimination of particular amenities or changes of habit. Right now, to implement a total reuse policy is difficult. Success is possible though. Study patterns of use, staff habits, and purchasing policies. Make changes wherever possible. Discussing options with vendors and suppliers may yield significant improvements.

Another valuable strategy is to share knowledge with the community. This can happen in a number of ways. Collecting data on a building's performance is useful for the architects, engineers, tenants and owner. The feedback may be used to compare original program goals and benchmarks with real world performance. The information may be supplied informally through dialogue with the owner or via actual cost analysis. It is possible to measure a number of criteria including energy costs, water use, indoor environmental quality, absenteeism and productivity.

Lastly, publishing a written summary of an owner's experiences may be useful, perhaps annually. Buildings and their surroundings tend to change over time, experiencing improvements or decreases in performance. On a positive note, as shade trees grow energy cost should decline as a result of decreased cooling loads. Providing public tours to a range of ages, from students to adults, provides a real life example to the curious and skeptical alike. This opportunity coupled to written information, even in summary form, becomes a powerful tool.

CONCLUSION

So the question becomes: Where to start? For those contemplating a building, tell your design team that you want to use green design principles. Set some goals and move forward. There is yet time to make simple changes, followed by more aggressive steps as the opportunity arises. If a project is a once-in-a-lifetime undertaking, set aside time during design to explore how to get the most out of the design effort. If an average commercial or institutional building's life span is 50 years, and design takes a year, then use represents 98%, while design represents only 2%, of the life of a building. Making sensible choices to slow the human assault on the natural environment is difficult, partly through the way our society works and partly out of habit. We initiate change through our commitment to using this knowledge proactively with the understanding that not everything can be fixed all at once.

The time is ripe, however, to turn knowledge into action.

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 - 3 The Greening of Industry, Ken Geiser, Technology Review, pg. 70, August/September, 1991.
 - 4 Photovoltaics: Unlimited Electrical Energy From the Sun, Jack L. Stone, Physics Today, September, 1993.
 - 5 Global Wind Energy Market Report, <http://www.awea.org/faq/global99.html>, 1999.
 - 6 Vital Signs 1995: Compact Fluorescents Remain Strong, David Malin Roodman, Worldwatch Institute, pg. 58, 1995.
 - 7 On Using Local Materials, Nadav Malin, Environmental Building News, pg. 1, September/October 1995.
 - 8 Greenseal web page: see <http://www.greenseal.org/index.asp> under the section on Certification.
 - 9 Forest Stewardship Council http://www.web.apc.org/goodwood/goodwood_list/cert_agencies/fsc.html
Institute for Sustainable Forestry, Pacific Certified Ecological Forest Products
http://www.web.apc.org/goodwood/goodwood_list/cert_agencies/isf.html
Rainforest Alliance, Smart Wood certification http://www.web.apc.org/goodwood/goodwood_list/cert_agencies/rainfor.html
Rogue Institute for Ecology and Economy, Community Forestry certification
http://www.web.apc.org/goodwood/goodwood_list/cert_agencies/rogue.html
Scientific Certification Systems, Green Cross certification http://www.web.apc.org/goodwood/goodwood_list/cert_agencies/scs.html
SGS Forestry, SGS certification <http://www.sgs.co.uk/forestry.htm>

The Soil Association, Woodmark certificate of responsible forestry

http://www.web.apc.org/goodwood/goodwood_list/cert_agencies/soil.html

- 10 A Building Revolution: How Ecology and Health Concerns are Transforming Construction, David Malin Roodman and Nicholas Lennsen, Worldwatch Institute, pg. 17, 1995.
- 11 Embodied Energy-Just What Is It and Why Do We Care? Nadav Malin, Environmental Building News, pg. 8-9, May/June 1993.
- 12 Avoiding IAQ Problems, Alex Wilson and Nadav Malin, Environmental Building News, pg. 17, May/June 1996.

GREEN BUILDING RATING SYSTEM

INTRODUCTION

What follows is information for rating proposed building projects. Numerous rating systems exist. They boast differing levels of complexity and focus. With this particular system, we emphasized education and community outreach as central to the long-term goal of changing building practices and habits.

There are two graphics following this introduction. The first is an abstraction that shows the many “inputs” possible during each phase of work: design, construction and use. A project’s lifespan is illustrated beginning with design. This is arbitrary because the real beginning of a project is in the mind of the owner: they perceive the need for a building and move to act on the idea. The reason design is so powerful is that it consists of ideas, language, drawings, and creativity. Few material resources are used. Possibilities can be studied without the cost of actual construction. Computer modeling continues to improve this area of inquiry and leverage the design phase even more. Once we move into construction we are manipulating the material world, using energy, shaping the land, consuming resources and taking life from the world around us. The Worldwatch Institute estimates that construction can use more resources and create more pollution than 10 years of a building’s life.¹ Once the construction is finished, the third phase begins as the owner moves in and reaps the benefits. To continue to be of environmental value though, an ongoing commitment is necessary.

The second graphic illustrates the rating system. The lowest rating is 1-Star with actions required noted in each phase. The level of commitment rises to the highest possible rating of 4 Stars. In the 3- and 4-Star ratings, the education and community parts of the green building formula take center stage. This rating system is unique in that it includes all three phases in the life of a building, whether existing or new. You will see a column devoted to the design phase, a second column for construction and the last column for building use or occupancy. Each is critical. Also, the successful completion of each phase bolsters the success of the others. Quality design paves the way for the construction phase. Quality construction will ensure the goals of the design phase are met or exceeded. Finally, owner commitment to the green aspects of a building over its life offers a payback in lower costs, healthier people and a more valuable property. In addition, an interesting thing occurs in the process: when an owner commits to green building, communicating this desire to the designers closes the loop back to the design phase.

The number of rating systems continues to increase. In some ways, they are infamous for the uproar they can cause. It is difficult to fairly represent the normal complexity of making a building, tie that successfully to respecting the environment, then offer value in a meaningful way to the community. To that end, we have used a 4-tiered ranking for each phase. We encourage you to use the rating system as a tool for determining the amount of effort appropriate for your project.

Of the three phases, design, construction and use, different phase rankings are possible. For example, a project might have a 2-star design effort, 2-star construction phase and a 3-star use phase. We recommend seeking matching rankings across all three phases, but simultaneously accept the reality that different skills in different places at different times may not be able to accomplish this. An overall project rating is determined by the lowest of the three rankings. In the example above, the project would receive an overall rating of 2-stars.

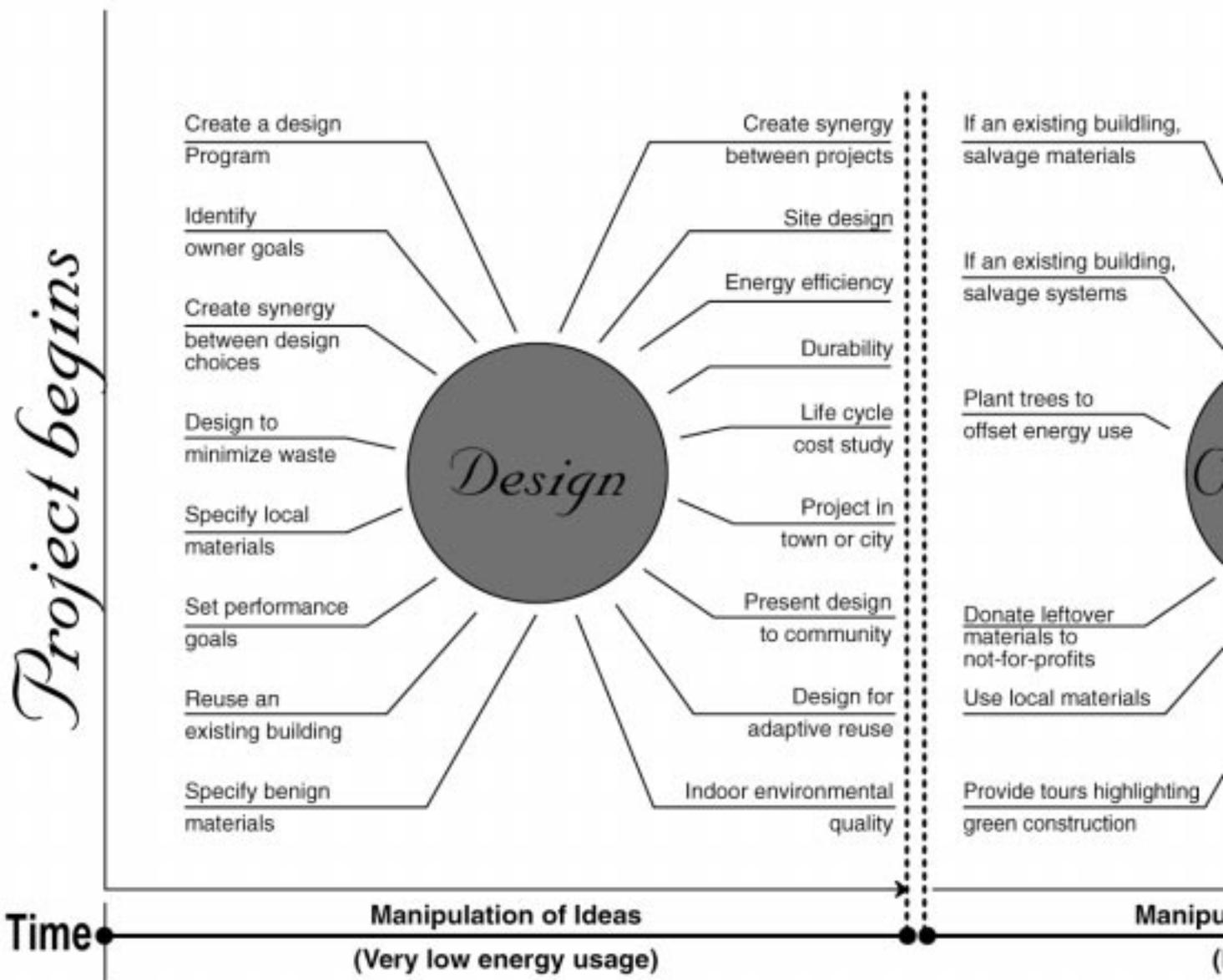
In an effort to encourage the use of green design thinking, the Wabash County Solid Waste Management District is prepared to discuss incentives for the adoption of green design features. If, in your review of this guideline, you determine to pursue the idea of a green building within the boundaries of the Wabash County Solid Waste Management District, please alert them of your intentions, then start a dialogue on the goals and potential incentives for your project. You will be expected to furnish documentation for review at the completion of each phase. The nature and extent of the documentation will be determined for each project individually by working directly with the Wabash County Solid Waste Management District. The review will confirm the rating applied to each phase of the project. The Wabash County Solid Waste Management District will determine incentives on a proj-

ect-by-project basis. This offering is available to Wabash County projects only.

The activities identified in the rating system do not cover every possibility. Our intention was to illustrate many useful ideas while avoiding a system that was cumbersome or overwhelming. As you use the rating system, new activities may emerge that enhance a project's environmental benefits. Owners, designers and builders are encouraged to submit new concepts for inclusion.

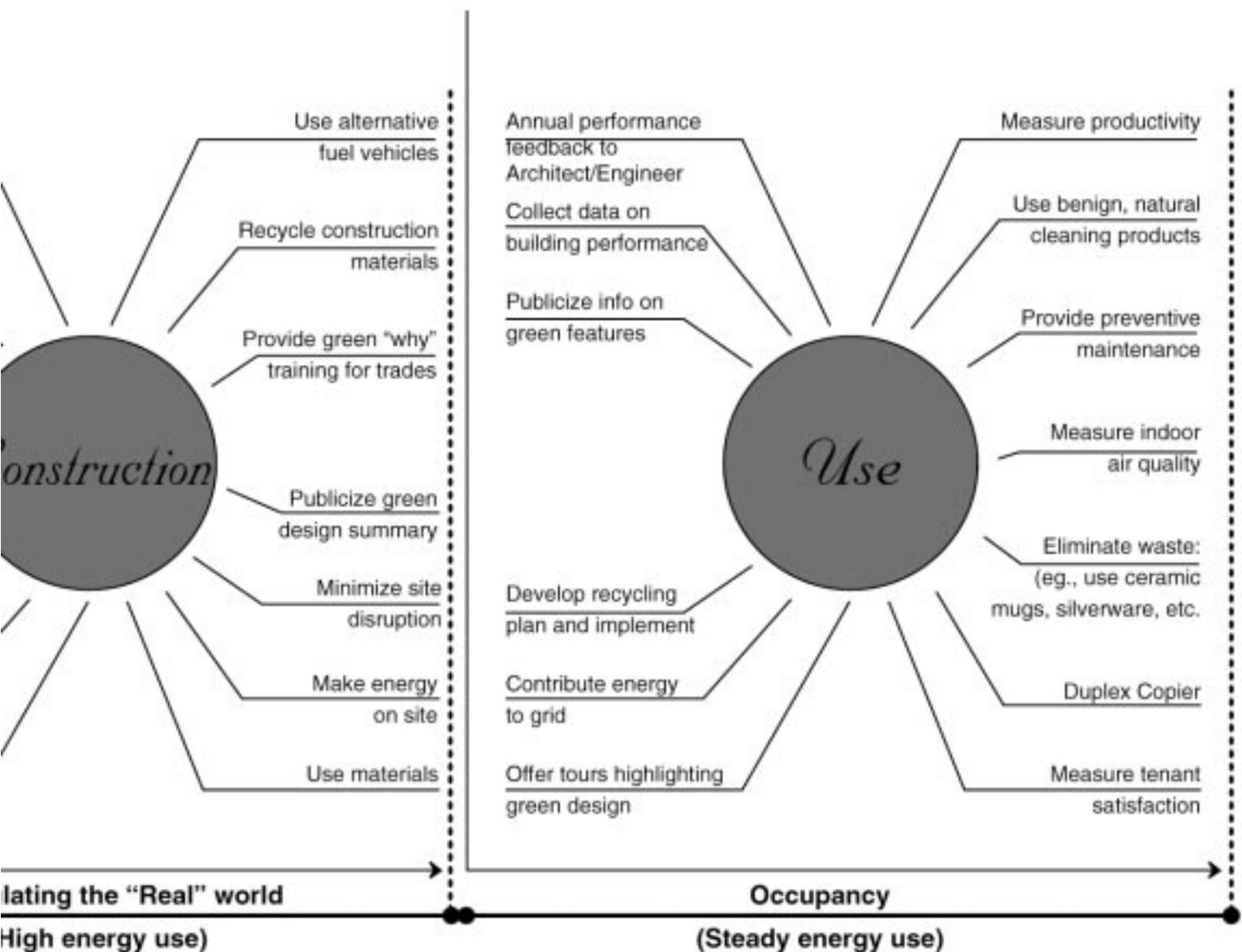
Gre

From Idea



Greening a Building Project

From Construction to Occupancy – An Illustration of Possibilities



•Note: Every activity may not be included in each phase.

Wabash Green Building

Rating	Design Responses	Construct
★ One Star	D1.1 Improve energy efficiency 10% over State code minimums. D1.2 Employ 1 water conserving strategy. D1.3 Design to construction module of 2 materials to minimize waste. For example, masonry and gypsum board, for 60% of spaces. D1.4 Specify 4 recycled content or resource efficient materials. D1.5 Specify at least 1 local material. ¹ D1.6 At least one person from design team attends a "Green Building" conference. D1.7 Participate in 1 public tour during construction or use to highlight green design.	C1.1 Provide C1.2 Recycle C1.3 Minimize perimeter C1.4 Use at le C1.5 If remodel C1.6 At least ("Building") C1.7 Provide work.
★★ Two Star	<p style="text-align: center;"><u>One star responses plus:</u></p> D2.1 Improve energy efficiency 20% over State code minimums. D2.2 Specify at least 2 materials or furnishings with reusable or returnable packaging. D2.3 Specify native plants in site design. D2.4 Employ 1 water conserving strategy. D2.5 Specify 4 recycled content or resource efficient materials. D2.6 Specify at least 2 local materials. ² D2.7 Specify trees to replace those removed during construction. D2.8 Participate in 1 public tour during construction or use to highlight green design.	<p style="text-align: center;"><u>One star</u></p> C2.1 Recycle C2.2 Employ p C2.3 Use at le C2.4 If rehab, C2.5 Provide work. C2.6 Plant tre
★★★ Three Star	<p style="text-align: center;"><u>Two star responses plus:</u></p> D3.1 Design allows future change of use ³ (in conjunction with Owner input). D3.2 Improve energy efficiency 30% over State code minimums. D3.3 Provide written description of green design principles and application to the Owner. D3.4 Specify 4 recycled content or resource efficient materials. D3.5 Participate in 1 public tour during construction or use to highlight green design.	<p style="text-align: center;"><u>Two star</u></p> C3.1 Write an C3.2 Use a m C3.3 Use phot or other C3.4 Use mini hybrid) o C3.5 Provide work.
★★★★ Four Star	<p style="text-align: center;"><u>Three star responses plus:</u></p> D4.1 Reuse an existing building or plant trees to offset materials and energy of building shell and floor(s). D4.2 Improve energy efficiency 40% over State code minimums. D4.3 Participate in 3 community education tours during construction and use. D4.4 Plant 1 tree within every 1,800 s.f. of paving area.	<p style="text-align: center;"><u>Three st</u></p> C4.1 Public to construct C4.2 Use mini hybrid) o C4.3 Restore C4.4 Donate l

Notes: See following page for specific conservation strategies.

Rating System Footnotes

¹If a local material is unavailable, substitute by adding at least one material from D1.3 or D1.4.

²If a local material is unavailable, substitute by adding any combination of 1.3, 1.4 and/or 2.3.

³Change of use: a new use in the same structure. For example, converting apartments into a hotel.

⁴If local materials are/or become unavailable, this requirement under Construction Activity may be set aside.

⁵If a material from the site is unavailable or unsuitable for use in construction, this requirement may be set aside.

Guidelines: Rating System

Construction Activity	Use/Owner Responses	
<p>Green design education for building trades. At least 3 construction waste materials or reuse. Minimal disruption of site to access, staging, excavated area and of building. At least 1 local material.⁴ Sorting, identify and recycle 1 material. One person from the construction team attends a "Green conference." Provide 1 public tour highlighting green design and construction</p>	<p>U1.1 Use benign natural cleaning products. U1.2 Recycle minimum 3 "everyday" materials (e.g.: glass, plastic, paper). U1.3 Direct designer to pursue green design approach. U1.4 Purchase recycled content supplies such as glass, plastic, paper. U1.5 Attend one "Green Building" seminar. U1.6 Provide 1 public tour highlighting green features.</p>	
<p>One star responses plus: At least 3 construction materials. Photovoltaic array to generate some energy on site. At least 2 local materials.⁴ Salvage at least 2 materials. Provide 1 public tour highlighting green design and construction trees, on or off site, to replace trees removed by construction.</p>	<p>One star responses plus: U2.1 Institute building preventive maintenance program. U2.2 Recycle 2 materials (e.g.: steel, aluminum, printer toner cartridges). U2.3 Direct designer to specify tree planting, on or off site, to replace trees removed by construction. U2.4 Provide 1 public tour highlighting green features. U2.5 Direct designer to specify sustainably grown wood.</p>	
<p>Two star responses plus: Publicize a "green construction" summary for the project. Material from the site in construction.⁵ Photovoltaic array to charge cordless tools, run arrow-boards devices on site. Minimum of (3). Minimum 1 alternative fuel vehicle (natural gas, electric or on site). Provide 1 public tour highlighting green design and construction</p>	<p>Two star responses plus: U3.1 Collect data on building performance. U3.2 Provide yearly feedback to design team on building performance for minimum 3 years. U3.3 Provide written and/or video documenting green features for publication. U3.4 Provide 1 public tour highlighting green design and construction work</p>	
<p>Three star responses plus: Tours (minimum 3) highlighting green design and construction work. Minimum 3 alternative fuel vehicles (natural gas, electric, on site). Minimal site disruption at construction completion. Shift over construction materials to not-for-profits.</p>	<p>Three star responses plus: U4.1 Provide minimum 3 tours over 3 years. U4.2 Develop employee "waste minimization" education plan. U4.3 Provide reusable supplies, accessories and kitchen items. Minimum "waste" leaves the facility. U4.4 Compost food waste for employee or public use, on or off site.</p>	

CONSERVATION STRATEGIES

WASTE REDUCTION STRATEGIES

- ☛ Work to design spaces that use standard sizes or modules of building materials. This reduces on site cutting and waste during construction.
- ☛ Choose products with a minimum of packaging.
- ☛ Choose products with reusable packaging.
- ☛ Design dedicated space(s) for recycling.
- ☛ Design to allow for future reuse.
- ☛ Specify salvage of materials as appropriate in existing structures.
- ☛ Study possible use of “soft demolition” to salvage materials from existing assemblies.
- ☛ Specify building products containing recycled materials and easily recyclable materials.

ENERGY CONSERVING STRATEGIES

- ☛ Design to encompass renewable energy sources; sun, wind, the earth’s thermal energy, running water if available.
- ☛ Take advantage of natural lighting through building orientation and placement of windows.
- ☛ Save on energy costs by designing a well insulated, tight building envelope.
- ☛ Specify energy efficient lighting, appliances and mechanical ventilation systems.
- ☛ Design site landscaping to augment and improve the energy efficiency of the building.
- ☛ Specify, where possible, local building materials and products.

WATER CONSERVING STRATEGIES

- ☛ Employ water conserving fixtures and appliances.
- ☛ Design a water efficient/drought tolerant landscape using native plants, shrubs and trees.
- ☛ If site watering is required, use an efficient irrigation system with rain sensors.
- ☛ Collect rainwater for irrigation or building use as technology and codes allow.
- ☛ Design the site to keep water on the property.

GREEN BUILDING RESOURCES

Within the following pages are a myriad of resources on green building design and construction. A diverse selection of media is presented—books, software and websites, to name a few—covering the wide spectrum of information sources.

The selections presented here offer various levels of understanding; for the individual being introduced for the first time to the concept of Green Design, to the design professional needing up-to-date technical information. After the title of each entry, you will note a number of asterisks; one * indicates a general introduction on a topic, two ** indicates a mid-level understanding, and three *** indicates a more technical and complex approach within the reading material. Our key is based on the summaries given by each resource. We have not reviewed all the materials listed in detail due to the extensive writing in the area now. Annotations and/or reviews are taken from the following sources: Environmental Building News (EBN), American Institute of Architects Committee on the Environment (AIA/COTE), Amazon.com (Amazon), or oikos.com (oikos) and are referenced accordingly. Uncredited reviews were contributed by CSO Architects Engineers & Interiors personnel.

