BRICK REVISITED

just how **GREEN** *is it ?*

GOOD QUESTION
"Green" is the idea that the environmental decisions we make today will resonate for years to come. Also known as "green architecture," "high-performance building" and "sustainable design," it expands the focus beyond the building itself, taking into account the long-term impact it will have on the environment, the economy, and human health. The concept of "green" has been around for decades. Early green design often focused on energy efficiency or used recycled materials to promote clean air, water, and soil.

However, as environmental awareness has increased, architects and designers are broadening their vision into what is better described as sustainable design.

It's a fast-growing movement among design and construction industry professionals who recognize their role in preserving the integrity of our planet's precious resources.

As sustainable design continues to gain prevalence, the definition of "green" will continue to expand and evolve. More than a trend, sustainable design is becoming the future of architecture.

Increasingly, clients are demanding efficient, long lasting design that enhances both the quality of life for their communities as well as their bottom line. Various organizations, institutions, and government bodies are aggressively creating guidelines and criteria to assess the sustainability of buildings and the materials that comprise them.

While some standards have already been established, "getting green" requires architects, building professionals, and owners to educate themselves about the environmental-friendliness of building products in order to make responsible choices.

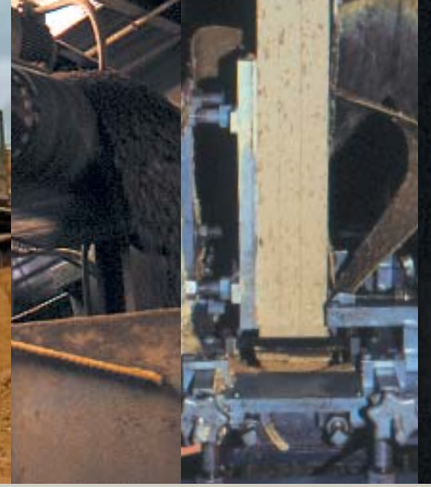
That's why we've brought you this information about brick.

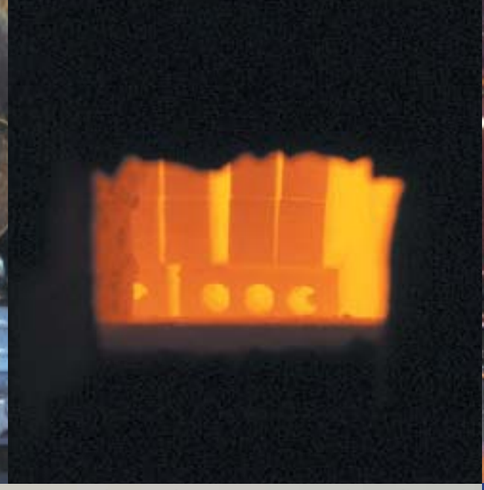
exactly what is "GREEN"*?*

What actually constitutes "green"?
The U.S. Green Building Council defines "sustainable design" as the practices of design and construction that significantly reduce or eliminate the negative impact of buildings on the environment and occupants in five broad categories:
1. Sustainable site planning
2. Safeguarding water & water efficiency
3. Energy efficiency & renewable energy
4. Conservation of materials & resources
5. Indoor environmental quality

WHY REVISIT BRICK?
It's a material you've long known, specified and used successfully. You know its design flexibility, durability, and low maintenance, and how its endless array of colors, shapes, textures, and sizes set the standard for beauty. What you may not know is that it's a natural for today's new emphasis on sustainable design.

Its unsurpassed life cycle, exceptional energy efficiency, natural ingredients, minimal waste, and countless recycling options are just a few of the properties that make brick the superb sustainable material it has been for *thousands* of years.





simply of the EARTH

BRICK IS EVERYWHERE
You've known, and probably lived with it all your life. Made of the most abundant materials on the planet, clay and shale, it is "of the earth" in the most basic way.

Care is taken to locate manufacturing near these natural materials, so as to minimize energy consumption in transporting them. The clay and shale are harvested from the earth's surface by a process that has minimal long-term environmental effect on the land.

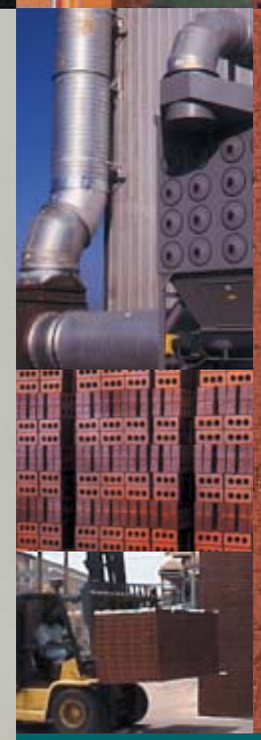
Brick manufacturers take pride in meeting or exceeding the federal requirements which govern this process, including an aggressive reclamation program that converts all involved land to a desirable natural condition, such as lakes and natural preserves. In fact, numerous manufacturers have been recognized for their efforts in such land enhancement. The harvested materials are blended, with little or no refinement, and then extruded or cast into the desired shapes. Next, they're slowly conveyed through a kiln at about 2000°F which transforms the raw material into permanent modular units. Sometimes recycled and industrial waste aggregates, such as fly and incinerator ash and waste glass, are mixed with the clay and shale. In all cases, the high firing temperatures used in the manufacturing process render the bricks environmentally safe and user-friendly. Throughout this process, there is virtually no waste – virtually all of the mined clay is used in the manufacturing process.