The resources are categorized by broad topic classifications:

General	25
Building Materials	33
Indoor Environment	36
Energy Conservation	37
Solar Design	39
Site and Landscape Design	40
Land Use and Community Planning	42
Internet Resources (may encompass any or all of the above topics)	45

Within each topic, a variety of media is presented: books, directories, periodicals, videos, audio-cassettes, and software.

It seems almost every day new resources can be added. For this document, we have extracted information from up-to-date sources, which we know to be currently in print and available. Generally, we selected only from resources published in the past couple of years, as technology and new products emerge rapidly. However, in some cases, we have listed resources that are considered “classics”, or have had such an impact on the issue of green design that their inclusion seemed essential.

GENERAL – BOOKS

Architecture and the Environment: Bioclimatic Building Design **

Author: David Lloyd Jones

(August 1998) Overlook Press

This book begins by placing the green building movement in historical context. It is a distinguished international survey of the most striking contemporary architecture built to “green”, environmentally sound guidelines. David Lloyd Jones examines fifty buildings, explaining how they all respond to the need to achieve harmony with their settings, to conserve energy, and to provide for the health and well being of their occupants. He reveals how environmental and energy conserving resources should be intrinsic considerations in the design of any building. (amazon.com)

Audubon House: Building the Environmentally Responsible, Energy-Efficient Office **

Authors: Architects Staff Croxton Collaborative

(March 1994) John Wiley & Sons

The behind-the-scenes story of the construction of one of the world’s most environmentally sound buildings in the heart of New York City, the headquarters of the Audubon Society. Providing a model that can be followed by owners, developers, architects, and building professionals, this book demonstrates how environmental criteria, such as sustainable use of resources, energy efficiency, and air quality can be achieved without sacrificing traditional considerations of cost, functionality, and aesthetics. (amazon.com)

The Building Commissioning Handbook ***

Author: John Heinz, P.E.

(1996) APPA Publications

An excellent, clear introduction to this complex topic. Detailed appendices include guideline specifications for adding commissioning to the standard CSI 16 divisions, and for creating a new Division 17 to specify a commissioning process. (EBN)

A Building Revolution: How Ecology and Health Concerns are Transforming Construction *

Authors: David Malin Roodman, Nicholas Lenssen

(1995) Worldwatch Institute

In the tradition of high-quality Worldwatch reports, a good summary of the green building movement and the issues it addresses. (EBN)

Buildings for a Sustainable America: Case Studies **

Author: Burke Miller Thayer

(1995) American Solar Energy Society

Booklet of reprints from Solar Today Magazine, with case studies of significant green buildings. (EBN)

Citizens’ Guide to Environmental Tax Shifting For a Cleaner Environment, Stronger Economy, Fairer Tax Code **

Authors: Hanno Beck, Brian Dunkiel

(1998) Friends of the Earth

A small handbook with lots of leads and ideas from the forefront of the movement towards taxes that make sense. (EBN)

Deep Design: Pathways to a Livable Future **

Author: David Wann

(1996) Island Press

This thought-provoking book (by an EPA analyst) considers the big picture and how we could fundamentally redesign industry, agriculture, communities, and buildings within an ecological framework. Includes enough specific examples to provide a solid grounding. (EBN)

Designing with Nature: The Ecological Basis for Architectural Design *

Author: Ken Yeang

(May 1995) McGrawHill

This timely and incisive book offers the first truly comprehensive framework for designing buildings that work with nature. Presenting a compelling case for ecological design, it provides architects and designers with a full understanding of the impact that their built works have on the natural environment, as well as what can be done to mitigate the damage to a building site and its natural resources. (amazon.com)

Ecological Design **

Authors: Sim VanDerRyn, Stuart Cowan

(1996) Island Press

Thoughtful and accessible discussion of the theory and practice of ecological design based on the authors' five principles. (EBN)

The Ecology of Architecture: A Complete Guide to Creating the Environmentally Conscious Building *

Author: Laura C. Zeiher

(1996) Watson-Guption Publications

A broad overview of the field, with nice case studies and designer profiles. Quite weak on the scientific and technical side. (EBN)

Environmental Design Charrette Workbook **

(1996) AIA (call 1-888-272-4115; order #W769)

This resource provides a first step in acting locally while thinking globally to fit environmental problems with real design solutions. Summaries highlight intensive design workshops dealing with energy conservation, building prevention and resource reclamation, as well as planning and cultural issues. (AIA/COTE)

Environmental and Economic Balance Technical Papers **

(1997) AIA (call 1-888-272-4115; order #W852)

A terrific self-study opportunity, with processes and case studies, of the "Environmental and Economic Balance: The 21st Century Outlook" conference cosponsored with the US Green Building Council and the US Department of Energy. Papers cover these five key areas: building performance and design; human habitat: housing and sustainability; indoor ecology: energy, health, and productivity; materials and recycling; regional and urban design: planning and land use. This is also available on CD-ROM (#W842) and Audio/Video Tapes (call 1-800-642-2287; #IA0297B). (AIA/COTE)

Global Symposium on Sustainable Environments **

(1995) AIA (call 1-800-365-2724; order #W168)

Five distinct aspects of sustainability – the home, city, building industry, natural resources, and the future – are discussed by leading representatives from a broad spectrum of disciplines. (AIA/COTE)

Greening Federal Facilities: An Energy, Environmental, and Economic Resource Guide for Federal Facility Managers **

Author: Sustainable Systems, Inc.

(1997) US DOE, National Technical Info. Service

A readable, concise guide to strategies that building managers can use to improve energy and environ-

mental performance. Contains hundreds of very specific strategies of use to managers of any large building. Also available on-line; see Internet Resource section. (EBN)

Greening the Built Environment*

Author: Maf Smith, John Whitelegg, Nick Williams

(1998) Earthscan Publications

A broad overview of environmental indicators relating to building, land use, and infrastructure, and suggested solutions. (EBN)

Guiding Principles of Sustainable Design *

(1993) National Park Service Technical Information Center

Written for national park facilities, but a great resource for designers of any buildings. Lots of information in a friendly, graphic style. The complete book is also available on the Web at www.nps.gov/dsc/dsgncnstr/gpsd. (EBN)

How Buildings Learn: What Happens after They're Built **

Author: Stewart Brand

(1994) Viking

Fascinating study of how buildings evolve or disintegrate after they're "finished", and how to design for their ongoing evolution. (EBN)

Lessons Learned Four Times Square: An environmental information and resource guide for the commercial real estate industry **

Author: Pamela T. Lippe

(1997) Earth Day New York

Magazine-format report (with ads) contains personal environmental statements from key players in this landmark project, insights into green design of skyscrapers, and other useful articles. (EBN)

Mid-Course Correction: Toward a Sustainable Enterprise: The Interface Model **

Author: Ray C. Anderson

(1998) The Peregrinzilla Press

This book is a remarkable personal account of a CEO's mission to transform his company – a large carpet manufacturer – into a model of sustainability. It describes sustainability principles from The Natural Step, Paul Hawken, Bill McDonough, and others. (EBN)

Our Ecological Footprint: Reducing Human Impact on the Earth **

Author: Mathis Wackernagel, William Rees

(1996) New Society Publishers

An exciting new perspective on ecological impacts, measuring them in terms of productive land area consumed rather than abstract ecopoints or controversial dollars. (EBN)

A Primer on Sustainable Building *

Author: Dianna Lopez Barnett, William D. Browning

(1995) Rocky Mountain Institute

An excellent overview and introduction to the concepts and issues of green building. (EBN)

Regenerative Design for Sustainable Development **

Author: John Tillman Lyle

(1994) John Wiley & Sons

A practical guide to the theory, design and construction of regenerative systems as the building blocks of a sustainable culture. Many systems have been implemented at the Center for Regenerative Studies at Cal Poly-Pomona. (EBN)

Reshaping the Built Environment: Ecology, Ethics, and Economics ****Editor: Charles Kibert****(1999) Island Press**

This resource is a sustainable design lecture series in book form. Dr. Charles Kibert invited an impressive slate of speakers to participate in the Rinker Eminent Scholar Series, and each speaker contributed his or her material as a chapter. The resulting book of detailed investigations covers many of the key construction issues. (EBN)

The Smart Office: Turning Your Company on Its Head ***Author: A.K. Townsend****(1997) Gila Press**

This book is an excellent starting point for greening a workplace, with extensive listing and references. (EBN)

Sustainable Architecture: Principles, Paradigms, and Case Studies ****Author: James Steele****(1997) McGraw-Hill Publications**

A good perspective on environmentally informed design as it fits into trends and movements in architecture, and some nice examples of climate-responsive design. (EBN)

Sustainable Building Technical Manual: Green Building Design, Construction, and Operations ****Author: David Gottfried, Annette Osso****(1996) Public Technology Inc.**

A good overview of green design topics in 25 chapters written by industry experts. Little in the way of specific, technical information. (EBN)

Sustainable Design Guide ****Author: Sandra Mendler, AIA****(1998) Hellmuth, Obata & Kassabaum**

A rich handbook of design strategies, guidelines, and resources organized in various formats. Most notable is the checklist of strategies by design phase, which is very detailed. (EBN)

The Technology of Ecological Building: Basic Principles and Measures, Examples and Ideas *****Author: Klaus Daniels****(1997) Birkhauser/Princeton Arch press**

Attractive, large format book uses B&W photos, graphs and charts to illustrate the many engineering principles behind the design of energy-efficient building, with an emphasis on high rise buildings and glass facades. Uses, examples and experience from Western Europe (translated from German). (EBN)

Victor Papanek: The Green Imperative, Ecology and Ethics in Design and Architecture ****Author: Victor Papanek****(1995) Thames & Hudson, London**

In this book, Victor Papanek researches and interprets problems of modern design and architecture in the light of ecological principles and environmental protection. Those problems are largely similar throughout the world despite great differences in natural environment and social order. Design ethics and purpose help find the path to harmonious living in the surrounding environment. The author especially emphasizes the importance of the purpose of design, the consciousness and ethics of the designer, whose goal should be to satisfy needs, not greed. He concludes that everyone – from leading designers to end users must contribute to the welfare of mankind and the preservation of the environment through a new

approach to design and technologies, using approaches that will focus on meaning and purpose, not only on form and function. (EBN)

GENERAL DIRECTORIES

Construction Resources: A Waste Reduction and Recycling Guide for Wisconsin Builders and Contractors **

Author: Sherrie Gruder

(1997) University of Wisconsin-Extension Solid and Hazardous Waste Education Center

This is a concise, very organized and practical guide for building professionals. Examples and case studies clarify the process of waste reduction and recycling. Helpful is a listing of companies/locations that take recyclable materials, although it is only relevant to the Wisconsin area. Designers and architects should refer to this guide as a resource to initiate waste reduction and recycling specifications in their construction projects.

Environmental Resource Guide ***

Editor: Joseph Demkin

(1997) John Wiley & Sons

A collection of detailed material assessments based on a modified life-cycle assessment methodology. Also includes application reports comparing groups of materials, and case studies of green building projects. (EBN)

European Directory of Sustainable and Energy Efficient Building 1999**

Author: James & James Ltd.

Books International

An annual paperback with a collection of articles on topics ranging from material choices to solar applications to low-energy cooling, followed by a directory of over 3,000 companies active in these fields. The directory is also available online. See Internet Resources section. (EBN)

GENERAL – PERIODICALS

Advanced Buildings Newsletter **

Author: Nils Larson

The Royal Architectural Institute of Canada

News from the field and case studies of energy-efficient and otherwise green commercial buildings in Canada. (EBN)

Building for a Future **

Author: Keith Hall

Association for Environment-Conscious Building

Friendly, non-technical magazine on environmentally friendly building in the U.K. Includes case studies, news and reviews. (EBN)

Designer/Builder: A Journal of the Human Environment *

Editor: Jerilou Hammett

Fine Additions, Inc.

A thoughtful, provocative look at buildings, communities, and how they are made from a social and environmental perspective. (EBN)

Environmental Design and Construction ****Author: John Sailer****Environmental Design & Construction**

High-quality trade magazine with useful articles on all aspects of environmentally responsible design and construction. Distributed free to qualified subscribers. Supported by advertising. Also available on the Internet at www.edcmag.com. (EBN)

Environment Design Guide****Royal Australian Institute of Architects**

High-quality, concise reports, case studies, and news updates from Australia on green design, written by experts in the field. (EBN)

Environmental Building News: A Monthly Newsletter on Environmentally Sustainable Design and Construction ****Authors: Alex Wilson, Nadav Malin****E Build, Inc.**

News, reviews and feature articles on all aspects of environmentally sustainable design and construction. Discounted, \$67/yr. Rate available for individuals and companies with fewer than 25 employees. (EBN)

Greenclips Environmental Journal ****Editor: Christine Hammer****Biweekly Newsletter**

This one-page digital summary is published every two weeks. It has a special focus on sustainable design for buildings (green architecture) and related government and business issues. Subscribe to Greenclips by email or search the archives on-line at solstice.crest.org/sustainable/greenclips-info.html. (EBN)

GENERAL – VIDEOS

Building Connections Video Teleconference Series ****(1993) AIA (call 1-202-626-7495)**

Videos featuring panel discussions given by expert architects, engineers, planners, and developers, as well as demonstrations of practice tools and techniques through innovative building and community case studies. The tapes emphasize integrated, multi-disciplinary approaches to projects and holistic, life-cycle design. Topic 1: Energy & Resource Efficiencies; Topic 2: Healthy Buildings and Materials; Topic 3: Sustainable communities; Topic 4: Case Studies in Environmentally Responsible Design. (AIA/COTE)

The Story of Pennsylvania's First Green Building: DEP South Central Office Building ****Video, 28 minutes. Produced by the Environmental Fund of Pennsylvania for the "GreenWorks for Pennsylvania" television show. Available free from:****The Pennsylvania Department of Environmental Protection****P.O. Box 2063****Harrisburg, PA 17105****717/787-4190 (www.dep.state.pa.us)**

This new video tells the story of creating the new South Central Office Building in Pennsylvania, a privately owned, 73,000 square foot (6,800 m²) office building leased by the Commonwealth of Pennsylvania for the Department of Environmental Protection. In many respects this is a remarkable building, but what is perhaps most noteworthy is the extent to which the state government of Pennsylvania has made this building a learning tool, as told in this video. (EBN)

Building Green, Audubon House ***By Claude Beller****National Audubon Society**

A fast-moving, high-quality video aimed at the general public. Succinctly spells out the problems with conventional buildings and presents the case for a different approach. (EBN)

Ecological Design: Inventing the Future ***By Brian Dantz, Chris Zelov****Ecological Design Project**

This hour-long video explores the evolution of environmentally aware design. Through interviews with a great many pioneers and theorists, and footage of their work, the film outlines the evolution from a mechanistic model of building and system design to one rooted in natural systems. (EBN)

GENERAL – SOFTWARE***E Build Library: Environmental Building News on CD-ROM *******Authors: Alex Wilson, Nadav Malin****E Build, Inc.**

All back issues of EBN through the end of the previous year, full text searching and a hot-linked conventional index. Includes a product directory, bibliography, and other features. (EBN)

Green Building Advisor ****1999 CD-ROM****E Build, Inc.****Order from CREST**

A user friendly software tool that draws from a database of over 700 green building strategies to provide customized green building checklists for specific projects. Each item on the list is linked to detailed explanations; in-depth, illustrated case studies; and sources of further information. (EBN)

Greening of The White House**(1995) AIA (call 1-888-272-4115; order #W751)**

In CD-ROM format, a series of environmental upgrades occurring at The White House complex are documented, as well as a wealth of general information on energy and environmental topics from dozens of sources. (AIA/COTE)

GENERAL – AUDIO CASSETTE TAPES***Architecture at the Crossroads: Designing for a Sustainable Future *******(1993) ACTs, Inc. (call 1-800-642-2287; order #IA9300)**

The World Congress of Architects, cosponsored with the International Union of Architects and the AIA, documents presentations and discussions on Creating Sustainable Communities, Working Toward a Sustainable Future, Environmental Leadership: A Global Perspective, Designing for Biodiversity, and many more. 55 tapes. (AIA/COTE)

GENERAL – ANNUAL CONFERENCES***EnvironDesign***

Annual conference exploring environmental initiatives in the areas of interior design, architecture and building development.

EnvironDesign
666 Dundee Rd., Ste. 807
Northbrook, IL 60062-7913
Tel: 847-498-9880
Fax: 847-498-9299
www.environdesign.com

BUILDING MATERIALS – BOOKS

Building Materials Energy and the Environment: Toward Ecologically Sustainable Development
**

Author: Bill Lawson

(1996) Royal Australian Institute of Architects

An excellent summary of environmental life-cycle impacts, such as embodied energy, for a range of common building materials and assemblies in the Australian context. Also includes some case studies. (EBN)

Buildings of Earth and Straw: Structural Design for Rammed Earth and Straw Bale Architecture ***

Author: Bruce King

(1996) Ecological Design Press

Offers a basic introduction to structural engineering, and then explains how these principles can be applied to earth and straw buildings, with heavy emphasis on seismic considerations. (EBN)

Ecoforestry: The Art and Science of Sustainable Forest Use **

Editors: Alan Drengson, Duncan Taylor

(1997) New Society Publishers

A large collection of essays by many leading figures on the alternatives to industrial, extraction-focused forestry. This collection tends toward the macro scale issues, with another volume on specific management practices promised. (EBN)

Environmental Resource Guide **

Editor: Joseph Demkin

(Annual) John Wiley & Sons

A collection of detailed material assessments based on a modified life-cycle assessment methodology. EBN editors contributed the application reports, which compare groups of materials. Includes useful case studies of green building projects. (EBN)

Green Building Materials: A Guide to Product Selection and Specification (Wiley Series in Sustainable Design) **

Authors: Ross Spiegel, Dru Meadows

(August 1999) John Wiley & Sons

Architectural interest in green design continues to grow. Now this book makes it easier for designers to require environmentally-friendly building materials, with guidance on what green material are, where they are available, and how they can be specified cost-effectively. (amazon.com)

Resourceful Specifications: Guideline Specifications for Environmentally Considered Building Materials & Construction Methods **

Author: Larry Strain

(1997) Siegel & Strain Architects

This document provides guideline specs for each material category, not model specs for particular products. An excellent resource. (EBN)

WasteSpec: Model Specifications for Construction Waste Reduction, Reuse, and Recycling****Author: Judith Kincaid, Cheryl Walker, Greg Flynn****(1995) Triangle J Council of Governments**

Guideline specifications done with great thoroughness and care. A must-have for anyone specifying job-site recycling. (EBN)

Environmental Building News Product Catalog ****Editors: Doug Patterson, Valerie Walsh****(Annual) E Build, Inc.**

A uniquely useful new resource, this 3-ring binder contains manufacturers' literature and product information sheets on green building materials. (EBN)

BUILDING MATERIALS – DIRECTORIES

1996 Good Wood Directory ****Certified Forest Products Council**

The annual "Good Wood List" that was published by WARP and then by the Good Wood Alliance keeps getting better. The most complete list we know of for certified forests, wood products manufacturers, and distributors. Updated annually. (EBN)

Architectural Resource Guide: A Listing Of Building Products And Services ****Editor: David Kibbey****Northern California ADPSR**

A green building products directory in CSI format with about 900 listings, weighted towards the Northern California region. (EBN)

Environmental Building News Product Catalog ****Editors: Doug Patterson, Valerie Walsh****(Annual) E Build, Inc.**

A uniquely useful new resource, this 3-ring binder contains manufacturers' literature and product information sheets on green building materials. (EBN)

GREENSPEC: Specifications for Environmental Sustainability ****1996 Product Directory****Kalin Associates**

A green building products directory in the CSI 16-division format, with model specification language for each product. Not the most comprehensive listing, but the ready-to-go language should be quite useful to spec writers. (EBN)

Guide to Resource Efficient Building Elements, 6th Edition ****By Tracy Mumma****(1997) Center for resourceful Building Technology**

The original listing of resource-efficient building materials, and the one with the most detail on each product. Especially strong in the area of alternatives to conventional wood products. Updated annually. (EBN)

NFRC Certified Products Directory, 6th Edition ****1996 Product Directory****NFRC Incorporated**

This comprehensive listing from the National Fenestration Rating Council lists over 30,000 windows and doors. Current product listings identify the frame material, describe the glazing system and list the U-value. Some now include solar heat gain data. (EBN)

REDI Guide: Resources for Environmental Design Index ****(1998) Iris Communications, Inc.**

Database in print or on diskette for either Macintosh or IBM-compatible computers. Extensive listings, updated quarterly. Listings from REDI are also accessible at no charge online at www.oikos.com. (EBN)

The Resource Guide to Sustainable Landscapes and Gardens, – 3rd Edition ****Author: Wesley A. Groesbeck, Jan Striefel****(1996) Environmental Resources, Inc.**

Huge list of resource-efficient products, primarily for landscaping, in the CSI 16-division format. (EBN)

Woods of the World ****(1996) Tree-Talk, Inc.**

A large computer database on CD-ROM with photos and data on hundreds of species of wood, designed to encourage the use of lesser-known species. (EBN)

BUILDING MATERIALS – PERIODICALS***Understory: Sustainable Developments from the World of Wood *******Editor: Scott Landis****Quarterly Newsletter****Certified Forest Products Council**

Interesting articles, and a good way to keep up to speed with the work of this innovative group. (EBN)

Choose Green Report ****Editor: E. Jay Murphy****Monthly Paperback****Green Seal**

Monthly reports designed to help us make environmentally sound purchasing decisions. Each report covers a specific product area, such as cleaners, indoor lighting, office furniture, or paper towels. (EBN)

BUILDING MATERIALS – SOFTWARE***GreenPro 98 (CD-ROM) *******Association for Environment-Conscious Building**

Building products database on CD-ROM for Windows™ 3.1 or later. (EBN)

INDOOR ENVIRONMENT – BOOKS***Building Materials for the Environmentally Hypersensitive*******(1995) Canada Mortgage and Housing Corporation**

No hard data, but lots of useful general information on materials that can be used to create healthier buildings. Includes reference to some specific products, although coverage of materials is primarily generic. Currently the best resource available on the topic. (EBN)

Common-Sense Pest Control: Least-Toxic Solutions For Your Home, Garden, Pets And Community **

Authors: William Olkowski, Sheila Daar, Helga Oklowski

(1991) The Taunton Press

Excellent reference on low-toxic pest control. Includes discussion of chemical controls, but emphasizes non-toxic alternatives. Very comprehensive (715 pages) and balanced. (EBN)

The Healthy School Handbook: Conquering The Sick Building Syndrome And Other Environmental Hazards In And Around Your School **

Editor: Norma L. Millar

(1995) National Education Association

A comprehensive overview of sick building syndrome in schools, the potential sources of the problem, and some possible solutions. A long list of experts each contributed chapters. In some instances leans too much on soft science, but a valuable reference nonetheless. (EBN)

Indoor Air Quality and HVAC Systems **

Author: David W. Bearg

(1993) Lewis Publishers/CRC Press, Inc.