Such recycling and waste containment, which minimizes the mining of gravel as aggregate and diverts waste materials from landfills, are benefits unequalled by any other building material.

Emissions throughout this process are regulated (as they are for most industrial processes) by the Clean Air Act, with modern brick plants strictly adhering to the established standards to assure air quality.

After cooling, brick is stacked and placed in stock, or shipped to a site for immediate use. Because brick is produced worldwide and in 38 of the 50 states in the US, it is truly a regionally available material. Shipping actually averages no more than 175 miles.

Brick's small size and efficient modularity allows it to be put in place with almost no waste. Even its minimal packaging, plastic straps and wooden pallets, is easily reused or recycled.



Checklist for Selecting Materials*
Building professionals should consider the following characteristics of materials when planning sustainable design projects – Products which:

1. Are made from environmentally attractive materials
2. Are "green" because of what isn't there
3. Reduce environmental impact during manufacture, distribution, construction, renovation and demolition
4. Reduce the environmental impact of building operation and maintenance.
5. Contribute to a safe, healthy indoor environment

* GreenSpec Criteria, Building Green, Inc.

a PRESENT *for the future*

WE SHOULD ALL LOOK SO GOOD AT A HUNDRED

Brick has an amazing life cycle, conservatively estimated at one hundred years, yet it's hard to ignore older examples of its longevity, such as the Great Wall and the Roman aqueducts. It ages beautifully, and requires almost no maintenance. Critics, who understandably may attempt to divert your attention elsewhere, tend to focus on the amount of heat energy used to make brick without putting it in the context of its long life.

Consider this:
The actual "embodied energy" of brick (the energy required to mine, manufacture and transport it), is approximately 4000 BTU's per pound or 14000 BTU's per standard brick. According to the *AIA Environmental Resource Guide*, that's less than concrete, glass, steel, aluminum or even wood! And it's far below the embodied energy of EIFS and fiber-cement products.

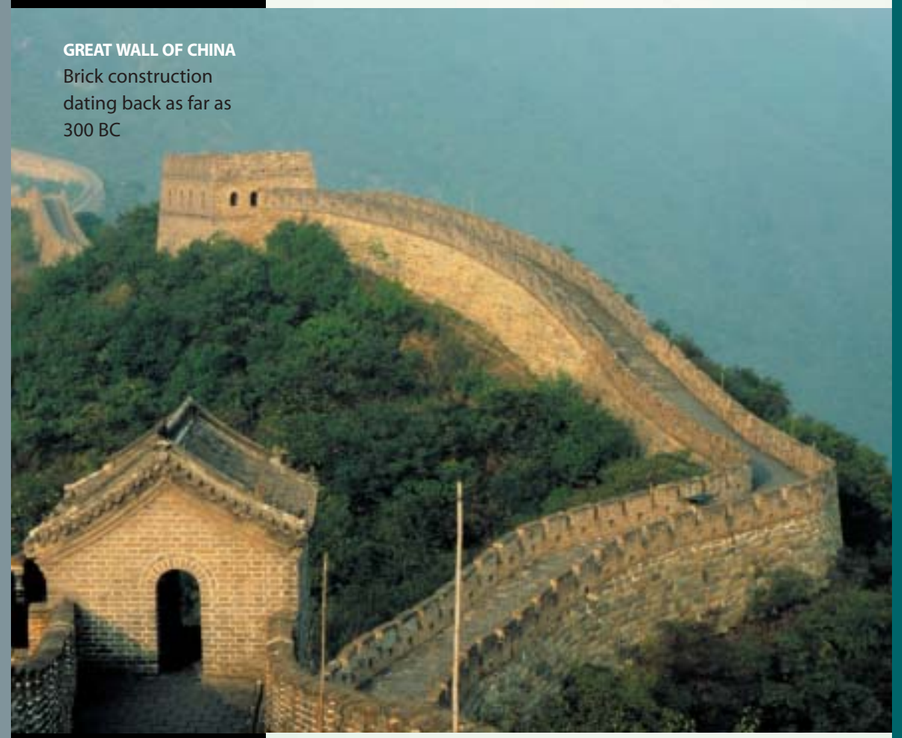
A recent study conducted by the National Brick Research Center demonstrates these results. [*see chart on overleaf*]

Whether the building in which it's originally used sees its hundredth birthday or not, the life of the brick can go on – in another building as salvaged brick (with all its charms and beneficial qualities intact), crushed and used as a roadway sub-base material, or chipped into a permanent landscaping mulch (a great vantage from which to watch its next generation carry on its time-honored and valued tradition).