Comprehensive discussion of the relationship between HVAC equipment and indoor air quality in large buildings.(EBN)

INDOOR ENVIRONMENT – PERIODICALS

EnvironDesign Journal **

Supplement to Interiors & Sources

Bi-Annual magazine

This is primarily a listing of various products that claim to have environmentally responsible features. Many of the advertisements throughout are geared toward interior design.

Green Office **

Monthly magazine

This magazine is fairly light on real core environmental issues, but some interesting environmental tidbits are included, making it worth the short amount of time it takes to flip through the pages. Some advertisements are not relative to green design at all.

IEQ Strategies **

Editor: Carlton Vogt

Monthly Newsletter

Cutter Information Corporation

Pricey, but packed with news and information relating to indoor air quality. (EBN)

Indoor Air Bulletin: Technology, Research, and News For Indoor Environmental Quality ***

Editor: Hal Levin

Monthly Newsletter

Indoor Air Information Service, Inc.

This technical newsletter on IAQ in commercial buildings will help architects keep up with the science behind IAQ issues. (EBN)

Interior Concerns **

Editor: Victoria Schomer

www.numenet.com/intconc or www.interiorconcerns.org

Newsletter is committed to sharing information on sustainable design and building issues. Most of the information is geared toward interior designers.

ENERGY CONSERVATION/ENERGY EFFICIENCY – BOOKS

Climatic Building Design: Energy-Efficient Building Principles and Practices **

Author: Donald Watson, FAIA, Kenneth Labs

(1992) McGraw-Hill Publications

One of the classics on energy-efficient and climate-responsive design. (EBN)

Climate Considerations in Building and Urban Design **

Author: Baruch Givoni

(1998) John Wiley & Sons

Not a perfect book, but it serves a valuable purpose in promoting simple design approaches, rather than energy-intensive mechanical systems, for making buildings comfortable. The technical, quantitative approach lends credence to concepts that might otherwise be discounted. (EBN)

Energy-Efficient Design and Construction for Commercial Buildings ***

Author: Adrian Tuluca

(1996) McGraw-Hill Publications

Initially developed as a manual, this book contains a lot of useful information, but the format is a little stiff. Energy-efficiency technologies and strategies are described on a component-by-component basis. (EBN)

From Eco-Cities to Living Machines: Principles of Ecological Design:**

Author: Nancy Jack Todd, John Todd

(1994) North Atlantic Books

An updated version presenting the authors' tremendous vision and creativity for the redesign of human systems to work in harmony with nature. (EBN)

Glazing Design: Handbook for Energy Efficiency ***

Author: Gregory Franta, Kristine Anstead, Gregg D. Ander

(1997) American Institute of Architects Press

A concise yet comprehensive introduction to glass and lowe coatings for architects and engineers. (EBN)

Moisture Control Handbook ***

Author: Joe Lstiburek, John Carmody

(1993) Van Nostrand Reinhold

The "bible" for technical information on moisture control in buildings. Design information is presented for major climate areas of the U.S. (EBN)

A Place in the Sun: The Evolution of the Real Goods Solar Living Center **

Author: John Schaeffer

(1997) Chelsea Green Publishing Company

Both unabashedly self-promotional and wonderfully candid, an account of how this remarkable project came together. Includes chapters by many of the key players, describing their own creative process. (EBN)

ENERGY CONSERVATION/ENERGY EFFICIENCY – DIRECTORIES

1997 Energy Products Directory: The Sourcebook for Commercial Buildings, 3rd Edition **

1996 Product Directory

Cutter Information Corp.

Extensive listing of products for conserving energy in commercial buildings, and the companies that sell them. (EBN)

ENERGY CONSERVATION/ENERGY EFFICIENCY – PERIODICALS

Energy Conservation News **

Editor: Kevin Gainer

Monthly Newsletter, Business Communications, Inc.

A thorough digest of news concerning energy efficiency and conservation technologies and programs. Addresses both commercial and residential construction and building operations, in addition to other industries. (EBN)

ENERGY CONSERVATION/ENERGY EFFICIENCY – SOFTWARE

Energy-10: Building Design Assistance Software ***

Passive Solar Industries Council

Energy-10 integrates daylighting, passive solar heating, and low-energy cooling strategies with energy-efficient envelope design and mechanical equipment, allowing detailed simulation and performance analysis. This analysis software brings energy issues into all phases of the design process. Ideal building types for Energy-10 analysis include schools, libraries, offices, and residential buildings. (EBN)

SOLAR/DAYLIGHTING/PASSIVE COOLING – BOOKS

Cooling Our Communities: A Guidebook on Tree Planting and Light-Colored Surfacing ***

Author: Hashem Akbari et al.

(1992) U.S. Superintendent of Documents

Argues that planting trees and increasing the reflectivity of rooftops can dramatically reduce urban energy use. Lots of practical information, references, economics, and water use data. Includes sample ordinance to promote wise practices. (EBN)

Passive and Low Energy Cooling of Buildings ***

Author: Baruch Givoni

(1994) Van Nostrand Reinhold

Technical reference on several important passive and low-energy cooling strategies by one of the leading experts. Primary focus is on ventilative, radiant, evaporative, and earth-coupled cooling. (EBN)

Passive Solar Commercial & Institutional Buildings: A Sourcebook of Examples and Design Insights ***

Editors: S.R. Hastings, International Energy Agency

(1994) John Wiley & Sons

One of the few books addressing large passive solar buildings. Lots of detailed information on solar heating, daylighting, and cooling strategies drawing from the experience of 45 buildings in Europe and in the U.S., half of which were fully monitored. (EBN)

The Passive Solar Design and Construction Handbook *****Author: Steven Winter Associates****(1998) John Wiley & Sons**

The updated and expanded version of a text from the early 1980's, this book fills an important gap in available resources. Includes new info on energy design software and high-tech glazings, but it isn't clear that the guidelines and strategies have been fully modified to account for these developments in the industry. (EBN)

SOLAR/DAYLIGHTING/PASSIVE COOLING – PERIODICALS***Solar Today *******Editor: Maureen McIntyre****Bi-monthly Magazine****American Solar Energy Society**

The official publication of ASES, this attractive magazine includes news from the various solar industries, with lots on building design and use. (EBN)

SITE & LANDSCAPE DESIGN/WATER CONSERVATION BOOKS***Design with Nature *******Author: Ian McHarg****(1995) John Wiley & Sons**

Reprint of this timeless classic from 1967. Old, but not dated. (EBN)

Energy Conserving Site Design *****Author: E. Gregory McPherson****(1984) American Society of Landscape Architects**

A collection of 13 articles by various authors on landscape and land-use design. Fairly technical, with lots of useful information. Includes a detailed bibliography, compiled references and index. (EBN)

Gray Water Use in the Landscape: How to Help Your Landscape Prosper with Recycled Water *****Author: Robert Kourik****(1991) Metamorphic Press**

Practical booklet on design and construction of simple graywater systems for use in landscape irrigation. (EBN)

Handbook of Water Use and Conservation *****Author: Amy Vickers****(1998) Lewis Publishers/CRC Press Inc.**

Brand new book with practical details on water conserving strategies. (EBN)

SITE & LANDSCAPE DESIGN/WATER CONSERVATION – VIDEOS***Effects of Construction Damage to Trees in Wooded Areas *******By: Mark Timmons, John Hartman****Research Trust, International Society of Arboriculture**

A 15-minute video that illustrates the problems that can occur if trees are not properly protected during

construction. The setting is the hardwood forests of Kentucky. (EBN)

Introduction to Stormwater: Concept, Purpose, Design* **

Author: Bruce K. Ferguson

(1998) John Wiley & Sons

An excellent overview of the concepts of stormwater management, beginning with basic concepts of hydrology, this book highlights environmentally sound water infiltration alternatives to the tropical retention/detention systems. (EBN)

Landscaping with Native Trees**

Author: Guy Sternberg, Jim Wilson

(1995) Chapters Publisher Ltd.

Beautifully illustrated book with concise arguments for landscaping with native trees and thorough descriptions of 82 species appropriate to the eastern U.S. (EBN)

Mitigation Banking: Theory and Practice***

Author: Lindell L. Marsh, Douglas R. Porter, David Salvesen

(1996) Island Press

Technical yet readable overview of the issues and concerns surrounding replacement of degraded wetlands with new or restored wetlands in other locations. Addresses, scientific, economic, political, and legal perspectives. (EBN)

The Natural Habitat Garden*

Author: Ken Druse, Margaret Roach

(1994) Clarkson N. Potter, Inc.

A lovely photo-essay of the four broad habitat types in North America: grasslands, drylands, wetlands, and woodlands, with examples of many gardens incorporating each type. (EBN)

The Once and Future Forest: A Guide to Forest Restoration Strategies* *

Author: Leslie Sauer

(1998) Andropogon Associates

An examination of ecological restoration by one of the nation's leading experts. The focus of this book is primarily on forest ecosystems of the eastern U.S., but much of the information will be relevant elsewhere. (EBN)

Permaculture A Designer's Manual* *

Author: Bill Mollison

(1992) Tagari Publications

Large and comprehensive book with information for use in all landscapes and climates. (EBN)

Stormwater Management: A Guide for Floridians* *

Authors: Eric H. Livingston, Ellen McCarron

Florida DEP, Stormwater/Nonpoint Source Management

Concise, well illustrated, 72-page booklet presenting the basics of responsible stormwater management. A great primer on this topic. (EBN)

Texas Guide to Rainwater Harvesting**

Author: Gail Vittori, Wendy Price Todd

Texas Water Development Board

Concise and useful guide to the collection and safe use of rainwater. (EBN)

Wetlands: Mitigating and Regulating Development Impacts, 2nd Edition* *

Author: David Salvesen
(1994) Urban Land Institute

A well-written discussion of the issues and regulations surrounding development and wetlands, from a middle-of-the-road perspective. Includes case studies of developments that were redesigned to avoid impacting wetlands. (EBN)

SITE & LANDSCAPE DESIGN/WATER CONSERVATION – PERIODICALS

Landscape Architecture* *

Author: Anne Elizabeth Powell
American Society of Landscape Architects

Official publication of the ASLA, this is a glossy design magazine for landscape architects. Includes a lot of information on environmentally sound design practices.(EBN)

The Permaculture Activist* *

Author: Peter Bane
The Permaculture Activist

A low-tech publication densely packed with articles, both historical and practical. A labor of love, and not for the light reader! (EBN)

Small Flows: Helping America's Small Communities Meet Their Wastewater Needs* *

Author: Jill A. Ross
National Small Flows Clearinghouse

Somewhat technical, but friendly tabloid-format newsletter on water conservation, pollution prevention, and wastewater treatment alternatives mostly at the community level. (EBN)

LAND USE AND COMMUNITY PLANNING – BOOKS

Asphalt Nation: How the Automobile Took Over America and How We Can Take It Back* *

Author: Jane Holtz Kay
(1997) The Crown Publishing Group

A searing indictment of the automobile, implicating it in many of our environmental and social problems. Also looks into some of the more promising solutions. (EBN)

Best Development Practices**

Author: Reid Ewing
(1996) American Planning Association

An excellent resource that studies both new and old communities that work in Florida, focusing on land use, transportation, housing, and environment. Explains State-endorsed voluntary guidelines for good development. (EBN)

***City Comforts: How to Build an Urban Village* ***

Author: David Sucher
(1995) City Comforts Press

A small “pattern book” in the tradition of Christopher Alexander’s *A Pattern Language*, that describes and illustrates the many little ways one can make cities feel comfortable. (EBN)

Ecological Design and Planning**

Authors: George F. Thompson, Frederick R. Steiner
(1997) John Wiley & Sons

This addition to the Wiley Series in Sustainable Design is a collection of essays on ecological planning and landscape architecture, with an emphasis on ecological preservation and enhancement of a site. (EBN)

Ecology of Place: Planning for Environment, Economy, and Community* *

Authors: Timothy Beatley, Kristy Manning

(1997) Island Press

This book doesn't break much new ground in exploring the themes of sprawl, social equity, and communities that work, but it does pull all the pieces together in a comprehensive and accessible text. (EBN)

Fractured Metropolis: Improving the New City, Restoring the Old City, Reshaping the Region* *

Author: Jonathon Barnett

(1996) HarperCollins

Analysis of what has been happening to our inner cities in recent decades and how they can be strengthened and revitalized through careful planning and urban design. (EBN)

Gaviotas: A Village To Reinvent The World* *

Author: Alan Weisman

(1998) Chelsea Green Publishing Company

A very readable journalistic account of the creation of this village in Colombia, where appropriate technologies are invented in a remarkable social and artistic setting. (EBN)

Green Development: Integrating Ecology and Real Estate* *

Authors: Rocky Mountain Institute, Alex Wilson

(1998) John Wiley & Sons

Covers all aspects of ecologically sensitive development, with real-world examples based on 80 case studies. (EBN)

Greenways: A Guide to Planning, Design, and Development* *

Authors: Loring Schwartz, Charles A. Flink, Robert M. Searns

(1996) Island Press

Highly practical book on the development of pathways, bicycle paths, and other greenways. (EBN)

Home From Nowhere: Remaking Our Everyday World For The 21st Century* *

Author: James Howard Kunstler

(1996) Simon & Schuster/Fireside

With a strong and thoughtful attack on the lack of a sense of place in modern America, the author embraces the New Urbanist approach to better towns and neighborhoods. (EBN)

Land Use in America**

Authors: Henry L. Diamond, Patrick R. Noonan

(1996) Island Press

In the first half of the book, the authors argue that, for environmental and social reasons, we must address land use more thoughtfully, and they lay out an agenda for doing so. In the second half of the book, a dozen contributors, ranging from the governor of Vermont to a farmer and an economist, offer perspectives on a wide range of issues relating to land use. (EBN)

Landscape Ecology Principles in Landscape Architecture**

Authors: Wenche E. Dramstad, James D. Olson, Richard T. Forman

(1996) Island Press

Key principles of landscape ecology presented with succinct explanations and simple graphics, featuring

14 case studies showing how the principles are implemented. Lots of punch for a very little book!
(EBN)

The New Urbanism: Toward an Architecture of Community* *

Author: Peter Katz

(1994) McGraw-Hill Publications

Superbly illustrated book on what is emerging as a new paradigm of land-use planning and community design. Provides several thoughtful essays on New Urbanism, then offers a tour of 24 communities (some unbuilt) designed by such leaders as Peter Calthorpe and Andres Duany. (EBN)

The Next American Metropolis: Ecology, Community, and the American Dream* *

Author: Peter Calthorpe

(1993) Princeton Architectural Press

A pattern book for designing pedestrian-friendly communities based on Calthorpe's "transit-oriented development" model. (EBN)

A Pattern Language: Towns – Buildings – Construction* *

Authors: Christopher Alexander, Sara Ishikawa, Murray Silverstein

(1977) Oxford University Press

One of the design classics, illustrating patterns that work on all scales, from the reading nook to the whole city. (EBN)

Placing Nature: Culture and Landscape Ecology* *

Author: Joan Iverson Nassauer

(1997) Island Press

Somewhat theoretical, but very thoughtful essays on the overlap between the fields of landscape architecture, and ecology. A collaborative work among experts in ecology, philosophy, art, literature, geography, landscape architecture, and history. (EBN)

Reclaiming Our Cities & Towns: Better Living with Less Traffic* *

Author: David Engwicht

(1993) New Society Publishers

Originally published in Australia, this book explains convincingly how having too many cars makes cities less livable for everyone, especially for the "car-less". A must-read for all planners! (EBN)

Rural By Design: Maintaining Small Town Character* *

Author: Randall Arendt

(1994) American Planning Association

Superb text addressing innovative planning and development strategies for rural sites. Emphasis on open-space protection, clustering of buildings, and the creation of livable communities. (EBN)

The Urban Ecologist: The Journal of Urban Ecology* *

Author: Stephen Wheeler

Urban Ecology

Excellent coverage of environmental movements in the urban context. Includes national and international developments, but focuses on the San Francisco bay area. (EBN)

INTERNET RESOURCES

Note: Readers of the Green Building Guidelines are encouraged to visit the Wabash County Solid Waste Management District website at www.slashthetrash.com. Many of the following resources will be represented as live links and periodically updated.

WCSWMD

Advanced Building Technologies

www.advancedbuildings.org/

A database of building-related, environmentally appropriate technologies. Extensive descriptive and contact information for products in several categories, including indoor air quality, daylighting, non-toxic materials, waste management, electricity production, water conservation, energy efficiency, and recycled materials. (EBN)

AIA Committee on the Environment**www.e-architect.com/pia/cote*****America Recycles Day*****www.americarecyclesday.org**

ARD is an annual event, now in its fourth year. Through this Web site, people are encouraged to sponsor an event in conjunction with Recycles Day and have the opportunity to enter a national contest whose yearly prize is the “American Green Dream House.”

Building Environmental Science and Technology**www.nrg-builder.com/**

There are lots of great facts and figures to be found among these essays and other resources. Of particular interest is the Green Building Primer, available on-line in its entirety at no charge. (EBN)

Campus Environmental Stewardship Program**www.brown.edu/Departments/Brown_Is_Green**

This site, based at Brown University, has a variety of information and resources for addressing sustainable practices on campus. (EBN)

Center for Resource Building Technology**www.montana.com/CRBT/nav.html*****CREST*****www.crest.org**

The grandfather of energy-efficiency Web sites, CREST is a great starting point for any search on energy and sustainability-related topics. Among the resources housed here are content of the Greening of the White House CD-ROM and archives from the green building and straw bale mailing lists. (EBN)

E Build.com**www.buildinggreen.com**

This is the Environmental Building News Web site. The Back Issues section features full text of most product reviews from our six years of publication, as well as some of our most popular feature articles and news stories. The Events Calendar is the most comprehensive one we know of, including many events that we simply don't have room for in the print edition. The Current Issue page tells you what we've just published, with links to Web sites mentioned in the newsletter. Highlights of the Greenbuilding E-Mail Discussion Group are organized by topic. And of course, you can find out about ordering back issues, our E Build Library CD-ROM, and our new Product Catalog. (EBN)

E Design Online**www.fcn.state.fl.us/fdi/e-design/online/edo.htm**

This online-only journal offers a great collection of essays and articles on many topics of interest, including building commissioning, indoor air quality, and sustainable design. Most are reprinted from other sources (including EBN)-they're doing a great service by choosing the best and posting them here. (EBN)

Environmental Design and Construction

www.edcmag.com

High-quality trade magazine with useful articles on all aspects of environmentally responsible design and construction. Distributed free to qualified subscribers. Supported by advertising. (EBN)

European Directory of Sustainable and Energy Efficient Building 1999****www.jxj.com/suppands/edseeb/index.html**

A collection of articles on topics ranging from material choices to solar applications to low-energy cooling, followed by a directory of over 3,000 companies active in these fields. (EBN)

Energy Star Web Site**www.epa.gov/energystar.html**

Up-to-date descriptions of the many energy efficiency programs and incentives available under the umbrella of Energy Star. (EBN)

Florida Solar Energy Center**www.fsec.ucf.edu/**

FSEC has long been a leading source of good technical data on energy efficiency in hot, humid climates. Now you can get much of their material online. Check out the technical articles from the Building Design Assistance Center, and the projects of the Advanced Technologies Division. (EBN)

G.E.O. Green Building Resource Center**www.geonetwork.org**

The best collection of sustainability-and-buildings Internet links we know of, a good book list with a direct ordering arrangement through the online bookstore Amazon.com, listings of green designers, other green building professionals, and many other resources. (EBN)

Global Eco-village Network**www.gaia.org/index.html**

The hub for the ecovillages movement sustainable living systems that are “light on the land.” (EBN)

Global Green USA**www.globalgreen.org**

Global Green USA, the American affiliate of Green Cross International founded by Mikhail Gorbachev works in cooperation with individuals, industry and government to foster a global value shift toward a sustainable future. Green Building E-mail Discussion Group co-sponsored by EBN, Oikos, and CREST – this forum has now been active for over a year and has over 400 participants. It’s a great place to ask questions and share insights about design strategies, technologies, and the philosophical underpinnings of green building. If you’re joining for the first time, we suggest that you peruse the archives (available at: solstice.crest.org/sustainable/greenbuilding-list-archive/index.html). To join, send the command: “subscribe greenbuilding” in the body of a message to: greenbuilding-request@crest.org. You must send this command from the e-mail account you’ll be using to receive and post messages to the group. (EBN)

Greenclips Environmental Journal**solstice.crest.org/sustainable/greenclips-info.html*****Green Design Network*****www.greendesign.net*****Green Developments (Rocky Mountain Institute)*****www.rmi.org/store/p74pid759.asp**

(1997) CD-ROM

The companion CD to Green Development, Integrating Ecology and Real Estate contains a wealth of resources on environmental design and construction. (EBN)

Greening Federal Facilities

www.eren.doe.gov/femp/techassist/over_green.html

Guiding Principles of Sustainable Design

www.nps.gov/dsc/dsgncnstr/gpsd

Green Seal

www.greenseal.org

Nonprofit organization protects the environment by promoting environmentally sensitive consumer products; sets standards and awards “Green Seal of Approval.”

IDEM (Indiana Department of Environmental Management)

www.state.in.us/idem/annualreports

This report tells you about IDEM’s activities, from preventing pollution to cleaning up environmental contamination.

Indigo Development

www.indigodev.com/

A division of RPP International, a California firm focused on research and systems design. Special emphasis is given to industrial ecology and sustainable development. (EBN)

Institute for Sustainable Design – University of Virginia

www.virginia.edu/~sustain/

International Darksky Association

www.darksky.org

IDA is the hub for information on light pollution worldwide. For years they have been making the win-win case for darker skies through more efficient use of outdoor lighting. In addition to links to other organizations around the world, they have an excellent collection of fact sheets that can be read on-line or ordered in print copy. (EBN)

NRDC’s Washington, D.C. EcoOffice: Tomorrow’s Workplace Today

www.nrdc.org/cities/building/dc/dcinx.asp

Natural Resources Defense Council

A detailed description of one of the most environmentally conscious offices in any urban area. The Natural Resources Defense Council took two floors of a reasonably efficient building and made them into a model of green office design.

OIKOS

www.oikos.com/

Featuring the Resources for Environmental Design Index (REDI) Guide to green building products and materials – a searchable database that is quite up-to-date and extensive. Oikos also offers an online bookstore, full content of the Energy-Source Builder newsletter, and other useful tidbits. (EBN)

PRe Consultants

www.pre.nl/

Netherlands group who have spent a great deal of time working on eco-indicators and life-cycle assessment. Software and other items available here. (EBN)

REDI Guide: Resources for Environmental Design Index**data.oikos.com/products**

This database of green building products and materials is available in print or on-line. Extensive listings are updated frequently on-line and semiannually in print. (EBN)

Rocky Mountain Institute**www.rmi.org**

RMI is a think-tank and advocacy organization that is leading the way in energy efficiency and environmental design. RMI's Green Development Services team consults on many high-profile projects. The Institute's newsletters are a great read on this Web site. (EBN)

Smart Growth Network: Development that Serves Economy, Community, and Environment**www.smartgrowth.org/index2.html**

The Smart Growth Network is a coalition of developers, planners, government officials, lending institutions, and others involved in the development process in U.S. cities and states. This site offers essays and other information on development, buildings, and Regional Planning, with special attention paid to alternatives to sprawl. (EBN)

Sustainable Business**www.sustainablebusiness.com**

Formerly the Sustainable Business Network, it includes The Sustainable Business Insider, Sustainable Business Opportunities, and Jobs in Sustainable Business. Focus is on trends, philosophies, and activity in the sustainable business community. (EBN)

Sustainable Sources**www.greenbuilder.com/general/BuildingSources.html**

Based in Austin, Texas, this site offers a wealth of resources related to green building, including a calendar of events, listings of greenbuilding professionals and the complete Sustainable Building Sourcebook, which is the primary reference for builders participating in the City of Austin's Green Builder Program. (EBN)

The U.S. Department of Energy, Office of Building Technology, State and Community Programs**www.eren.doe.gov/buildings/**

Lots of material on Department of Energy programs and initiatives on energy efficiency and sustainability in buildings. The detailed listing of software tools is a valuable resource. (EBN)

U.S. Department of Energy Center of Excellence for Sustainable Development**www.sustainable.doe.gov/**

A useful networking hub for government and private sector sustainability initiatives. The entire Sustainable Building Technical Manual is available here as a free download. (EBN)

US Green Building Council: Seminars and Events**www.usgbc.org/resource/events.htm*****United States Green Building Council*****www.usgbc.org**

Outline of green buildings rating system; listing of seminars and events. A priority program of the United States Green Building Council is the LEED (Leadership in Energy & Environmental Design) Green Building Rating System. For more information about the rating system, view the USGBC website at: <http://www.usgbc.org/programs/leed.htm> or by contacting

1015 18th Street, NW, Suite 805

Washington, D.C. 20036

Tel: 202-828-7422

Fax: 202-828-5110

Wabash County Solid Waste Management District

www.slashthetrash.com

The District's Green Building Program page provides links to many related sites.

WaterWiser: The Water Efficiency

Web Site www.waterwiser.org

A good site for basic, reliable information on water conservation strategies. (EBN)

CSI (Construction Specification Institute) 16 Divisions

Division 1 – General Requirements

Summary; Price and Payment Procedures; Administrative Requirements; Quality Requirements; Temporary Facilities and Controls; Product Requirements; Execution Requirements; Facility Operation; Facility Decommissioning

(Page 52)

Division 2 – Site Work

Basic Site Materials and Methods; Site Remediation; Site Preparation; Earthwork; Tunneling, Boring and Jacking; Foundation and Load-bearing Elements; Utility Services; Drainage and Containment; Bases; Ballasts; Pavements and Appurtenances; Site Improvements and Amenities; Planting; Site Restoration and Rehabilitation

(Page 52)

Division 3 – Concrete

Basic Concrete Materials and Methods; Concrete Forms and Accessories; Concrete Reinforcement; Cast-in-Place Concrete; Precast Concrete; Cementitious Decks and Underlayment; Grouts; Mass Concrete; Concrete Restoration and Cleaning

(Page 56)

Division 4 – Masonry

Basic Masonry Materials and Methods; Masonry Units; Stone; Refractories; Corrosion-Resistant Masonry; Simulated Masonry; Masonry Assemblies; Masonry Restoration and Cleaning

(Page 58)

Division 5 – Metals

Basic Metal Materials and Methods; Structural Metal Framing; Metal Joists; Metal Deck; Cold-Formed Metal Framing; Metal Fabrications; Hydraulic Fabrications; Railroad Track and Accessories; Ornamental Metal; Expansion Control; Metal Restoration and Cleaning

(Page 59)

Division 6 – Wood and Plastics

Basic Wood and Plastic Materials and Methods; Rough Carpentry; Finish Carpentry; Architectural Woodwork; Structural Plastics; Plastic Fabrications; Wood and Plastic Restoration and Cleaning

(Page 61)

Division 7 – Thermal and Moisture Protection

Basic Thermal and Moisture Protection Materials and Methods; Damp-proofing and Waterproofing; Thermal Protection; Shingles; Roof Tiles and Roof Coverings; Roofing and Siding Panels; Membrane Roofing; Flashing and Sheet Metal; Roof Specialties and Accessories; Fire and Smoke Protection; Joint Sealers

(Page 71)

Division 8 – Doors and Windows

Basic Door and Window Materials and Methods; Metal Doors and Frames; Wood and Plastic Doors; Specialty Doors; Entrances and Storefronts; Windows; Skylights; Hardware; Glazing; Glazed Curtain Wall

(Page 77)

Division 9 – Finishes

Basic Finish Materials and Methods; Metal Support Assemblies; Plaster and Gypsum Board; Tile; Terrazzo; Ceilings; Flooring; Wall Finishes; Acoustical Treatment; Paints and Coatings

(Page 78)

Division 10 – Specialties

Visual Display Boards; Compartments and Cubicles; Louvers and Vents; Grilles and Screens; Service Walls; Wall and Corner Guards; Access Flooring; Pest Control; Fireplaces and Stoves; Manufactured Exterior Specialties; Flagpoles; Identification Devices; Pedestrian Control Devices; Lockers; Fire Protection Specialties; Protective Covers; Postal Specialties; Partitions; Storage Shelving; Exterior Protection; Telephone Specialties; Toilet, Bath and Laundry Accessories; Scales; Wardrobe and Closet Specialties

(Page 89)

<p>Division 11 – Equipment Maintenance Equipment; Security and Vault Equipment; Teller and Service Equipment; Ecclesiastical Equipment; Library Equipment; Theater and Stage Equipment; Instrumental Equipment; Registration Equipment; Checkroom Equipment; Mercantile Equipment; Commercial Laundry and Dry Cleaning Equipment; Vending Equipment; Audio-Visual Equipment; Vehicle Service Equipment; Parking Control Equipment; Loading Dock Equipment; Solid Waste Handling Equipment; Detention Equipment; Water Supply and Treatment Equipment; Hydraulic Gates and Valves; Fluid Waste Treatment and Disposal Equipment; Food Service Equipment; Residential Equipment; Unit Kitchens; Darkroom Equipment; Athletic, Recreational and Therapeutic Equipment; Industrial and Process Equipment; Laboratory Equipment; Planetarium Equipment; Observatory Equipment; Office Equipment; Medical Equipment; Mortuary Equipment; Navigation Equipment; Agricultural Equipment; Exhibit Equipment</p>	<p>(Page 91)</p>
<p>Division 12 – Furnishings Fabrics; Art; Manufactured Casework; Furnishings and Accessories; Furniture; Multiple Seating; Systems Furniture; Interior Plants and Planters; Furnishings, Repair and Restoration</p>	<p>(Page 93)</p>
<p>Division 13 – Special Construction Air-Supported Structures; Building Modules; Special Purpose Rooms; Sound, Vibration and Seismic Control; Radiation Protection; Lightning Protection; Cathodic Protection; Pre-Engineered Structures; Swimming Pools; Aquariums; Aquatic Park Facilities; Tubs and Pools; Ice Rinks; Kennels and Animal Shelters; Site-Constructed Incinerators; Storage Tanks; Filter Underdrains and Media; Digester Covers and Appurtenances; Oxygenation Systems; Sludge Conditioning Systems; Hazardous Material Remediation; Measurement and Control Instrumentation; Recording Instrumentation; Transportation Control Instrumentation; Solar and Wind Energy Equipment; Security Access and Surveillance; Building Automation and Control; Detection and Alarm; Fire Suppression</p>	<p>(Page 98)</p>
<p>Division 14 – Conveying Systems Dumbwaiters; Elevators; Escalators and Moving Walks; Lifts; Material Handling; Hoists and Cranes; Turntables; Scaffolding; Transportation</p>	<p>(Page 99)</p>
<p>Division 15 – Mechanical Basic Mechanical Materials and Methods; Building Services Piping; Process Piping; Fire Protection Piping; Plumbing Fixtures and Equipment; Heat-Generation Equipment; Refrigeration Equipment; Heating, Ventilating and Air Conditioning Equipment; Air Distribution; HVAC Instrumentation and Controls; Testing, Adjusting and Balancing</p>	<p>(Page 100)</p>
<p>Division 16 – Electrical Basic Electrical Materials and Methods; Wiring Methods; Electrical Power; Transmission and Distribution; Low-Voltage Distribution; Lighting; Communications; Sound and Video</p>	<p>(Page 102)</p>

GREEN BUILDING PRODUCTS

The market for “green” building materials is growing at a surprising pace. This is an exciting time for building and design professionals in that these products begin the move toward sustainable design, but it is also challenging and somewhat overwhelming given the wide selection of product offerings. What is “green” is not always simple to determine.

In the following document we have attempted to compile “green” products from a variety of resources, including some of those listed in the Resources section of this book. A majority of the materials, however, are extracted from the following:

- ☛ The Oikos website (<http://www.oikos.com/>)
- ☛ “Environmental Building News” (<http://www.buildinggreen.com>)
- ☛ “GreenOffice” (e-mail: greenoffice@msn.com)
- ☛ “EDJ” (Environ Design Journal e-mail: edj@isdesignet.com)
- ☛ Department of Commerce: Energy Policy Division - Indiana Recycled Products List (www.state.in.us/doc/energy/recycle_indiana.html)
- ☛ Manufacturer’s product brochures.

The products are organized in the CSI format (Construction Specifications Institute), which includes 16 divisions, each with a multitude of individual specification sections. In some cases you will find that there may be many products in one division, while few or none are present in another. This is an indication of the market place at this time. We have chosen to list all 16 divisions, anticipating future updates as needed. For those of you familiar with construction, we used the section numbering employed by Sweet’s Catalogue. For products listed more than once, generally detailed contact information is listed once as well. If you run across a product of interest without detailed contact information, there should be a reference back to a section with complete information.

By organizing the information in the CSI format, we are able to provide an approach consistent with standard construction practice. This organizes the material and eases use by the construction industry. For those not directly involved with construction like the Land Use/Community Planner at the inception of a project or a new Owner/Client, this format allows easy access to information and support.

As mentioned earlier, there are a number of products available on the market. This product listing is primarily focused on products that are manufactured from recycled materials and/or can be recycled. Certainly many other products can be considered “green,” but in an effort to align with the objectives of the Wabash County Solid Waste Management District we have focused on recycled products.

Some products are presented with more detailed descriptions than others due to the information available at the time. CSO has not conducted any testing or comparisons of, or between, the products listed. Neither has CSO performed any cost analysis comparing the “green” products listed to the more mainstream and traditionally used products of a similar type. This detailed analysis is extremely time consuming and thus, extremely expensive with its ultimate value being debatable given the rapid development of the market. We suggest that close attention to the principles outlined at the beginning of this document is a serviceable way to spark a continuous process of improvement on all fronts. Your suggestions for improvement and new products for inclusion are welcome.

DIVISION 01—GENERAL DATA

01315—professional consulting firms

01317—associations and professional organizations

01319—reference books and publications

01346—computer software

01542—construction cranes, elevators and hoists

01544—construction scaffolding and platforms

01548—construction tools

01760—protecting installed construction

DIVISION 02—SITEWORK

02250—shoring and underpinning

02264—soil and rock anchors

02340—soil stabilization

02342—geotextiles/geomatrixes

02370—erosion and sedimentation control

Invisible Structures, Inc.—Porous paving, erosion control and drainage systems

Made from 100% post-consumer recycled plastic with long service life and low life cycle costs, the Grasspave 2 Porous Paving System is the environmental choice of architects, engineers, landscape architects, and contractors for two reasons:

1. Grasspave 2 is manufactured entirely from recycled plastics; specifically, from 35-mm film canisters and the bottoms of pop bottles. Grasspave 2 units themselves can be recycled if removed due to remodeling or reconstruction.
2. The Grasspave 2 porous paving system, unlike impervious pavements, adds to the quality and beauty of the built environment. The park-like appearance created by Grasspave 2 greatly enhances the appeal of urban projects, replacing concrete squares with sparkling green spaces.

There are many environmental advantages of the Grasspave 2 system, including:

- ☛ Porosity—Rain water is controlled on the site, percolating immediately into the ground and, ultimately, the water table. By minimizing runoff, Grasspave 2 reduces the need for large and costly drainage systems.
- ☛ Lower temperature—Unlike asphalt or concrete, grass has low light/heat reflectivity and low heat retention, which results in a cooler environment. Lower temperatures ensure the survival of existing trees and the successful planting of new trees.
- ☛ Cleaner air and water—Grass acts as a water filter and as a dust and dirt collector, thus returning cleaner water to the water table and reducing airborne particulates on site.

Invisible Structures, Inc.
 14704-D East 33rd Place
 Aurora, Colorado 80011-1218
 Phone: 800-233-1510
 Fax: 800-233-1522
 sales@invisiblestructures.com
 www.invisiblestructures.com

Nu-Wool Co., Inc.

Hydroseeding mulch is made from 100% recycled newspaper.

Phone: 800-748-0128

<http://www.nuwool.com>

Tascon, Inc.

EnviroGuard Plus is a combination of soil amendment and fertilizer and is made from recycled paper and animal manure.

Phone: 713-937-0900

02390—shoreline protection and mooring structures

02392—docks and boat facilities

02530—sanitary sewage

02610—pipe culverts

02622—subsurface drainage materials

02624—subsurface drainage piping

Eee Zzz Lay Drain Co., Inc.—drainage system

Drainage system utilizing recycled polystyrene as a substitute for stone aggregate.

Eee Zzz Lay Drain Co., Inc.

PO Box 639

Pisgah Forest, NC 28768-0639

Phone: 828-883-2130

Fax: 828-884-2348

saleszinc@citcom.net

02632—storm drains and underdrain inlets

02634—storm drainage pipe and fittings

02636—precast trench drain systems

02660—ponds and reservoirs

02730—aggregate surfacing

02752—concrete pavement

American Reclamation Corp.

Asphalt products are manufactured from recyclable materials.

Phone: 508-248-3777

02760—paving specialties

Parsec Roadway Application Systems—paving systems

Components made predominantly from recycled plastic waste to repair potholes and street.

Parsec Roadway Application Systems

10345 Brockwood Rd.

Dallas, TX 75238

Phone: 214-341-6700 ext. 116

Fax: 214-553-0983

02762—pavement marking

02772—curbs and gutters

02780—unit pavers

02785—flexible pavement coating and micro-surfacing

02790—athletic and recreational surfaces

02792—synthetic grass and turf

RK Manufacturing, Inc., Grassy Paver—artificial grass surfaces

Made of recycled HDPE

RK Manufacturing, Inc., Grassy Paver

PO Box 7300

Jackson, MS 39282-7300

Phone: 800-957-5575

Fax: 601-502-1338

rkmfg@rkmfg.com

www.rkmfg.com

02795—porous paving

American Reclamation Corp.—porous paving (See 02752)

Invisible Structures, Inc.—porous paving (See 02370)

Soil Stabilization Products, Inc.

The GEOBLOCK Porous Pavement System is a series of interlocking, high strength blocks made from recycled plastic materials.

Phone: 800-523-9992

02815—fountains, pools and water displays

E.C.O. of NY

All of E.C.O.'s products go through a ten-step cradle to cradle evaluation to determine their "green" criteria. All products fall into 4 categories, sustainable, natural, recycled and hypoallergenic. Before selling any product it must meet high quality and performance evaluations.

Phone: 718-292-0626

UltraGlas Inc.—Fountains, Pools and Water Displays (See 02342)

02825—fences, gates and hardware

E.C.O. of NY—Fences, Gates and Hardware (See 02815)

02827—gate operators

02832—retaining walls

02840—walk, road and parking appurtenances

02852—bridges: pedestrian, vehicular

02862—highway noise barriers**02870—site, street and mall furnishings****FibreX Group—site furniture**

Site furnishings made from recycled plastic.

FibreX Group
3734 Cook Blvd.
Chesapeake, VA 23323
Phone: 800-346-4458
Fax: 757-487-5826
fibrex@aol.com
www.fiberxgroup.com

Landscape Forms—site furniture

Recycled timbers made from 100% HDPE, cast aluminum parts of recycled aluminum, solstice umbrellas of recycled aluminum.

Landscape Forms
431 Lawndale Ave.
Kalamazoo, MI 49001-9543
Phone: 800-521-2546
Fax: 616-381-3455
specify@landscapeforms.com
www.landscapeforms.com

Meta.morf, Inc.—site furniture

Durable and elegant outdoor furniture made from post-consumer recycled plastic, landscape fixtures, children's furniture.

Meta.morf Inc.
2700 4 th Ave. S.
Seattle, WA 98134
Phone: 206-903-6332
Fax: 206-223-0853
Colinmetamorfdesign.com
www.metamorfdesign.com

Recycled Plastic Man, Inc.—recycled plastic lumber

Manufacturer of recycled plastic lumber and value added products such as park amenities.
Phone: 941-473-1618

Scientific Developments, Inc.—speed bumps

Speed bumps containing 85% recycled tire rubber and 15% virgin rubber overlay.
Phone: 800-824-6853

02872—street/mall clocks, bells and carillons**02873—outdoor sculpture and ornamental work****02874—bicycle racks and lockers****02875—site and street shelters****02882—recreational facility and playground equipment**

02892—highway sign posts

02912—soil preparation and materials

02940—simulated plants and rocks

02945—planting accessories

DIVISION 03—CONCRETE

03050—concrete materials

American Polysteel, Inc—form building system

The Polysteel Form building system is a stay-in-place concrete forming system used to create an insulated, steel-reinforced concrete wall. Polysteel Forms reduce energy use and employ recycled materials.

Phone: 505-345-8153

Oscoda Plastics, Inc.—expansion joints

ProFlex Vinyl Expansion Joints are made from 100% post-industrial scrap vinyls from the automotive and roofing industries.

Phone: 800-544-9538

03100—concrete formwork

K-X Industries—Insulated concrete forms containing recycled wood and Portland cement.

The Faswall® building system provides true sustainability as well as superior strength and design flexibility. Conserving material resources while providing superior structural performance is the essence of sustainability. Some building systems emphasize sustainability while sacrificing structural performance. Others offer structural performance at the expense of sustainability. FASWALL achieves both superior structural performance and excellent resource sustainability.

These permanent wall forms are made with K-X® processed recycled waste wood chips. The K-X process is a revolutionary improvement in wood concrete technology—proven by over 50 years of use in Europe and Asia. The wall forms are filled with reinforced concrete to create a post-and-beam structural grid with superior strength and remarkable energy savings.

Faswall Content by volume:

85% K-X Aggregate (waste wood)

12% Portland Cement (15% with fly ash additive)

K-X Industries, Inc.

P.O. Box 180

Windsor, SC 29856 USA

Phone: 803-642-9346

Phone: 800-491-7891

Fax: 803-642-6361

www.faswall.com

RASTRA—Insulated concrete form system

RASTRA is an insulated concrete form system with a difference. First, 80 percent of each building “element” is expanded polystyrene that has been recycled from the consumer waste stream. The other 20 percent is Portland cement, which discourages insects attacking the material. Each element is 10 ft. long with vertical and horizontal cavities. This post-and-beam design provides ample structural strength, but

uses less concrete than other types of insulated concrete forms.

Rastra of the Americas LLC
501 E Plaza Circle
Litchfield, AZ 85340
Phone: 623-935-3545
Fax: 623-935-3037
www.rastra.com

03125—form liners

03150—concrete accessories

03200—concrete reinforcement

03360—concrete finishes

03394—concrete crack control equipment

03404—precast autoclaved aerated concrete wall and roof panels

03410—structural precast concrete

03412—precast, insulated foundation wall systems

Sparfil International, Inc.—concrete block

A pre-insulated, cellular concrete block that is lightweight, loadbearing, energy efficient and environmentally friendly. It is made using fly ash (a recycled product) as well as recycled polystyrene.
Phone: 813-963-3794

03450—architectural precast concrete

03500—cementitious decks

03540—cementitious underlayments

Baleblock Celestial Construction, Inc.

Recycled straw replaces wood framing; non-toxic, locally available; handmade, cementitious tiles, interior and exterior, landscape pavers, all colors, various patterns.

Baleblock Celestial Construction, Inc.
1599 Luisa St.
Santa Fe, NM 87505-4055
Phone: 505-820-0861
Fax: 505-820-2818
birkani@aol.com

03600—grout

03900—concrete restoration and cleaning

Grasan—concrete services

Glass cullet recycling systems; asphalt and concrete rubble recycling systems; construction and demolition recycling systems.

Grasan
440 S. Illinois Ave.
Mansfield, OH 44907-1809
Phone: 419-526-4440

Fax: 419-524-2176
grasan@ridhnet.net
www.grasan.com

DIVISION 04—MASONRY

04065—masonry mortar and masonry grout

04082—masonry anchorage, reinforcement and accessories

04084—stone anchors

04200—masonry units

Midway Environmental Associates—Masonry units from recycled wood waste and fly ash

Midway Environmental Associates recently introduced WoodBrik™, a building block made entirely from two recycled materials: wood waste and fly ash. Walls require no mortar. Instead, they interlock, similar to Lego toys, and are bolted to the foundation and roof. Walls can be plastered or painted. The blocks are non-combustible, shock resistant and weather resistant

Midway Environmental Associates, Inc

5998 Routt Court

Arvada, CO 80004

Phone: 303-456-0844

Phone: 303-421-4790

Fax: 303-456-0939

04260—acoustical control masonry units

04270—glass masonry units

04400—stone

04411—marble

04412—limestone

04413—granite

04414—sandstone

04415—slate

04418—reconstructed stone

04700—simulated/manufactured masonry

04720—cast stone

04730—simulated/manufactured stone

04810—unit masonry wall assemblies

04812—masonry veneer assemblies

04840—preassembled masonry panels

04900—masonry restoration and cleaning

DIVISION 05—METALS

05060—metal materials

05080—metal coatings

05090—metal fastenings

05100—structural metal framing

05150—wire rope assemblies

05165—space frame systems

05200—metal joists

05300—metal decking

05380—bridge flooring

05400—cold-formed metal framing

05515—ladders and rungs

05532—gratings and trench covers

Arden Architectural Specialties, Inc.—tread mats and grates

ENVIRON tread mats and grates use recycled tire treads in aluminum rails; they are effective, durable and contribute to a clean interior.

Arden Architectural Specialties
151 Fifth Ave. NW, Ste. J
St. Paul, MN 55112-3268
Phone: 651-631-1607
Fax: 651-631-0251
www.ardenarch.com

Island House Inc.—architectural metalwork

Products are made from recycled 55-gallon drums. Sold in either sheets or individual decorative pieces.
Phone: 305-816-1415

The Levy Company—manufacturer and distributor of blast and steel furnace slag

Mr. Bill Stanley
P.O. Box 540
Portage, IN 46368
Phone: 219-787-8666
Fax: 219-787-8986

05542—floor plates

05560—metal castings

05584—enclosures and pockets

05586—architectural metalwork

05588—metal moldings

05712—straight run stairs

05715—spiral and circular stairs

05720—railings and handrails

05723—treads and nosings

05735—perforated metals

05800—expansion control

DIVISION 06—WOOD AND PLASTICS

06062—lumber

AFM Corporation—wood facings; foam core

Renewable wood facings, recyclable foam core.

AFM Corporation

PO Box 246

Excelsior, MN 55331-0246

Phone: 800-255-0176

Fax: 612-474-2074

afm@r-control.com

www.r-control.com

Aged Woods, Inc.—lumber

Both Aged Woods and Whiskey Country Heartpine lines are 100% recycled. The sawdust and wood chips are re-used in the agricultural industry.

Phone: 800-233-9307

Architectural Forest Enterprises (AFE)—wood

Made from “Agricultural Straw Waste” using non-formaldehyde glue, finished with a coating that releases virtually no solvents (VOC’s), recycled, certified furniture and doors.

Architectural Forest Enterprises

3775 Bayshore Blvd.

Brisbane, CA 94005

Phone: 800-483-6337

sales@ecoforest.com

www.ecoforest.com

Brands, Inc.—distributor of fencing, lumber

Ms. Angie Ogle

1425 California Street

Columbus, IN 47201

Phone: 812-374-9566

FZS: 812-372-9690

brands@hsonline.net

BTW Industries—plastic lumber

100% post consumer recycled plastic lumber, 50-year limited warranty. Does not rot, not affected by weather or water.

BTW Industries
3939 Hollywood Blvd., Ste. 3B
Hollywood, FL 33021-6749
Phone: 888-685-7570
Fax: 954-963-4778
btw@webtv.net
www.gplanet.net/BTW

Chemical Specialties, Inc.—wood

Chromium and arsenic free treated wood, protected with a copper-based wood preservative manufactured from recycled copper.
Chemical Specialties, Inc.
200 W. Woodlawn Rd., Ste. 250
Charlotte, NC 28217-2205
Phone: 800-421-8661
Fax: 704-527-8232
productinfo@chemspec.com
www.treatedwood.com

Columbia Trading Company—wood

Recycled wood products: fir flooring, trim, wainscoting, paneling.
Columbia Trading Company
0547 SW Gaines St.
Portland, OR 97201
Phone: 503-279-8165
Fax: 503-279-8793
ecofloor@teleport.com

Conklin's Authentic Barnwood—wood

All reclaimed lumber from salvaged barns; barnwood, beams, planks, rafters and furniture.
Conklin's Authentic Barnwood
RR1, Box 70
Susquehanna, PA 18847-9751
Phone: 570-465-3832
Fax: 570-465-3835
conklins@epix.net
www.conklinsbarnwood.com

Duluth Timber Co.—lumber

All materials are produced from reclaimed wood.
Phone: 218-727-2145

Ecotimber—wood

Recycled and salvaged wood products
Ecotimber
1020 Heinz Ave.
Berkeley, CA 94710-2719
Phone: 510-549-3000
Fax: 510-549-3001
ecotimber@ecotimber.com
www.ecotimber.com

Endura Wood Products—wood

Wood products including certified sustainably harvested and rediscovered / recycled antique wood.

Endura Wood Products
524 SE Main St.
Portland, OR 97214
Phone: 503-233-7090
Fax: 503-233-7091
endura@teleport.com

Environmental Building Products

Made from 100% recycled plastic, at least 90% is post consumer.

Environmental Building Products is the master distributor for Ecodeck, Perma-deck and Re-Plast recycled plastic lumber products for the Western United States. Our products are maintenance free and are mainly used for decking, outdoor furniture, boardwalks, marinas, and wallbumpers.

Environmental Building Products
PO Box 261310
Highlands Ranch, CO 80163-1310
Phone: 303-470-7555
Fax: 303-470-7390
jmurphy11@earthlink.net
www.environmentalblgdgprod.com

G.R. Plume Company, The Architectural Timber Division

Reclaimed architectural timber products
G.R. Plume Company, The Architectural Timber Division
1373 W. Smith Rd., Ste. A-1
Ferndale, WA 98248-8930
Phone: 360-384-2800
Fax: 360-384-0335

Jefferson Recycled Woodworks

100% post consumer recycled, keeps waste out of landfills, promotes the concept of wood re-use.

Jefferson Recycled Woodworks
PO Box 696
McCloud, CA 96057-0696
Phone: 530-964-2740
Fax: 530-964-2745
goodwood@snowcrest.net
www.ecowood.com

Maxwell Pacific—reclaimed timber

Recycled reclaimed timber custom milled for flooring, molding, siding and decking. All from used wood.

Phone: 310-457-4533

Mountain Lumber Co.

Reclaimed wood.
Mountain Lumber Co.
PO Box 289, 6812 Spring Hill Ln.
Ruckersville, VA 22968-9510
Phone: 804-985-3646

Fax: 804-985-4105
sales@mountainlumber.com
www.mountainlumber.com

Pioneer Millworks—lumber and mouldings

Recycled and remilled lumber salvaged from commercial and industrial structures, river bottoms and wine vats. Beams, flooring, casings and mouldings are available.
Phone: 800-951-9003

Plastic Lumber Company—plastic lumber

Manufacturer, wholesaler and retailer of plastic lumber and plastic lumber products that are 97% recycled, post consumer polyethylene.
Phone: 330-762-8989

Recycled Polymer Associates—plastic lumber

Recycled plastic lumber manufactured from 100% recycled plastic.
Phone: 212-463-8622

Sierra Timber Framers—recycled lumber

Recycled and salvaged wood.
Phone: 530-292-9449

Trex—wood-polymer composite lumber

Trex is a wood-polymer lumber that is made from reclaimed plastic (recycled plastic grocery bags and reclaimed pallet wrap) and waste wood. It contains no preservatives and will not shrink, crack, or splinter and is also resistant to termites, rot and decay. It is suitable for a wide range of uses including boardwalks/walkways, marina docks/decking and industrial flooring.

Trex
800-289-8739
www.trex.com
Tom Mulligan
Schultz, Snyder and Steele
Indianapolis, IN
888-238-8586

06070—wood treatments

06080—wood coatings

06092—connectors and supports

06120—structural panels

Insulpan—structural panels

Foam cores of panels are recyclable, reduce significantly the amount of old growth timber required in construction, reduces job site waste.

Insulspan
PO Box 38
Blissfield, MI 49228-0038
Phone: 800-726-3510
Fax: 517-486-2056
www.insulspan.com

06150—wood decking***06162—fiberboard sheets*****Homasote—multi-purpose board, sound-control board, wall paneling**

Products made from 100% recycled newsprint.

Homasote

PO Box 7240

West Trenton, NJ 08628-0240

Phone: 206-487-1453

Fax: 609-530-1584

ISOBORD, Inc.—fiberboard

Made from an annually renewable resource – wheat straw, formaldehyde free.

ISOBORD, Inc.

1300 SW 5 th Ave., Ste. 3030

Portland, OR 97201

Phone: 503-242-7345

Fax: 503-721-0940

Polywood, Inc.

Manufactured from post-consumer plastics

Polywood, Inc.

125 National Road

Edison, NJ 08817

Phone: 732-248-8810

Fax: 732-248-8828

www.polywoodinc.com

PrimeBoard/WheatBoard—Industrial-grade particleboard made from wheat straw

WheatBoard is an industrial-grade particleboard made from wheat straw and non-toxic, emission-free binding agent. As a result, it creates a new form of particleboard referred to as “EFB” or emission-free board.

United Board Group

2111 3M Drive

Wahpeton, ND 58075

Phone: 701-642-9700

Fax: 701-642-1154

SierraPine Ltd.—fiberboard

SierraPine medium density fiberboard is 100% recycled and recovered wood fiber.

Phone: 916-772-3422

06164—laminated and processed sheets**States Industries Inc.—veneers**

FSC Certified veneers laminated to certified veneers, agricultural board products or GridCore board of recycled linerboard.

Phone: 541-688-7871

06170—prefabricated structural wood***06172—prefabricated wood joists and trusses***

06180—glued-laminated timber

06182—glued-laminated decking

Chemical Specialties, Inc.—Preserve Treated Wood

For more than a decade, arsenic and chromium free Preserve® treated wood has been used in some of the world's most environmentally sensitive locations. From the pristine environments of national parks in Australia, North America, Europe and Japan, to neighborhood playgrounds and backyards like yours, Preserve® treated wood has been used around the globe to provide a durable building product for outdoor projects where environmental values and product safety are priorities.

Preserve® treated wood products are available in response to concerns raised by public and government sectors of the treated wood market regarding the use of arsenic and chromium in pressure-treated wood. Preserve® is treated with ACQ®, an environmentally advanced formulation that is arsenic and chromium free. The ACQ preservative system provides long-term protection from rot, decay and termites without the use of any EPA listed hazardous chemicals.

Chicago Flameproof
Chemical Specialties, Inc.
1200 Lake Street
P.O. Box 318
Montgomery, IL 60538
Phone 630-859-0009
Fax 630-896-4773
www.treatedwood.com

Endura Wood Products—Smartwood certified wood products, rediscovered wood and agri-based products for home and business

Endura Wood Products offers a wide variety of certified and rediscovered woods and wood products for homes and business. These certified, rediscovered, recycled content, and agri-based products for homes and businesses are everything you expect in high quality materials. Endura proves its commitment to preserving the world's forests through chain of custody certification from the Smart Wood Certified Forestry program and by its commitment to the Forest Stewardship Council's (FSC) "Ten Principles of Sustainability". Working with Endura assures you of the finest wood products and services, and of the highest standards of environmental responsibility.

Smart Wood Certified Forestry
Endura Wood Products
524 SE Main Street
Portland, OR, 97214
Phone: 503-233-7090

CollinsWood—Certified Wood Products from Well-managed forests

The Collins Pine Company operates 293,000 acres of forest producing high-quality lumber and veneer while maintaining forest ecosystems that are vibrant and diverse. Despite harvesting more than 1.5 billion board feet of lumber from the Collin's Alamanor Forest in California, the forest still holds just as much wood as it did when logging began. Since the 1940s Collins has operated under a truly "sustained yield" management plan using selective harvesting. The company's forest management practices have been certified by scientific certification systems, which designated it a "state-of-the-art well-managed forest." All particleboard uses waste from milling operations to make a new product. Collins goes a step further by using the waste from milling certified logs from their sustainably managed forests.

To promote markets for certified wood, Collins sponsored a furniture design contest. The national award is intended to support and encourage furniture design and manufacture using environmentally certified

wood.
CollinsWood
1618 SW 1st Avenue #300
Portland, OR 97201 USA
Phone 800-329-1219
Phone: 503-417-7755
Fax: 503-417-1441

06250—prefinished paneling

06260—board paneling

Medex/Medite II—Engineered wood-based panel

Medex and Medite II is manufactured from over 90% wood residuals for maximum utilization of our timber resources. Medex as a replacement for plywood and solid wood in the following non-structural moisture area applications: counter tops, Baseboard and decorative cap mouldings, window sill, and bathroom cabinets and woodwork. Medite II is an interior grade engineered wood based panel. Medite II can be used as a replacement for sanded plywood and solid wood in the following non-structural and non-moisture applications: Display cases, millwork and wainscoting, and cabinetry.

Medite
PO Box 4040
Medford, OR 97501
Phone: 800-676-3339
Fax: 541-779-9921

Smith and Fong Co./Plyboo Bamboo Products

Bamboo is a rapidly renewable, alternative to wood products. It is grown and harvested on a 4-year cycle, 25% being harvested annually, sustainably, indefinitely.
Phone: 650-872-1184

06400—architectural woodwork

Pioneer Millworks

Recovers and mills salvaged timbers into fine new wood products such as: flooring, doors, trim, and cabinetry.

Pioneer Millworks
1180 Commercial Dr.
Farmington, NY 14425
Phone: 716-924-9970
Fax: 716-924-9962
erin@newenergyworks.com
www.pioneermillworks.com

What Its Worth, Inc.

Antique/recycled longleaf heart pine (flooring, blank stock, posts and beams) salvaged from buildings slated for demolition, uses a lumber slated for landfills and makes accessible a virgin lumber not available in currently grown forests.

What Its Worth, Inc.
PO Box 162135
Austin, TX 78716-2135
Phone: 512-328-8837
Fax: 512-328-8837

wiwpine@aol.com

06412—cabinet and drawer hardware

06420—wood paneling

Contact Lumber—Veneer covered, finger-jointed millwork

Contact Lumber produces a wide variety of products for the millwork industry. These have been engineered to maximize wood fiber usage. Most products use a minimum of clear lumber, which comes from larger, older trees. Instead, a substrate of softwood—which may contain knots or other minor blemishes—is covered with a thin, clear veneer. The softwood substrate is finger jointed, making it possible to use many short blocks of wood that once were thrown away.

www.contactlumber.com

Evenson Natural Resources, Michael—paneling

Wood paneling custom made from reclaimed wood.

Phone: 707-629-3679

States Industries—wood paneling

Panel products, 100% post-consumer waste

States Industries

29545 E. Enid Rd., PO Box 7037

Eugene, OR 97402-9656

Phone: 541-688-7871

Fax: 541-689-8051

marketing@statesind.com

www.statesind.com

06422—wood veneers and flitches

06424—laminates

Environ Biocomposites Inc.—manufacturer of countertops

Countertops are made from organic, soy-based materials that incorporate recycled newsprint and wood chips. This is an excellent environmental alternative to petroleum-based resins that are made from fossil fuels.

Phenix Biocomposites Inc.

P.O. Box 609

Mankato, MN 56002-0609

Phone: 507-931-9787

06430—wood stairs and handrails

06432—ladders

06440—wood moldings and ornaments

06442—ornamental columns

06446—simulated architectural woodwork

06600—plastic fabrications

BF Composites, Inc.—manufacturer of plastic wood products

Mr. David Fielding

1501 Cottage Avenue
Columbus, IN 47210
Phone: 812-375-9930
FAX: 812-375-9935

U.S. Plastic Lumber Corp.—manufacturer of high quality recycled plastic lumber

Mr. Scott House
P.O. Box 467
Sweetser, IN 46987
Phone: 765-384-4336
FAX: 765-384-4346

Max Katz Bag company, Inc.—manufacturer and distributor of construction blankets and other plastic sheeting materials

Sales Representative
235 South LaSalle Street
Indianapolis, IN 46201
Phone: 317-635-9561
FAX: 317-635-3458

Rehab Resource, Inc. (RRI)—non-profit redistribution of building materials, computers, paint

Mr. Danny Woodcock
3029 E. Washington Street
Indianapolis, IN 46201
Phone: 800-685-4686
Phone: 317-637-3701
Fax: 317-637-3835
rehab@iquest.net
www.rehabresource.org

Renew Resources—products made from 100% recycled plastic

Products made by this manufacturer include Polyboard, Deck Master, Plastic Lumber, Kelron and other recycled plastic products. Kelron is an injection moulded high density polyethylene (HDPE) plastic made from recycled products. Kelron is innovative, cost-effective, and an alternative to traditional plywood and other solid plastic sheeting.

Renew Resources
3480 McNicoll Ave Unit #6
Toronto, Ontario
Canada, M1V5A6
Phone: 800-439-5028
Phone: 416-335-4040
FAX: 416-335-4039
danny@renewresources.com
www.renewresources.com

06610—glass fiber-reinforced plastic

Knauf Fiber Glass

Contains recycled glass, recyclable packaging, is an Energy Star product.
Knauf Fiber Glass
One Knauf Dr.

Shelbyville, IN 46176-1496
Phone: 800-825-4434
Fax: 317-398-3675
www.knauffiberglass.com

06650—solid polymer fabrications

DIVISION 07—THERMAL AND MOISTURE PROTECTION

07100—waterproofing and dampproofing

07180—traffic coatings

07190—water repellents

07210—building insulation

American Rockwool, Inc.—insulation

Non-toxic, non-flammable, contains no asbestos, no formaldehyde, no chemical additives, inorganic, made from recycled slag, waste by-product of steel mills, manufactured with recovered materials.

American Rockwool, Inc.

1 Jackrabbit Rd.

Nolanville, TX 76559-0483

Phone: 800-762-9665

Fax: 254-698-2234

www.amerrock.com

AMOCO—Building Insulation

Extruded polystyrene insulation and house wrap for commercial and residential use. Foam insulation board made with a minimum of 50% recycled polystyrene. At least half of the recycled material comes from post-consumer sources; the remainder comes from industry sources. Amoco is a founding member of the National Polystyrene Recycling Company (NPRC), the largest recycler of polystyrene in the USA.

Amoco Foam Products Company

2907 Log Cabin Drive

Smyrna, GA 30080-7013

Phone: 800-241-4402

**Anco Products, Inc.—manufacturer of fibrous glass insulation
(Textrafine) and flexible airtuct**

Mr. Ray Plagens

2500 South 17 th Street

Elkhart, IN 46517

Phone: 219-293-5574

Fax: 219-295-6235

Applegate Insulation

Applegate Cellulose provides superior performance and many environmental benefits; contains 85% post-consumer recycled materials and, according to the NRDC, is the least polluting and most energy efficient, and consumes just one-tenth the energy during manufacturing as fiber-glass.

Applegate Insulation

1000 Highview Dr.

Webberville, MI 48892-9270

Phone: 800-627-7536

Fax: 517-521-3597

appleinsul@aol.com

applegateinsulation.com

Armstrong World Industries, Inc., Armstrong Insulation Products, North America

Reduces need for fossil fuel, contributes to energy efficiency of mechanical system, won't support microbial growth, contains no formaldehyde, up to 10% process scrap recycled into products, elimination of CFC's 1985, HCFC's phased out 1997, recycling of scrap into consumer products, including carpet padding.

Armstrong World Industries, Inc.

Armstrong Insulation Products, North America

150 N. Queen St.

Lancaster, PA 17603-3550

Phone: 800-866-5638

Phone: 717-396-4127

Fax: 800-443-9386

717-396-4265

moreinfo@armaflex.com

www.armaflex.com

Certainteed Corp., Insulation Group

Saves energy, reduces greenhouse gases; made from recycled glass (up to 40%)

Certainteed Corp., Insulation Group

PO Box 860

Valley forge, PA 19482-0860

Phone: 610-341-7739

Fax: 610-341-7571

Tom.Newton@ct.sgcna.com

www.certainteed.com

Enercept, Inc.—structural insulated panels

Enercept SIP's are manufactured from short growth replaceable lumber and recyclable EPS.

Enercept, Inc.

3100 9 th Ave. SE

Watertown, SD 57201

Phone: 605-882-2222

Fax: 605-882-2753

enercept@enercept.com

Energy Control Inc.—manufacturer of cellulose insulation

Mr. Dave Bell

P.O. Box 327

Ossian, IN 46777

Phone: 219-622-7614

Fax: 219-622-7604

Dbell29499@aol.com

Greenstone Industries, Inc.—manufacturer of cellulose insulation

Manufactured with 100% newspaper and other waste paper products

Thermafiber, LLC
Corporate Headquarters
3711 West Mill Street
Wabash, IN 46992

Additional Facilities:
Tacoma, WA
Nolanville, TX
Spring Hope, NC



Telephone/Fax Number: 219-563-2111/219-563-8979

Internet Address: www.thermafiber.com

Insulation/Acoustical Products Manufactured: Thermafiber is the largest manufacturer of mineral wool in North America servicing the insulation industry since 1934. Our products are used in high temperature, fire protection and sound control applications. Products are listed with Underwriter's Laboratories, Inc. (UL) and Omega Point Laboratories, Inc. (OPL).

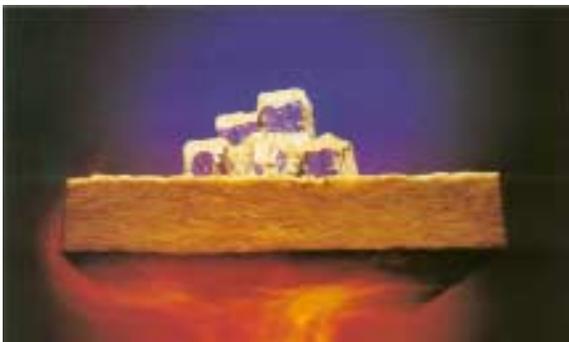
Thermafiber products are non-toxic and non-flammable. They contain no asbestos, formaldehyde, or chemical additives. They are inorganic, made from recycled slag which is a waste-by product of steel mills, manufactured with recovered materials.



Commercial Insulation Products-

Thermafiber plays an important role in fire protection and life safety in commercial construction through the ability of mineral rock wool to resist temperatures in excess of 2000° F.

- **FIRESPAN®**- fire protection for listed UL and OPL perimeter fire containment designs
- **FIRESPAN® SS**- fire protection for exterior steel studded curtain wall fire containment systems
- **Curtain Wall Insulations**- provide fire/thermal performance for exterior curtain walls systems
- **Safing Insulation**- fire stopping material for perimeter fire containment systems, penetrations, and construction joint applications
- **Sound Attenuation Fire Blankets**- sound/fire performance for walls, ceilings and floors
- **FS-15 & FS-25 Blankets**- fire/thermal performance in exterior walls, ceilings and floors
- **Micore®** - mineral fiber board used for sound absorption, tackboards, wall panels and stoveboards
- **Safing Clips**- Safing Insulation support clips for perimeter fire containment installations
- **Smoke Seal® Compound**- caulk-type sealant for fire and smoke stop systems
- **USG Firecode® Compound** - mortar-type sealant for fire/smoke stop systems (UL designs)
- **3M-Thermafiber Fire Barrier Spray**- elastomeric sealant for fire/smoke stop systems (OPL designs)



Industrial Insulation Products-

- **Industrial Felts and BI Insulations-** for high temperature applications up to 1,350° F
- **Metal Mesh Blankets-** Flexible blankets with wire mesh covering used to insulate curved surfaces and irregular shapes in applications up to 1200° F.
- **FRF Insulation-** Filler Reinforcement Fibers with properties to enhance many products
- **Maritime Insulation-** US Coast Guard approved felts
- **Granulated, Spray and Packing Bulk Wool-** for condensation control/thermal/acoustical performance
- **K-FAC® 19-** for high temperature applications up to 1900° F
- **Firedoor Coreboard-** light weight mineral fiber board used as core material in fire doors

Residential Insulation Products-

- **Thermatech Side Wall Spray-** spray on mineral wool applied to interior and exterior walls for sound/thermal/fire performance
- **Thermatech Attic Blow Insulation-** attic blow insulation for sound/thermal/fire performance
- **Thermatech Foundation Wall Spray-** thermal application for foundation walls



Thermafiber®, K-FAC® and FIRES PAN® are registered trademarks of Thermafiber, LLC. Micore® is a registered trademark of USG Interiors, Inc.



Mr. Lonnie Krump
4401 New Haven Avenue
Fort Wayne, IN 46803
Phone: 800-286-8012
Fax: 219-420-2553779
www.greenstone.com

Johns Manville Corporation, Building Insulation

Green Cross certification from Scientific Certification Systems, a minimum of 25% recycled glass.
Johns Manville Corporation, Building Insulation
717 17 th St., PO Box 5108
Denver, CO 80217-5108
Phone: 303-978-2506
Fax: 303-978-3661
bradburn@jm.com
www.jm.com

Koschnick and Company, Inc.—distributor of homasote building products

Mr. Clarence Koschnick
925 E. Vermont Street
Indianapolis, IN 46206
Phone: 317-639-6591
FAX: 317-639-4995
kosco@indy.net

Par/PAC—insulation

Patented system 80% recycled content cellulose insulation.
Par/PAC
27 Main St.
West Swanzey, NH 03446
Phone: 603-357-6625
Fax: 603-357-6621
parpac@monad.net
www.parpac.com

Regal Industries, Inc.—manufacturer of cellulose insulation

Mr. Robert Spicer
9564 E. 600 South
Crothersville, IN 47229
Phone: 812-793-2214
Fax: 812-793-3432

**Simplex Products—Housewraps, recycled-content structural sheathing
and exterior insulation and finish systems**

Simplex Products produces a number of well-known, environmentally-beneficial building materials:

R-wrap, Barricade and Airstop house wraps that reduce building air leakage and protect the thermal properties of cavity insulation.

Thermoply structural sheathing contains 80% post-consumer recycled material and is completely recyclable.

Studio Board is a construction panel targeted specifically for building sets in the entertainment industry. Studio Board contain 85% post-consumer waste and is completely recyclable.

Finestone exterior insulation and finish system uses 100% acrylic polymers...never vinyls.

Simplex Products

PO Box 10

Adrian, MI 49221

Phone: 800-345-8881

www.simplex-products.com

07220—roof and deck insulation

Homasote—roof decking and nailbase roof insulation

(See 06162 for more information)

07240—exterior insulation and finish systems

07248—insulation fastening accessories

07260—vapor retarders

07270—firestopping

L.T. Ollesheimer—distributor of huebert fireboard construction products

Mr. Michael Zunk

105 S. Denny

Indianapolis, IN 46201

Phone: 317-353-8242

Fax: 317-353-8267

07272—air infiltration barriers

07310—shingles

Classic Products, Inc.—shingles

98% post-consumer recycled material, energy efficiency documented by FSEC study, installs over old roofs without a tear-off.

Classic Products, Inc.

PO Box 701

Piqua, OH 45356-0701

Phone: 800-543-8938

Fax: 937-773-9261

www.classicroof.com

www.perfectionusa.com

Crowe Building Products Ltd.—Realistic roofing slates from 100% recycled plastic

Authentic Roof™ was conceived as a world first and specifically designed to be an improvement on real slate roofing. It is made from 100 percent recycled materials and is itself completely recyclable. The tiles were made in molds that were computer engineered and precision crafted from 100-year-old slates for that special authentic look of natural slate. The polymers extend the life expectancy and stiffen the rubber materials that comprise the product as well as making it relatively light in weight. This roofing material was formulated for durability and tested to the extreme so as to far surpass the highest standards of the industry.

Crowe Building Products Ltd.

116 Burris Street
Hamilton, ONT, Canada. L8M2J5
Phone: 905-529-6818
Fax: 905-529-1755
Email: crowe@authentic-roof.com

Gary-Hobart Roofing—distributor of roofing products and siding

Mr. Bob Fuller
P.O. Box 346
Hobart, IN 46342
Phone: 219-962-1173
Fax: 219-962-6245

Globe Building Materials—manufacturer of asphalt roofing products, organic felt

Mr. John Klikus
2230 Indianapolis Boulevard
Whiting, IN 46394
Phone: 219-473-4500
Fax: 219-473-4504

Metalworks—metal shingles

Manufactured from up to 50% recycled product, can be installed over existing asphalt roofs eliminating removal and disposal of old roof, saves approximately 30,000 lbs. of roofing waste being thrown in landfills.

Metalworks
1005 Beaver Grade Rd.
Moon Township, PA 15108-2964
Phone: 412-299-7320
Fax: 412-299-7326
roofworks@aol.com
www.metalworksroof.com

Ondura Corporation

Corrugated asphalt roofing, cellulose fibers are 100% post-consumer recycled materials.
Ondura Corporation
4900 Ondura Dr.
Fredericksburg, VA 22407-8773
Phone: 800-777-7663
Fax: 540-898-4991
www.ondura.com

Re-New Wood Eco-Shake—shingles for a healthier environment

The eco-shake shingle is made from two recycled materials: reinforced vinyl and cellulose fiber. The eco-shake shingle can 1) dramatically reduce the amount of materials that would otherwise find its way into landfills and 2) provide us all with a healthier environment by using only waste wood products, thereby preserving our natural forests.

Eco-shakes are an excellent roofing product for all climates and are ideally suited for both residential and commercial use.

Re-New Wood, Incorporated

104 N. 8 th

PO Box 1093
Wagoner, OK 7446
Phone: 800-420-7576
Phone: 918-485-5803

07320—roof tiles

07325—roofing tile fastening accessories

07410—roof and wall panels

07415—wall panels

07460—siding

07500—membrane roofing

07590—roof maintenance and repair

07610—metal roofing

07620—sheet metal flashings and trim

07645—preformed flashings

07650—flexible flashings

07710—prefabricated roof specialties

07715—fascias, soffit panels and penthouse enclosures

07720—roof accessories

07762—roof pavers and ballast materials

07812—applied fireproofing

07840—firestopping

07870—smoke containment barriers

07915—sealants, caulking and seals

DIVISION 08—DOORS AND WINDOWS

Note: Division 8 contains nearly 100 different sections. Due to the volume of materials, assemblies and systems we have chosen not to list each individual section. Some generalizations may be made, however. Many doors and windows employ wood, steel, and aluminum. Steel and aluminum usually contain some recycled content. Wood, of course, is a renewable resource.

Glass is also a significant material in Division 8. Although glass requires tremendous amounts of energy to produce, advances in glazing technologies have dramatically improved window energy efficiency.

As you search for doors and windows, focus on product quality, recycled material content and energy efficiency.

08100—metal doors and frames

BetterBilt Doors and Windows

Windows feature aluminum frames. Strong and durable aluminum is one of the most easily recycled materials currently available for window frames.

BetterBilt Doors and Windows
704 Twelfth Ave., PO Box 277
Smyrna, TN 37167
Phone: 615-459-4161
Fax: 615-459-0959
www.betterbilt.com

08724—weather stripping and thresholds

Earhart Technologies, Inc.—shims for doors, windows, etc.

Made from recycled composite material.
Earhart Technologies, Inc.
123 Santa Barbara St.
Santa Barbara, CA 93101
Phone: 805-963-8786
Fax: 805-564-4847
etezshim@silcom.com

08812—decorative glazing

Tory West

Artist that uses enamels (crushed colored glass) on recycled window glass.
Tory West
3408 N. 37 th St.
Tacoma, WA 98407-6114
Phone: 253-752-3090
Torywest@compuserve.com

UltraGlas inc.

All UltraGlas products for all applications are made of pre-, and post-consumer waste.
Phone: 800-777-2332

DIVISION 09—FINISHES

09120—ceiling suspension

09140—interior framing assemblies

09200 –Lath and Plaster—Gypsum

09220—Portland cement plaster/stucco

09230—plaster fabrications

09250—gypsum board, framing and accessories

09255—gypsum fabrications

09300—tile

Durable Corp.—floortile

Floortile made from 100% recycled tires, floor mats, loading dock bumpers, wheel chocks—100% recycled tires.
Durable Corp.
75 N. Pleasant St., PO Box 290

Norwalk, OH 44857-1218
Phone: 800-537-1603
[sales@durablecorp.com](mailto:sales@ durablecorp.com)
www.durablecorp.com

Majestic Slate by EcoStar Inc.—tile

Majestic Slate tile is made of 100% recycled industrial rubber and plastics.
Majestic Slate by EcoStar, Inc.
30 Center Drive, #201
Vernon Hills, IL 60061
Phone: 847-362-6558
Fax: 847-816-3965
kerston@ameritech.net
customer_service@majesticskylines.com
www.ecostarinc.com

09305—tile-setting materials and accessories

09310—ceramic tile

Oceanside Glasstile Co.

85% recycled glass content.
Oceanside Glasstile Co.
3235 Tyler St.
Carlsbad, CA 92008-3026
Phone: 760-434-0051
Fax: 760-434-0590

Summitville Tiles

Post-industrial waste product as the primary raw material, closed system for solid waste accumulation and re-use in a manufacturing process that is virtually waste free.
Summitville Tiles
PO Box 73
Summitville, OH 43962-0073
Phone: 330-223-1511
Fax: 330-223-1414
www.summitville.com

Terra Green Ceramics—manufacturer of ceramic tiles

Made from 58% recycled glass, of which 20% is post-consumer waste.
Ms. Sonya Brock
1650 Progress Drive
Richmond, IN 47374
Phone: 765-935-4760
Fax: 765-935-3971
sbrock@terragreenceramics.com
www.terragreenceramics.com

Turtle Plastics

Made from 100% recycled plastic. Tile is also recyclable.
Turtle Plastics
7450 A Industrial Pkwy.

Lorain, OH 44053-2064
Phone: 440-282-8008
Fax: 800-437-1603
info@turtleplastics.com
www.turtleplastics.com

09510—acoustical ceilings

Armstrong World Industries, Inc.—acoustical ceilings

Made from up to 79% recycled material, reduces energy consumption and costs by up to 18%, damage and soil resistance for sustainable design, inhibits/retards growth of mold and mildew on painted ceiling surfaces, many can be recycled after useful life through reclamation and recycling program.

Armstrong World Industries, Inc.
PO Box 3001
Lancaster, PA 17604-3511
Phone: 888-CEILINGS
Fax: 800-572-TECH
www.ceilings.com

BPB Celotex —acoustical ceilings

A wide range of products with a recycled material content ranging from 55% to 96%, depending on the product.

BPB Celotex Corporation
5301 W. Cypress St., Suite 300
Tampa, FL 33607
Phone: 800-CELOTEX
BPB Celotex
1400 Main Street
Lagro, IN 46941
Phone: 219-782-2211
Fax 219-782-2184
www.bpb-celotex.com

USG Corporation—acoustical ceilings

Innovative ceiling solutions with products that have a recycled content of up to 95%.

Every year, USG uses nearly 60,000 tons of corn starch (33% of industry total), over 150,000 tons of slag (36% of industry total), over 670,000 tons of recycled paper (33% of industry total), over 40,000 tons of waste newspaper (45% of industry total), and over 2,750,000 tons of synthetic gypsum.

USG Corporation
125 South Franklin Street
PO Box 4470
Chicago, IL 60680-4470
Phone: 800-USG4YOU
Fax: 312-606-5566
www.usg.com

09546—integrated ceilings

09547—metal ceilings

The Gage Corporation—metal ceilings

Decorative aluminum ceilings, at least 50% recycled materials.

The Gage Corporation
803 South Black River St.
Sparta, WI 54656
Phone: 800-786-4243
Fax: 608-269-7622

09547—metal ceilings***09548—special ceiling surfaces******09555—mirror ceilings******09570—wood ceilings******09585—acoustical ceiling baffles and screens******09610—floor treatments******09614—detectable/tactile warning surfaces******09618—sound isolation membranes******09622—industrial block flooring******09624—resilient athletic surfacing*****RB Rubber Products, Inc.—rubber surfaces**

Products from recycled tires. Over 2 million tires were processed into useful products in 1998.

RB Rubber Products, Inc.
904 E. 10 th Ave.
McMinnville, OR 97128
Phone: 503-472-4691
Fax: 503-435-1685
sales@rbrubber.com
www.rbrubber.com

09630—masonry flooring***09640—wood flooring*****PermaGrain Products, Inc.—wood flooring**

Certified wood, recycled materials used in packaging and shipping.

PermaGrain Products, Inc.
4789 West Chester Pike
Newton Square, PA 19073
Phone: 610-353-8801
Fax: 610-353-4822
cristellos@aol.com
www.permagrain.com

Woods Company, Inc.

Flooring is made from lumber reclaimed from old buildings destined for demolition.

Woods Company, Inc.

5045 Kansas Ave.
Chambersburg, PA 17201
Phone: 717-263-6524
Fax: 717-263-9346
woodsco@innernet.net
www.thewoodscompany.com

09642—wood athletic flooring

Phenix Biocomposites, LLC—wood panels

A manufacturer of highly engineered composite panels utilizing waste products (newsprint) and renewable resources (various agricultural fibers) for the building and furniture industries.

Phenix Biocomposites, LLC
PO Box 609
Mankato, MN 56002
Phone: 507-931-9787
Fax: 507-931-5573
sales@phenixllc.com
www.phenixbiocomposites.com

09650—resilient flooring

Amtico International, Inc.—resilient flooring

Chlorine-free, plasticizer-free, low smoke density and toxicity, recyclable, low VOC emissions

Amtico International, Inc.
6480 Roswell Rd. NE
Atlanta, GA 30328-3148
Phone: 404-267-1900
Fax: 404-267-1901
info@amtico.com
www.amtico.com
www.stratica.com

Cork America

Renewable raw materials, recycles 100% of post-production waste.
Cork America
5657 Santa Monica Blvd.
Los Angeles, CA 90038-2903
Phone: 323-469-3228
Fax: 323-465-5866

Dinoflex Manufacturing, Ltd.—interior and exterior rubber flooring

Rubber surfacing products made from recycled tires.

Dinoflex Manufacturing, Ltd.
PO Box 3309
Salmon Arm, BC V1E4S1 Canada
Phone: 250-832-7780
Fax: 250-832-7788
sales@dinoflex.com
www.dinoflex.com

Dodge-Regupol, Inc.—cork flooring

Recycled SBR tire rubber, reprocessed post-industrial EPDM rubber.

Dodge-Regupol, Inc.

PO Box 989

Lancaster, PA 17608-0989

Phone: 717-295-3400

Fax: 717-295-3414

sales@regupol.com

www.regupol.com

Gerbert Limited—rubber flooring

ECOsurfaces made from 100% recycled rubber and ECOshock underlayment.

Gerbert Limited

PO Box 4944

Lancaster, PA 17604-4944

Phone: 717-295-3400

Fax: 717-295-3414

gerbertltdinfor@gerbertltd.com

www.regupol.com

Infocork, LDA—cork flooring

Recycled raw materials used in the production.

Infocork, LDA

PO Box 20

4535 Mozelos Vfr, Portugal

Phone: 351-2-747-5600

Fax: 351-2-747-5606

Sales Manager: Bruce Graye, 877 381-8123

Gm3@amorim-revestimentos.pt

Johnsonite—flooring and flooring accessories

Vinyl and rubber products made of recycled materials, environmentally friendly adhesives.

Johnsonite

16910 Munn Rd.

Chagrin Falls, OH 44023-5411

Phone: 440-543-8916

Fax: 440-543-8290

info@johnsonite.com

www.johnsonite.com

Marley Flexco Flooring

Durable, anti-slip flooring formulated from recycled tires.

Marley Flexco Flooring

PO Box 553

Tuscumbia, AL 35674

Phone: 800-633-3151

Fax: 256-381-0322

www.marleyflexco.com

Protect-All—rubber flooring

Protect-All is designed to provide heavy-duty protection of floors and other sensitive, high-wear surfaces. Protect-All Floor Covering is manufactured using recycled vinyls from the single-ply roofing and automotive industries. It has been manufactured since 1989 using a patented process. Protect-All is a

recycled product using 100% post-industrial scrap vinyls.

Oscoda Plastics, Inc.
Sales Office: 5585 North Huron Avenue
Oscoda, MI 48750
Phone: 517-739-6900
Phone: 800-544-9538
Fax: 517-739-1494

Bishop Distributing Company
1610 S. Girls School Rd.
Indianapolis, IN 46231
Phone: 800-968-8901 ext. 366
www.bishopdistributing.com

09652—laminatE flooring

09670—fluid-applied flooring

09682—carpet cushion

Chicago Adhesive Products Company—environmentally safer adhesives for carpets and other floor coverings

Safe-Set adhesives is a line of solvent-free, low-odor, professional quality adhesives, which contain no hazardous ingredients as per OSHA Regulation: 29CFR1910, 1200.

Safe-Set can be used to bond all kinds of flooring and trim, including wood flooring, ceramic tiles, resilient flooring, cove base or carpet, including commercial or contract grade carpets with difficult synthetic backing. The adhesives are nonflammable, anti-microbial, nontoxic, low-VOC, and freeze-thaw stable.

All Safe-Set products are packaged in recycled plastic containers. All cartons and labels as well as all promotional materials are printed on recycled paper.

Safe-Set products are a reflection of CHAPCO's commitment to the environment and its preservation. The products do not contain any solvents, toxins or carcinogens. Chapco adhesives protect the health of installers, building occupants and the planet.

Chicago Adhesive Products Co. (CHAPCO)
1165 Arbor Drive
Romeoville, IL 60446 USA
Phone: 630-679-9100
Phone: 800-621-0220
Fax: 630-679-9155
www.chapco-adhesive.com

Homasote—carpet underlayment and subflooring

(See 06162 for more information)

09688—sheet carpet

Collins and Aikman—carpet tiles

Closed loop recycled content (28-54%) floorcovering, 100% recyclable, returned to the manufacturer for recycling.

Collins and Aikman

PO Box 1447
Dalton, GA 30722-1447
Phone: 706-259-2070
Fax: 706-259-2610

DuPont Flooring Systems, DuPont Commercial Carpet, DuPont Carpet Reclamation Program

Reclamation specification, Reclaimed carpets may be processed into reusable materials for: Automobile parts, RepTile utility flooring product, soundproofing materials, padding, sod reinforcement.

DuPont Flooring Systems, DuPont Commercial Carpet

175 Townpark Dr., Ste. 400

Kennesaw, GA 30144

Phone: 800-328-7719

Fax: 770-420-7752

j.kirk.hendrix@answers.ke.dupont.com

www.dupont.com/antron

Earthwise Ennovations Programs—carpet restoration

Earthwise Ennovations (E2) is a program that reconditions and restores old modular carpet for reuse in refurbishment projects and office space installations. With E2, customers not only have an environmentally responsible alternative to landfilling used carpet—they have an effective way to avoid the high (and often hidden) cost of disposal.

Renewal and Reuse Program

- ☛ The customer returns old, existing carpet tile to Milliken
- ☛ The old carpet undergoes the E2 process of cleaning, fiber rejuvenation and repatterning.
- ☛ The renewed carpet is sent back to the customer.

A Renewal and Reuse credit program is available.

Milliken Carpet

201 Lukken Industrial Dr. W.

LaGrange, GA 30240

Phone: 706-880-8653

Phone: 800-241-4826 x 8653

Fax: 706-880-5906

Interface, Inc.—carpet squares

Interface is redesigning its processes and products into cyclical material flows where “waste equals food.” We are reducing use of raw materials and working to get the most value out of the materials that we employ. This includes careful recycling of man-made materials so that waste materials from industry and from society become valuable raw materials in industry. It also means using more organic materials in a way that allows them to safely return to their natural cycles.

Interface, Inc.

Atlanta, GA

770-437-6800

Larry Boyle, Account Executive

Phone: 800-336-0225

Larry_Boyle@mail.ifsia.com

Milliken Carpet —carpet tiles

Earth Square: Old carpet tiles are renewed and reused, minimizing waste, energy and natural resources, costs approximately 50% less than new carpet.

Milliken Carpet

201 Lukken Industrial Dr. W.
LaGrange, GA 30240-5913
Phone: 877-327-3639
Fax: 706-880-3134
Steve_Hoffmann@milliken.com
www.earthsquare.com

Shaw—carpet

Eco Solution Q is an environmentally responsible product, containing a minimum of 25% reclaimed fiber from post-industrial and post-consumer waste.

Shaw Contract Group
PO Drawer 2128
Dalton, GA 30722-2128
Phone: 800-342-SHAW

09720—wall coverings

Brewster Contract Wallcovering Brewster Environmentals is a varied selection of responsible wallcoverings.

Brewster Contract Wallcovering
67 Pacella Dr.
Randolph, MA 02368
Phone: 800-717-5651
Fax: 781-963-4975
Brewster_contract@brewp.com
www.brewsterwallcovering.com

Len-Tex Wallcoverings

Environmental awareness is the guiding philosophy at Len-Tex wallcoverings. The company's mission is to design and produce flexible wallcoverings of outstanding beauty and superior durability, and to achieve this with minimal impact on the environment. The environmentally friendly manufacturing process, using water-based technology, was the pioneer in the 1980s in the wallcovering industry. Today, this "green" approach to manufacturing coupled with comprehensive recycling efforts has made Len-Tex the standard of the wallcovering industry. Recycling Efforts: Every yard of unbacked vinyl that is trimmed from rolls, or scrapped for waste is shipped overseas and turned into plastic toys for a major toy manufacturer. Also, all of the fabric backing that is trimmed from the rolls, along with all of the cardboard cores on which larger rolls of wallcovering are stocked, are recycled. Interoffice recycling includes office paper, aluminum cans and glass bottles. Revenue generated from the recyclable goods is divided among all of the non-management employees in the form of a quarterly bonus. This contributes to the overall enthusiasm and effort that is made by all of the employees.

Community Participation: The residential recycling facility in town is fully operated on a volunteer basis, and all of the owners of Len-Tex are regular monthly volunteers at the site. Even the owner of the company sorts out aluminum cans.

Key Features of Manufacturing Process: no solvent odors, mercury or heavy metal pigments; free of ozone-depleting chemicals; comprehensive recycling program.

Len-Tex
www.lentexcorp.com
MDC Wallcoverings
Mark Meier

Phone: 800-621-4006 x 7436

Guard Contract Wallcovering, CCF

Scrap vinyl is recycled into post-consumer products.

Guard Contract Wallcovering, CCF

1280 N. Grant Ave.

Columbus, OH 43201-2871

Phone: 614-297-6000

Phone: 800-521-5250

Fax: 614-297-6076

tschorn@decorativesurfaces.com

Satinesque Wallcoverings, CCF—wallcovering

Scrap vinyl recycled

Satinesque Wallcoverings, CCF

1280 N. Grant Ave

Columbus, OH 43201-2871

Phone: 614-297-6000

Fax: 614-297-6076

09772—special wall surfaces

09775—sanitary wall and ceiling panels

09800—acoustical treatments

09820—acoustical insulation and sealants

09835—sound diffusers and reflectors

09840—acoustical wall treatments

09910—paints

Amazon Environmental, Inc.—Recycled Paint and Paint Recycling Services

Amazon Environmental, Inc. (AEI) is a leading provider of latex paint recycling services. Amazon accepts many types of water based materials including latex paints for recycling at competitive rates. Materials that meet our quality requirements are manufactured into high-quality paints for consumer and commercial uses. Paints that fall below our standards are recycled into specialty cement additives.

Because we recycle 100 percent of the approved materials received, we have grown into a leading supplier of paint recycling services. AEI provides management solutions for hazardous and non-hazardous wastes. Services include waste classification, transportation, recycling, and emergency response. AEI also offers a complete range of hazardous and non-hazardous waste management, consulting and disposal solutions.

Phone: 800-566-2396

www.nvo.com/amazon

Eco-House—Natural Paints and Finishes

Eco-House, Inc. offers environmentally-friendly wood finishes made entirely from natural ingredients, such as linseed oil, orange oil, carnauba wax, rosemary oil beeswax, pine resin and shellac wax.

Eco-House Inc.

PO Box 220 Stn A

Fredericton, NB E3B4Y9, Canada

Phone: 506-366-3529

Fax: 506-366-3577

www.eco-house.com

Kelly-Moore Paint Co., E-Coat Division

Recycled interior and exterior paint product.

Kelly-Moore Paint Co., E-Coat Division

5101 Raley Blvd.

Sacramento, CA 95838

Phone: 916-920-0550

Fax: 916-920-1416

09940—decorative finishes

09960—high-performance coatings

PPG Industries, Inc. Coil and Extrusion Coatings

Kaleidoscope Workcell manufacturing is a closed loop process. Waste is recycled, making the process environmentally friendly. PPG also makes water-based coatings including Environ and Environ-ST.

PPG Industries, Inc. Coil and Extrusion Coatings

151 Colfax St.

Springdale, PA 15144

Phone: 800-258-6398

Fax: 724-274-2600

coexcoatings@ppg.com

www.ppg.com/car_coex

09964—fire-retardant coatings

09966—graffiti-resistant coatings

09995—finish fasteners

DIVISION 10—SPECIALTIES

10110—chalkboards and tackboards

10150—compartments and cubicles

10155—toilet compartments

**Meyer and Associates—district representative for Santana Toilet
Partitions and Plastic Lockers**

Mr. Earl Meyer

P.O. Box 19323

Indianapolis, IN 46219

Phone: 800-888-7915

Fax: 317-357-9817

10190—hospital cubicles

10194—cubicle hardware

10200—louvers and vents

10235—brick and block vents

10240—grilles and screens

10250—service walls

10260—wall and corner guards

10270—access flooring

10280—prefabricated ramps and walkways

10290—bird and pest control

10300—fireplaces and stoves

10350—flagpoles

10405—banners and flags

10410—directories and bulletin boards

10416—computerized directories and message boards

10420—letters and plaques

10426—signage and graphics

Envirosigns—signage

Design and manufacturing of recycled plastic, maintenance-free signage

Envirosigns

6360 Promler St., NW

North Canton, OH 44720

Phone: 888-765-7659 or 330-499-1990

Fax: 330-499-1995

sales@envirosigns.com

www.envirosigns.com

10450—pedestrian control devices

10500—lockers

Meyer and Associates—district representative for Santana Toilet

Partitions and Plastic Lockers

See Sub-Division 10155 for more information

10501—locker accessories and locks

10512—tenant storage compartments

10520—fire protection specialties

10525—emergency aid devices

- 10530—protective covers*
- 10536—awnings*
- 10550—postal specialties*
- 10605—wire mesh partitions*
- 10610—folding gates*
- 10615—demountable partitions*
- 10630—portable partitions, screens and panels*
- 10650—operable partitions*
- 10666—retractable grilles and closures*
- 10670—storage shelving*
- 10705—exterior sun control devices*
- 10730—daylighting panels*
- 10750—telephone specialties*
- 10800—toilet, bath and laundry accessories*
- 10824—tub and shower doors/enclosures*
- 10826—bathroom mirrors*
- 10900—wardrobe and closet specialties*
- 10914—hat and coat racks and accessories*
- 10916—closet specialties*

DIVISION 11—EQUIPMENT

- 11012—central vacuum cleaning systems*
- 11014—window washing and building facade maintenance equipment*
- 11020—security and vault equipment*
- 11030—bank equipment*
- 11036—automatic banking systems*
- 11038—teller equipment systems*
- 11040—ecclesiastical equipment*
- 11050—library equipment*
- 11060—theater and stage equipment*

11070—musical instrument equipment

11090—checkroom equipment

11106—merchandising/display equipment

Marlite

Contains 50% or more by weight of recycled post-industrial wood waste.

Marlite

PO Box 250

Dover, OH 44622-0250

Phone: 330-343-6621

Fax: 330-343-7296

info@marlite.com

www.marlite.com

11110—commercial laundry and dry cleaning equipment

11130—audio-visual equipment

11132—projection screens

11133—motorized projection screen covers and carriers

11134—multimedia theater systems

11138—conference room equipment

11150—parking control equipment

11160—loading dock equipment

11170—solid waste handling equipment

11172—waste compactors and destructors

11175—waste chutes and collectors

11190—detention equipment

11200—water supply and treatment equipment

11400—food service equipment

11406—walk-in coolers and freezers

11410—food preparation appliances

11425—kitchen hood and ventilation equipment

11434—serving line units

11435—ice machines

11452—residential appliances

11455—kitchen and bath cabinets

11456—countertops

11457—television units and accessories

- 11458—disappearing stairs*
- 11459—emergency escapes and protective equipment*
- 11460—unit kitchens*
- 11470—photographic and graphic arts equipment*
- 11480—athletic, recreational and therapeutic equipment*
- 11486—shooting range equipment*
- 11530—industrial safety equipment*
- 11600—laboratory equipment*
- 11670—educational equipment*
- 11700—medical and hospital equipment*
- 11720—examination and treatment equipment*
- 11730—patient care equipment*
- 11780—mortuary equipment*

DIVISION 12—FURNISHINGS

12050—fabrics

Carnegie Fabrics—contract textiles

Carnegie is a manufacturer of aesthetically pleasing environmentally safe textiles including Xorel-durable, anti-bacterial, recyclable and Climatex Lifecycle-natural fibers, compostable.

Carnegie Fabrics

110 North Centre Ave.

Rockville Centre, NY 11570

Phone: 516-678-6770

Fax: 516-678-6875

cgoldman@carnegiefabrics.com

www.carnegiefabrics.com

Design Tex, Inc., Marketing—contract textiles

McDonough Collections are woven from natural fibers; Redux Collections are derived from 100% recycled polyester.

Design Tex, Inc., Marketing

200 Varick St., 8 th Floor

New York, NY 10014-4810

Phone: 800-221-1540

Fax: 212-886-8149

www.dtex.com

Guilford of Maine—contract textiles

Terratex brand fabrics are made of 100% recycled material.

Guilford of Maine

80 Ottawa Ave. NW, Ste. 304

Grand Rapids, MI 49503
Phone: 616-554-4193
Fax: 616-451-0230
Karen.smant@us.interfaceinc.com

12100—artwork

Glass Art and Architecture

Glass products of 100% recycled glass.
Glass Art and Architecture
PO Box 942
Volcano, HI 96785
Phone: 808-968-8813
Fax: 808-968-8813
glassarts@bigisland.net

Joel Berman Glass Studios—art

Recycled glass
Joel Berman Glass Studios
#1, 1244 Cartwright St., Granville Island
Vancouver, BC V6H3R8 Canada
Phone: 604-684-8332
Fax: 604-884-8373

Resource Revival, Inc.—artwork and accessories

Fabricated from recycled materials, primarily old bicycle parts.
Resource Revival, Inc.
2267 N. Interstate
Portland, OR 97227
Phone: 503-282-1449
Fax: 503-282-1905
sales@resourcerevival.com
www.resourcerevival.com

Tamalpais TimberWorks—furniture and art

All furniture products are constructed of certified first use or recycled lumber.
Tamalpais TimberWorks
PO Box 3353
San Rafael, CA 94912-3353
Phone: 415-454-9948
Fax: 415-459-2806
bill@tamalpais.com
www.tamalpais.com

Yemm and Hart, Ltd.—art, furniture, lighting, accessories

100% post-consumer HDPE (milk jugs and detergent bottles), recycles industrial waste, recycles waste tires.
Yemm and Hart, Ltd.
1417 Madison 308
Marquand, MO 63655-9153
Phone: 573-783-5434
Fax: 573-783-7544

yemmhart@il.net
www.yemmhart.com

12300—manufactured casework

Neil Kelly Company, Signature Cabinets—cabinetry, doors, millwork

Certified wood, recycled wood, and bamboo.

Neil Kelly Company, Signature Cabinets

804 N. Alberta St.

Portland, OR 97217

Phone: 503-288-7461

Fax: 503-288-7464

Kathleen@neilkelly.com

www.neilkelly.com

12310—metal casework

12320—wood casework

12322—plastic/plastic laminate-faced casework

12352—laboratory casework

12354—medical casework

12358—display casework

12362—furniture drawers

12460—furnishing accessories

12484—floor mats and frames

Mat Factory, Inc.

Made from recycled rubber tires and recycled PVC.

Mat Factory, Inc.

760 W. 16 th St., Bldg. E

Cost Mesa, CA 92627-4319

Phone: 800-628-7626

Fax: 949-645-0966

matfact@pop3.concentric.net

www.matfactoryinc.com

Mats, Inc.

Recycled tires, recycled PVC.

Mats, Inc.

37 Shuman Ave.

Stoughton, MA 02072-3734

Phone: 800-628-7462

Fax: 781-344-1537

12492—blinds, shades and shutters

12495—draperies and curtains

12496—drapery and curtain hardware

12498—motorized hardware—blinds, shades, draperies

12506—room dividers and screens

12510—office furniture

Håg, Inc.—office furniture

Håg features the HÅG Scio office chair made of recycled bottlecaps.

Håg, Inc.

108 Landmark Dr.

Greensboro, NC 27409

Phone: 336-668-9544

Fax: 336-668-7331

anita@haginc.com

www.haginc.com

Herman Miller, Inc.—office furniture

Most products contain recycled components.

Herman Miller, Inc.

855 E. Maine Ave., PO Box 302

Holland, MI 49424

Phone: 616-654-5035

Fax: 616-654-5117

Studio eg

Free-standing, modular office furniture made from 98% recycled materials- tires, cardboard, newspaper and wheat chaff, manufactured utilizing environmentally responsible processes.

Studio eg

2437A Peralta St.

Oakland, CA 94607-1708

Phone: 510-763-8812

Fax: 510-893-2353

design@studioeg.com

www.studioeg.com

12544—restaurant/bar furniture

12563—health care furniture

12564—mailroom furniture

12565—classroom/library furniture

12566—computer/communications furniture and accessories

12567—ecclesiastical furniture

12600—multiple seating

12612—fixed audience seating

12620—portable audience seating

12640—booths and tables

12650—multiple-use fixed seating

12660—telescoping stands

12670—pews and benches

12700—systems furniture

Open Plan Systems—furniture systems

Spared approximately 48.4 million pounds of work stations from landfills by remanufacturing systems furniture; excess and used cardboard, plastic wrap and fabric are baled and sent to recycling plants that convert it to usable resource; Terretex fabrics which are made from 100% re-cycled materials, mainly plastic soda bottles; no heavy metals used, no VOC emissions; water-based paints; usable and excess steel and aluminum are recycled.

Open Plan Systems
4299 Carolina Ave., Bldg. C
Richmond VA 23222
Phone: 804-228-5688
Fax: 804-228-5656
www.openplan.com

12800—interior plants and planter

Ecologic, Inc.—manufacturer of products made from recycled materials

When the company was formed in 1992, the objective was to design and manufacture products made from recycled materials. The principle product line is for institutional use, with items available such as trash receptacles. Primary customers have expanded from the college and university market to municipalities.

1140 Elizabeth Avenue
Waukegan, IL 60085
Phone: 800-899-8004
Phone: 847-244-4466
Fax: 847-244-5977
Sales: stevelee@ecoloft.com
Technical: ken@ecoloft.com
General Information: infor@ecoloft.com
www.ecologicfurniture.com

DIVISION 13—SPECIAL CONSTRUCTION

13010—air-supported structures

13032—athletic rooms

13034—sound-conditioned rooms

13036—precision-controlled environments

13038—cold storage rooms and buildings

13039—wine storage rooms

13046—shelters and booths

13052—saunas and equipment

- 13054—steam baths and equipment*
- 13056—modular protective rooms and vaults*
- 13058—bathroom modules*
- 13070—bullet-resistant protection*
- 13072—blast-resistant construction*
- 13074—pressure-relief panel assemblies*
- 13080—sound, vibration and seismic control*
- 13090—radiation protection*
- 13095—radio frequency-shielded enclosures*
- 13100—lightning protection*
- 13121—pre-engineered buildings*
- 13122—metal building systems*
- 13125—grandstands and bleachers*
- 13127—heliports*
- 13130—cable-supported and fabric structures*
- 13132—dome structures*
- 13134—glazed structures*
- 13136—portable and mobile buildings*
- 13138—mezzanine systems*
- 13140—equipment/storage enclosures*
- 13142—pre-engineered concrete systems*
- 13144—prefabricated residential structures*
- 13147—pre-engineered wood component systems*
- 13150—swimming pool enclosures*
- 13152—swimming pools and equipment*
- 13172—whirlpool spas and hot tubs*
- 13200—liquid and gas storage tanks and basins*
- 13217—tank lining systems*
- 13282—hazardous materials containment*
- 13602—solar energy systems*
- 13630—solar collector components*

- 13650—photovoltaic collectors*
- 13700—security access and surveillance*
- 13800—building automation and control*
- 13850—detection and alarm*

DIVISION 14—CONVEYING SYSTEMS

- 14100—dumbwaiters*
- 14200—elevators*
- 14205—passenger cabs*
- 14235—residential elevators*
- 14310—escalators*
- 14320—moving walks*
- 14420—wheelchair lifts*
- 14425—stair lifts*
- 14450—vehicle lifts*
- 14460—material handling lifts*
- 14500—materials handling*
- 14520—hospital transport*
- 14550—conveyors*
- 14555—vertical reciprocating conveyors*
- 14560—chutes*
- 14580—pneumatic tube systems*
- 14600—hoists and cranes*
- 14700—turntables*
- 14840—powered scaffolding*
- 14930—funiculars*

DIVISION 15—MECHANICAL

- 15062—hangers and supports*
- 15070—mechanical sound, vibration and seismic control*
- 15075—mechanical identification*

15077—mechanical equipment cabinets and enclosures

15080—mechanical insulation

15082—duct insulation

15084—equipment insulation

15086—piping insulation

15105—pipes and tubes

15110—valves

15120—piping specialties

15164—floor and roof drains

15210—process air and gas piping

15410—plumbing fixtures

15412—water coolers and drinking fountains

15416—wash fountains

15418—safety showers

15426—fittings, trim and accessories

15480—domestic water heaters and enclosures

15510—heating boilers and accessories

15540—fuel-fired heaters

15600—refrigeration equipment

15700—heating, ventilating and air conditioning equipment

15720—air handling units

Conserval Systems, Inc., Solarwall Division

Uses renewable solar energy, reduces air pollution and global warming, saves energy, 100% recyclable, 25-50% post-consumer recycled material.

Conserval Systems, Inc., Solarwall Division

4254 Ridge Lea Rd., Ste. 101

Buffalo, NY 14226-1051

Phone: 716-835-4903

Fax: 716-835-4904

conserval@aol.com

www.solarwall.com

15730—unitary air conditioning equipment

15750—humidity control equipment

- 15760—terminal heating and cooling units*
- 15762—convectors and radiators*
- 15764—unit heaters*
- 15770—floor heating and snow melting equipment*
- 15780—energy recovery equipment*
- 15810—ducts*
- 15820—duct accessories*
- 15830—air handling fans*
- 15842—air curtain units*
- 15852—registers, grilles and diffusers*
- 15862—air cleaning devices*
- 15864—fume exhaust equipment*

DIVISION 16—ELECTRICAL

- 16060—grounding and bonding*
- 16118—power and communications columns*
- 16128—undercarpet cabling systems*
- 16130—raceways and boxes*
- 16140—wiring devices*
- 16220—motors and generators*
- 16230—generator assemblies*

BP Solarex

Produces electricity from sunlight and requires no fuel, uses recycled materials in fabrication, can be disassembled at end of life for recycling, non-recyclable parts can be landfilled, long life with energy payback in one to three years.

BP Solarex

630 Solarex Ct.

Frederick, MD 21703-8698

Phone: 301-698-4200

Fax: 301-698-4201

Info@solarex.com

www.solarex.com

- 16240—battery equipment*
- 16500—lighting*

Note: a list of recyclers of lighting and ballasts is available from the Wabash County Solid Waste Management District's office.

Full Circle, Inc.—lighting

Provides comprehensive recycling and disposal services for PCB and non-PCB ballasts, fluorescent and HID lamps, transformers, capacitors, and batteries. All services include complete documentation and nation-wide transportation, and are provided in compliance with regulations.

Full Circle, Inc.
509 Manida St.
Bronx, NY 10474
Phone: 800-775-1516
Fax: 718-328-4462
fullcircle@evtc.com
www.evtc.com

Lightsite—Compact fluorescent torchieres

Lightsite—Compact fluorescent torchieres and other high efficiency lighting fixtures.

Ecos Consulting is proud to announce the launch of the Lightsite— featuring ENERGY STAR lighting products. Its purpose is to educate visitors about the EPA ENERGY STAR light fixture program and make it possible to purchase these new light fixtures, conveniently and affordably. Lightsite can show how much money and pollution one can expect to save, based on your local utility rates and power sources, and also provide tips on recycling old light fixtures. And we'll offer a huge range of educational materials about energy-saving lighting, including the latest news about halogen torchiere turn-in events around the country.

Lightsite
Phone: 800-379-4121
www.lightsite.net

Lumatech—Advanced compact fluorescent lights

Lumatech—Advanced compact fluorescent lights for replacing incandescent bulbs in downlights, exit signs and just about any standard light fixture.

When replacing a single light bulb or more than 100, Lumatech's compact fluorescent lights are a simple, cost-effective solution for saving energy.

Lumatech Lamp Features include:

- ☛ Units last up to 150,000 hours.
- ☛ Replaceable lamps last up to 10,000 hours.
- ☛ Uses 80% less energy than incandescents.
- ☛ Ideal for lobbies, hallways, offices and work areas.
- ☛ Produces pleasing, natural-looking light.
- ☛ 10-year warranty on units.
- ☛ Replacement lamps are available at most local lighting and home improvement stores.

Lumatech Corporation
41636 Enterprise Circle North, Suite C
Temecula CA. 92590
Phone: 800-932-0637
Fax: 800-345-5862

Pacific Northwest National Laboratory—Special discounts on subcompact fluorescent lamps.

Introducing energy-efficient compact fluorescent lamps (CFLs) into your home, business, or energy-effi-

ciency program just got easier. A group of lighting manufacturers are offering subcompact fluorescent lamps (sub-CFLs) through a Department of Energy (DOE) Program designed to bring new and shorter lamps to market. The sub-CFLs are energy-efficient and long lasting, plus they fit into most incandescent fixtures and can be ordered directly from the manufacturer at very competitive prices.

To stimulate the market for sub-CFLs, suppliers are selling the lamps at specially arranged prices directly to volume buyers such as multi-family building owners/operators, universities, public housing authorities, hotel/ motel companies, federal agencies and lighting product resellers.

DOE Pacific Northwest National Laboratory (PNNL)
2400 Stevens
Richland, WA 99352 USA
Phone: 800-270-2633
Fax: 509-375-3614
www.pnl.gov/cfl/

Phillips Lighting Company – low mercury fluorescent

Manufacturer of the ALTO™ low-mercury fluorescent lamp, containing 80% less mercury than the industry average.

Philips Lighting Company
200 Franklin Square Drive
P.O. Box 6800
Somerset, NJ 08875-6800
Phone: 908-563-3000
www.lighting.philips.com

W.L. Gore—compact fluorescent retrofits for recessed lights.

The aspen lighting system offers a retrofit kit—an easy way to change old incandescent downlights into highly efficient compact fluorescent downlights.

W. L. Gore and Associates, Inc.
201 Airport Road
Elkton, MD 21921
Phone: 800-455-4680
Phone: 410-392-3200
Fax: 410-392-4817

16510—interior luminaries

Fire and Water Lighting—lighting and furniture

Lighting and furniture using dimmable compact fluorescents, recycled glass, sustainable bio-composites and low-VOC finishes.

David Berman Architects/Fire and Water Lighting
241 Eldridge St., #3R
New York, NY 10002
Phone: 212-475-3106
Fax: 212-677-7291
info@cyberg.com
www.cyberg.com

16514—luminous ceilings

- 16520—exterior luminaires*
- 16522—roadway and parking area luminaires*
- 16524—stair and walkway lighting*
- 16525—arena, stadium, sports lighting*
- 16530—emergency lighting*
- 16551—theater and entertainment lighting*
- 16552—display and showcase lighting*
- 16553—medical/surgical lighting*
- 16554—lighting graphics*
- 16586—lenses, louvers, reflectors and accessories*
- 16588—poles, posts and standards*
- 16705—electronic scoreboards*
- 16710—communications circuits*
- 16720—telephone and intercommunication equipment*
- 16810—sound and video circuits*
- 16820—sound reinforcement*
- 16830—broadcast studio audio equipment*
- 16850—television equipment*
- 16880—multimedia equipment*

SAMPLE SPECIFICATION LANGUAGE

INTRODUCTION

Specifications are the part of design documents that control the quality of the work. They provide a reference for the designer to determine if the construction material and workmanship meets the expectations set out in the documents. Designers may reject built work that does not conform to the specifications, requiring the contractor to dismantle and rebuild parts of any building that fall short of the desired quality. Hence, this part of the documents is very powerful.

Incorporating specification language with a focus on resource efficiency and waste reduction has a pronounced effect on the environmental results, particularly in the area of reducing the volume of waste funneled to landfills. Those primarily interested in this part of the Green Building Guidelines will be architects, engineers and builders.

The primary source used for this section is *Wastespec: Model Specifications for Construction Waste Reduction, Reuse and Recycling*, produced by the Triangle J Council of Governments, first published in 1995. The principle authors are Judith Kincaid, Cheryl Walker and Greg Flynn. Wastespec is an elegant and concise binder that illustrates appropriate language for use across the entire range of the typical specification. Ordering information is available from the Triangle J Council of Government's web page: <http://www.tjcog.dst.nc.us/cdwaste.htm> or by calling 919.549.0551.

Access to local construction waste recycling vendors will depend on your locale. In some areas, haulers and processors may need to be contracted in order to accomplish your material recovery goals. Use the Yellow Pages to contact local service providers regarding construction waste handling services, or contact the local solid waste management district for further information and options. [A list of Indiana districts with the counties they serve is included at the end of this section.](#)

Some construction materials recycling activities are making rapid progress. The market for carpet reclamation is growing steadily. At least one commercial manufacturer offers to place a semi-trailer on site to receive salvaged carpeting. For example, DuPont Flooring Systems offers this service. They may be reached at 1.800.438.7668, prompt 5. Contact local carpet retailers or manufacturer's representatives to find out the latest developments. Another good contact may be an interior designer.

Many building projects serve the needs of local government. Design professionals are required by law to write specifications in a way that allows at least three manufacturers to bid on any given component of a public building. The reason is to ensure competition and a good climate for bids to control project costs. However, in the case of new resource efficient or recycled materials, three manufacturers may not be available. In fact, a product may be made by only one company. As a result, in a standard public specification, the products we hope to consider are frequently forced out by the bid requirements.

To provide an option to this challenge, the use of add alternates is encouraged. An add alternate allows inclusion of a specific product, with any associated cost noted, on a product-by-product basis. The list of add alternates becomes a kind of menu which allows comparison of mainstream products to resource-efficient options. Favorable cost and proven performance give the green product opportunity for use.

MODEL SPECIFICATIONS

The following three sections are taken with permission from the Wastespec book. Included is an example of a Division 0 section, a Division 1 section and a section taken from what is often called the "Technical Sections" or Divisions 2 through 16. Divisions 0 and 1 generally cover bidding, contract conditions, bid forms and general requirements. The remaining divisions, 2 through 16, provide detailed information on the major materials and systems associated with construction such as concrete, metals, masonry, mechanical and electrical systems, to name a few.

TRIANGLE J COUNCIL OF GOVERNMENTS WasteSpec

- DOCUMENT 00120 -**SUPPLEMENTARY INSTRUCTIONS TO BIDDERS:
RESOURCE EFFICIENCY**

INCORPORATE APPLICABLE STATEMENTS BELOW INTO STANDARD DOCUMENT 00120 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS.

EDIT TO SUIT PROJECT AND LOCATION.

UNDER THE FOLLOWING HEADINGS, INSERT APPLICABLE STATEMENTS.

PART 1 GENERAL**DESCRIPTION**

- ④ A. The Owner requires the Contractor to efficiently use resources to the fullest extent possible in the completion of this Project. Resource efficient aspects to be considered in completing this Project include:

[EDIT LIST BELOW TO SUIT PROJECT.]

1. Use of techniques that minimize waste generation.
2. Reuse and renovation of existing structures in lieu of demolition.
3. Salvage of existing materials and items for reuse or resale.
4. Reuse of materials on site where possible.
5. Recycling of waste generated during the demolition and construction processes.

[THIS IS AN APPROPRIATE LOCATION FOR ADDITIONAL LANGUAGE REGARDING ENVIRONMENTAL PROVISIONS BEYOND THE SCOPE OF THIS WASTESPEC, SUCH AS REQUIRED USE OF RECYCLED-CONTENT MATERIALS.]

- ⑤ B. The Contractor is encouraged to include additional resource efficient methods in the Project.

TRIANGLE J COUNCIL OF GOVERNMENTS **WasteSpec**

RELATED SECTIONS

- ⑤ A. The following Documents and Sections describe specific areas where resource efficiency is to be incorporated into the Project.

[EDIT LIST BELOW TO SUIT PROJECT.]

1. Document 00800 - Supplementary General Conditions
2. Section 01010 - Summary of the Work
3. Section 01030 - Alternates, or
Section 01031 - Waste Management/Recycling Alternates
4. Section 01060 - Regulatory Requirements
5. Section 01094 - Definitions
6. Section 01200 - Project Meetings
7. Section 01300 - Submittals
8. Section 01400 - Quality Control
9. Section 01500 - Construction Facilities and Temporary Controls
10. Section 01505 - Construction Waste Management
11. Section 01600 - Material and Equipment
12. Section 01630 - Substitutions
13. Section 01700 - Contract Close-out
14. Section 02050 - Building Demolition
15. Section 02070 - Selective Demolition
16. Section 02080 - Material Salvage

COST INFORMATION

- ⑤ A. Cost information is to be provided on the "Waste Management Plan," described in Section 01505 - Construction Waste Management, for the following:

[EDIT LIST BELOW TO SUIT PROJECT.]

1. Waste Disposal.
2. Recycling.
3. Salvage.

[THIS IS AN APPROPRIATE LOCATION FOR ADDITIONAL LANGUAGE REGARDING ENVIRONMENTAL PROVISIONS BEYOND THE SCOPE OF THIS WASTESPEC, SUCH AS REQUIRED USE OF RECYCLED-CONTENT MATERIALS.]

EVALUATION OF RESOURCE EFFICIENCY

- ⑤ A. Evaluation of efficient use of resources in the Project will be based on the specific Project goals stated below:

TRIANGLE J COUNCIL OF GOVERNMENTS **WasteSpec**

[LIST GOALS APPROPRIATE TO THIS PROJECT.]

- 1.
- 2.
- 3.
- 4.

[THE FOLLOWING EXAMPLES MAY ASSIST IN DEVELOPING GOALS FOR THE PROJECT.]

1. Example Goal 1: To divert 25% of the construction waste generated by this project from municipal landfills.
2. Example Goal 2: To recycle 50% of the construction waste generated by this project in local recycling markets.

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

- END OF DOCUMENT -

TRIANGLE J COUNCIL OF GOVERNMENTS WasteSpec

- SECTION 01030 -

ALTERNATES

**** OR ****

- SECTION 01031 -

WASTE MANAGEMENT / RECYCLING ALTERNATES

INCORPORATE APPLICABLE STATEMENTS BELOW INTO STANDARD SECTION 01030 - ALTERNATES;

****OR****

INCLUDE SEPARATE SECTION 01031 - WASTE MANAGEMENT / RECYCLING ALTERNATES.

IF THE PROJECT IS BID, THIS SECTION CAN BE USED TO OBTAIN AND ISOLATE COST INFORMATION ON PROPOSED JOB SITE RECYCLING SO THAT THE OWNER CAN DETERMINE THE FEASIBILITY OF IMPLEMENTING SOME OR ALL RECYCLING MEASURES. ALLOW ADEQUATE TIME FOR DISCUSSION OF WASTE MANAGEMENT GOALS AND BID PREPARATION IF REQUIRING ALL BIDDERS TO SUBMIT RECYCLING ALTERNATES IN ORDER TO RECEIVE REALISTIC BIDS DUE TO BASIC UNFAMILIARITY WITH CONSTRUCTION WASTE MANAGEMENT.

****OR****

IF THE PROJECT IS NEGOTIATED, OR IF THE OWNER REQUIRES ONLY THE SUCCESSFUL BIDDER TO SUBMIT A WASTE MANAGEMENT PLAN, THIS ALTERNATE SECTION MAY BE OMITTED IN FAVOR OF DEVELOPMENT OF THE DRAFT WASTE MANAGEMENT PLAN AS OUTLINED IN SECTION 01505 - CONSTRUCTION WASTE MANAGEMENT.

EDIT TO SUIT PROJECT AND LOCATION.

UNDER THE FOLLOWING HEADINGS, INSERT APPLICABLE STATEMENTS.

PART 1 - GENERAL

SUMMARY: ALTERNATE BIDS

[EDIT BELOW TO SUIT PROJECT.]

- Ⓢ A. It is intended that references in the Bid Forms to "Waste Management/Recycling Alternate Bid" shall refer directly to this

TRIANGLE J COUNCIL OF GOVERNMENTS **WasteSpec**

Section. Information included is provided for use of the bidders in completing their Bid Proposals and will not be repeated on the Bid Forms.

SCHEDULE OF ALTERNATES

- A. For each Waste Management/Recycling Alternate proposed, describe the recommended method for proper disposal of materials to be recycled or disposed of included in the Waste Management/Recycling Alternate.

[THIS IS AN APPROPRIATE LOCATION FOR LANGUAGE PERTAINING TO ENVIRONMENTAL ISSUES BEYOND THE SCOPE OF THIS WASTESPEC.]

- B. For each Waste Management/Recycling Alternate proposed, provide a waste management plan with the Bid.

[SEE APPENDIX D FOR A SAMPLE WASTE MANAGEMENT PLAN FORM.]

- C. For each Waste Management/Recycling Alternate proposed, describe waste management requirements. Requirements for performance, appearance, workmanship, and materials not modified under the Alternate Bids shall conform to Drawings and Specifications, except as exceeded by Code.

[EXAMPLES LISTED BELOW MAY ASSIST IN DEVELOPMENT OF A SCHEDULE OF ALTERNATES FOR THIS PROJECT. PRODUCTS OR MANUFACTURERS ARE USED FOR EXAMPLE ONLY, AND DO NOT IMPLY WARRANTIES. EDIT TO SUIT PROJECT AND LOCATION.]

Example 1. Recycling Alternate Bid Number 1: State the amount to be added or to be deducted from the Base Bid if the Project's estimated clean wood waste is recycled at a recycling facility in lieu of traditional disposal in a landfill.

ADD: _____ dollars; or DEDUCT _____ dollars.

Example 2. Environmental Alternate Bid Number 1: State the amount to be added or to be deducted from the Base Bid if insulation containing minimum 100 percent cotton/polyester blend is provided in lieu of batt insulation as specified in Section 07200 -Building Insulation. (MFR.: Greenwood Cotton Insulation Products, SC., 404 - 998 - 6888.)

ADD: _____ dollars; or DEDUCT _____ dollars.

TRIANGLE J COUNCIL OF GOVERNMENTS **WasteSpec**

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

- END OF SECTION -

– DIVISION 8 –

DOORS AND WINDOWS

REFER TO THE FOLLOWING RELATED SPECIFICATION DOCUMENTS AND SECTIONS FOR TECHNICAL SUPPORT, PROCEDURES, AND COORDINATION WHEN USING THIS WASTESPEC DIVISION:

00000	DOCUMENTS
DIV.1	GENERAL REQUIREMENTS
01010	SUMMARY OF THE WORK
01094	DEFINITIONS
01500	CONSTRUCTION FACILITIES
01505	CONSTRUCTION WASTE MANAGEMENT

SIGNIFICANT FACTORS IN THE GENERATION OF WASTE IN THIS DIVISION INCLUDE CORRUGATED CARDBOARD, PACKING MATERIALS, FIELD CONDITIONS, PROTECTION, AND ORDERING OR DELIVERY ERRORS.

THIS DIVISION HAS GOOD POTENTIAL FOR THE INCORPORATION OF PRODUCTS AND MATERIALS WITH RECYCLED CONTENT. SEE APPENDIX E FOR RESOURCES.

UNDER THE FOLLOWING OR SIMILAR HEADINGS, INSERT APPLICABLE STATEMENTS.

PART 1 GENERAL

RELATED SECTIONS

- A. Section 01500 Construction Facilities.
- B. Section 01505 Construction Waste Management.

PART 2 PRODUCTS

ENVIRONMENTAL CONSIDERATIONS

[THIS IS AN APPROPRIATE LOCATION FOR ADDITIONAL LANGUAGE PERTAINING TO ENVIRONMENTAL ISSUES BEYOND THE SCOPE OF THIS WASTESPEC, SUCH AS THE FOLLOWING PROVISION.]

- A. Where choices exist, preference is to be given to products and materials with [EDIT TO SUIT PROJECT] recycled content or resource efficient characteristics [EDIT TO SUIT PROJECT].

TRIANGLE J COUNCIL OF GOVERNMENTS **WasteSpec**

[SPECIFY REUSE OF EXISTING OR SALVAGE ITEMS IF RELEVANT.]

PART 3 EXECUTION**WASTE MANAGEMENT**

- ④ A. Provide covered storage area to protect materials and products from sunlight, moisture, staining, and impact or other damage.

[CORRUGATED CARDBOARD IS ONE OF THE LARGEST SOURCES OF CONSTRUCTION WASTE. CHECK YOUR SPECIFIC PROJECT LOCATION FOR RECYCLING OPTIONS AND REGULATIONS.]

- ④ B. Separate corrugated cardboard in accordance with the Waste Management Plan and place in designated areas for recycling.
- ④ C. Place materials defined as hazardous or toxic waste in designated containers.
- ④ D. Use the least toxic sealants, adhesives, sealers, and finishes necessary to comply with the requirements of this section.
- ④ E. Close and seal tightly all partly used sealant containers and store protected in well ventilated fire-safe area at moderate temperature.
- ④ F. Place used sealant tubes and other containers in areas designated for hazardous materials.

SPECIFIC SECTIONS

[SECTIONS FOR WHICH THE SAME ADDITIONAL PROVISIONS ARE APPLICABLE ARE SHOWN GROUPED. INSERT THE FOLLOWING ADDITIONAL PROVISIONS UNDER PART 3 EXECUTION, WASTE MANAGEMENT, UNLESS OTHERWISE NOTED.]

08100 METAL DOORS AND FRAMES
08200 WOOD AND PLASTIC DOORS
08300 SPECIAL DOORS
08400 ENTRANCES AND STOREFRONTS

- ④ A. Separate wood and metal spreader bars for reuse or recycling.
- ④ B. Separate protective materials for reuse or recycling.

08500 METAL WINDOWS
08600 WOOD AND PLASTIC WINDOWS
08800 GLAZING
08900 GLAZED CURTAIN WALLS

TRIANGLE J COUNCIL OF GOVERNMENTS **WasteSpec**

[THE GLASS WASTE GENERATED BY THE WORK OF THESE SECTIONS MAY NOT BE COMPATIBLE WITH TYPICAL GLASS CONTAINER RECYCLING. CHECK YOUR PROJECT LOCATION FOR RECYCLING STANDARDS.]

- ④ A. Separate protective materials for reuse or recycling.

- END OF DIVISION -

INDIANA SOLID WASTE MANAGEMENT DISTRICTS

APRIL 11, 2000

Adams County SWMD

219-724-9971

Allen County SWMD

219-449-7878

Bartholomew County SWMD

812-376-2614

Boone County SWMD

765-483-0687

Brown County SWMD

812-988-0140

Cass County SWMD

219-732-9253

Clark County SWMD

812-256-7942

Clay-Owen-Vigo SWMD

812-443-0168

Crawford County SWMD

812-365-9419

Daviess County SWMD

812-486-3774

Dearborn County SWMD

812-537-8757

Decatur County SWMD

812-663-0960

Dubois County SWMD

812-683-8379

East Central Indiana SWMD

(Delaware, Grant & Madison Counties)

800-863-2793

Elkhart County SWMD

219-293-2269

Floyd County SWMD

812-948-4733

Fountain County SWMD

765-294-2260

Fulton County SWMD

219-223-4939

Gibson County SWMD

812-385-3136

Greene County SWMD

812-659-3788

Hamilton County SWMD

317-776-8500

Harrison County SWMD

812-738-8415

Howard County SWMD

765-456-2274

Huntington County SWMD

219-358-4886

Jackson County SWMD

812-358-4277

Johnson County SWMD

317-738-2546

Knox County SWMD

812-895-4878

Kosciusko County SWMD

219-372-3087

Lake County SWMD

219-769-3820

Laporte County SWMD

219-326-0014

Lawrence County SWMD

812-278-8845

Marshall County SWMD

800-935-8618

Martin County SWMD

812-295-4142

Miami County SWMD

765-472-7224

Midwest Indiana SWMD

(Blackford & Jay Counties)

765-768-6748

Monroe County SWMD

812-349-2020

Northeast Indiana SWMD

(Lagrange, Steuben, Noble & Dekalb Counties)

219-587-3063

Northwest Indiana SWMD

(Jasper, Newton, Pulaski, White, Carroll & Benton Counties)

219-583-5976

Orange County SWMD

812-723-3600

Perry County SWMD

812-547-9787

Pike County SWMD

812-354-2924

Porter County SWMD

219-465-3694

Posey County SWMD

812-838-1613

Randolph County SWMD

765-584-9816

St. Joseph County SWMD

219-235-9971

Shelby County SWMD

317-392-1394

Southeastern In. SWMD

(Jennings, Franklin, Ripley, Jefferson, Scott, Switzerland & Ohio Counties)

812-689-3525

Spencer County SWMD

812-362-7401

Starke County SWMD

219-772-9118

Sullivan County SWMD

812-268-5157

Three Rivers SWMD

(Henry, Hancock, Rush & Fayette Counties)

800-726-9278

Tipton County SWMD

765-675-9006

Vanderburgh County SWMD

812-436-7800

Vermillion County SWMD

765-492-5014

W-U SWMD

(Wayne & Union Counties)

765-966-8219

Wabash County SWMD

219-563-7649

Warren County SWMD

765-762-1433

Warrick County SWMD

812-897-6210

Washington County SWMD

812-883-3039

West Central SWMD

(Montgomery, Parke, Putnam, Hendricks & Morgan Counties)

800-211-2750

Whitley County SWMD

219-248-3132

Wildcat Creek SWMD

(Tippecanoe & Clinton Counties)

765-423-2858

EPILOGUE

This guideline focuses on single building projects, commercial and institutional construction in particular. The topic of sustainable, regenerative or “green” design is broad. If you’ve spent time studying this manual, you now have a sense of the many possibilities for improving how we design, create and use our buildings.

Perhaps the most significant underlying principle of green design is to place our buildings in context: that is, to each other and to the community. In so doing, we increase the power of the results. The section on Principles is applicable at this larger scale. In fact, the principles are useful at any scale.

If you have the opportunity to work on the planning of a community or affect changes in planning law or policy, here is where the green design principles can make an astonishing difference. An enormous challenge lies in the current pattern of laws and zoning. Couple this with prevailing attitudes about planning and it becomes clear in fairly short order that small victories are the best we can expect in the beginning. We wish you the best of luck and success as we strive to make a prosperous future for humans and the Earth as well.

GLOSSARY

Benchmark—A standard by which something can be measured or judged.
(American Heritage Dictionary)

Benign materials—Substances whose manufacture and use create no additional pollution or health effects when used.

Bio-composite—A product manufactured from a combination biological material.
An example is “Environ” made by Phenix Biocomposites, which uses 40% recycled newspaper and 40% soy flour plus 20% other materials.

Building skin—Building elements, (for example the walls, roofs, floors) that enclose conditioned spaces and through which thermal energy may be transferred to and from the exterior
(Environmental Resource Guide)

Closed Loop—Materials that make their way from original supplier to installation, then are reclaimed or returned to the supplier for reuse later on.

Cradle to Grave—The life cycle of a material from initial mining, harvest or assembly, its lifetime in a building and its subsequent demolition followed by deposit in a landfill.

Cyclical—a regular occurrence of events, either unplanned or systematically scheduled.

Ecosystem—A level of organization within the living world that includes both the total array of biological organisms present in a defined area and the chemical-physical factors that influence the plants and animals in it. (Source: Environmental Resource Guide)

Embodied Energy—The total energy required to erect a structure including materials, mining if appropriate, harvest, all transportation, assembly and so on that results in a completed building.

Fly Ash—A waste by-product from coal fired power plants that may be used in concrete block and poured in place concrete. Its use reduces solid waste deposited in landfills.

Footprint (of a building)—as seen in plan view (above the floor), the basic components of a building including the core units such as stairwells and mechanical equipment spaces, and the perimeter, or shell, of the building.

Friable—Materials that can be crumbled, pulverized or reduced to powder by hand pressure. (United States EPA)

Fringe technologies—Devices, either mechanical or electrical, that represent solutions outside the mainstream. For example, a car that runs purely on solar power.

Gray water—A general term for domestic wastewater that does not contain sewage or fecal contamination. (Environmental Resource Guide)

Green design—An approach to the design of either new or renovated spaces that are residential, commercial or industrial and are designed, constructed, operated and demolished in an environmentally responsible and energy efficient manner.

HDPE—High Density Polyethylene—an easily recycled plastic, which is typically used for milk jugs, detergent bottles and many other containers.

Human environment—The interior of any building where we spend the majority of our time. Often used in writing about Sick Building Syndrome.

Inspection services—Experts hired to study in detail some aspect of a structure or a site.

Litmus test—A test that uses a single indicator to prompt a decision. (American Heritage Dictionary)

Local—Within the boundaries of the state of Indiana.

Materials—Any generally recognized building material.

Mechanic's liens—Legal action taken by a contractor to bar the use of a structure based on outstanding invoices due to the contractor filing the lien.

Native Plants—Plants indigenous to an area prior to the arrival of settlers.

Natural ingredients—Substances, compounds or materials from the natural environment, used with little or no additional processing.

Non-Renewable Energy—An energy resource such as coal or oil, which is available in large, but finite quantities. Also termed fossil fuels.

Ozone—A reactive gas produced by photochemical reactions or lightning in the troposphere and by the absorption of ultraviolet radiation in the lower stratosphere. (Environmental Resource Guide)

Photovoltaics and photovoltaic arrays – Solid-state cells, typically made from silicon, that directly convert sunlight to electricity. This energy system is considered a renewable form of energy.

Post-Consumer Waste—Previously used consumer products or materials that have little or no marketable value or beneficial use; otherwise destined for a landfill. Post-consumer waste accounts for a large percentage of recycled content in many recycled products and building materials.

Post-Industrial—Pre-consumer material that was actually manufacturing scrap generated before the end of the manufacturing process.

Proactive—Taking the initiative to develop a plan or strategy; a forward-thinking approach to analyzing potentially problematic situations before they occur.

Reclamation—Salvaging refuse or waste products; to make suitable for reuse in another form, such as “reclaimed lumber” being made into furniture.

Recyclable EPS—Expanded Polystyrene plastic, a recyclable polymer made from oil.

Recycled Content Products—Building materials or other products that contain pre or post consumer recycled materials.

Rehabilitation—Restoration and adaptation of an existing structure to a new use.

Renewable Energy—An energy resource based on energy from the sun, wind, water or heat from the earth.

Retention money—During construction of a building, a percentage of each contractor’s payment is withheld until satisfactory completion of their part of the work.

Retrofit—To make something work or fit into an existing system or structure.

Selective demolition—The dismantling of small, specific areas of an existing building.

Sick Building Syndrome—When a building causes its occupants to become physically ill through the action of volatile organic chemicals, mold, fungi or some combination of these.

Sustainable Design—Design which is successful at meeting the needs of the present while minimizing environmental impact during the construction and life of a building.

Urban brownfield—Land in cities unused because of previous contamination.

VOC (Volatile Organic Compounds)—Organic compounds generally are classified as “volatile” if they create a vapor pressure higher than 1 mm of mercury at 20°C. In other words, they evaporate rapidly at room temperature.

Wheat chaff—Stalks left over from the threshing of wheat to harvest the grain. This material normally is an agricultural waste.