And, in the rare event that it ever finds its way into a landfill, because it's simply "earth" it's inert, so it requires no special handling. So, "earth to earth," and all that.

HARAPPA BRICK
Fired brick from Harappa, the capital city of Indus valley, Harappan culture (now part of Pakistan) circa 2500 BC

GREAT WALL OF CHINA
Brick construction dating back as far as 300 BC



JERICHO BRICK
From a pre-pottery Neolithic settlement discovered beneath the biblical city of Jericho. Carbon 14 tests at the site indicate it is 9,000-10,000 years old.

Life Cycle Insights

The following chart provides a cradle-to-grave assessment of all energy consumption & pollution generated in manufacturing a unit area (square foot) distributed over the warranted life of the product. The warranted life was chosen, when available, as the best indicator of the potential performance of the product.

Thus, unlike the BRE Profiles, the envelope material was assessed based on its warranted life rather than an average building life. The end product of the assessments was the kilowatt hours consumed, the pounds of pollution, and the landfill/depletion weight per unit area of cladding on a per year of service life basis.

Cladding/Life Cycle Analysis

Basic Data	Brick Masonry	Block Masonry	Fiber Cement	Vinyl Siding	EIFS
Warranty Weight/ft²	100 years 35.5 lb.	50 years 42.8 lb.	50 years 2.3 lb.	50 years 0.5 lb.	5 years 1.24 lb.
Energy, Mining & Manufacturing *Recycling & Energy kWh/ft²/yr*	Recycling: Brick 100% Mortar 40% Energy: 0.252	Recycling: 80% Energy: 0.228	Recycling: 0%[1] Energy: 0.328	Recycling: 80%[2] Energy: 0.210	Recycling: 0%[1] Energy: 5.48
Pollution *Water & air emissions lb/ft²/yr*	0.011	0.005	0.026	0.001	0.023
Distribution Energy *Avg/Distance, Miles & Net Energy kWh/ft²/yr*	175 miles 0.004	100 miles 0.004	365 Miles 0.146	310 miles 0.001	300 miles 0.189[3]
Waste & Depletion *lb/ft²/yr*	0.108	0.203	0.048	0.460[4]	0.828
TOTALS					
Energy	0.256	0.232	0.474	0.211	5.669
Pollution	0.011	0.005	0.026	0.001	0.023
Waste & Depletion	0.108	0.203	0.048	0.460	0.828

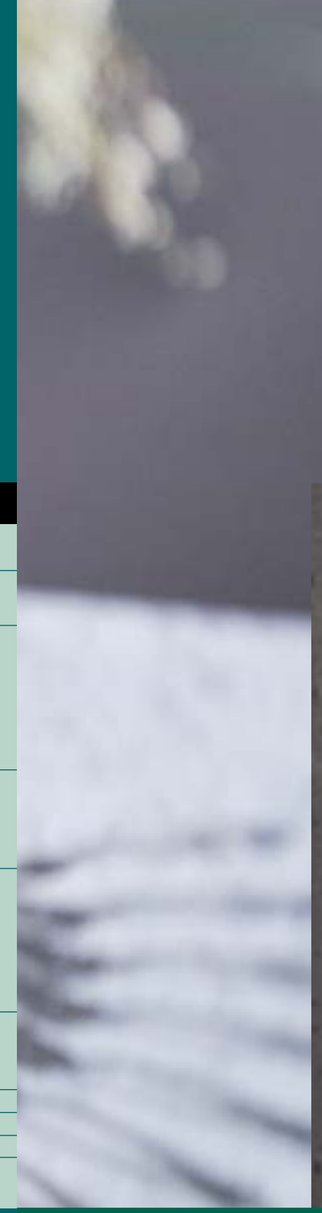
Research data generated by the National Brick Research Center, Clemson University

[1] No proven method available

[2] Used the maximum allowed in this analysis (80%). According to the Vinyl Siding Institute, 100% of vinyl siding is recyclable. Some environmental groups claim recycling of vinyl siding results in dioxin emissions.

[3] Low weight per truckload influenced results

[4] Depletion of salt in processing PVC influenced results



The Benefits of Building Green*

ENVIRONMENTAL
Building green reduces the impact of natural resource consumption

ECONOMIC
It improves the bottom line in terms of building operation, asset value, worker productivity, and can bring favorable zoning ordinances and tax benefits

HEALTH & SAFETY
It enhances occupants' comfort & health

COMMUNITY
It minimizes the strain on local infrastructures by lessening demand for landfills, water supply, storm water management, and transportation of materials

* US Green Building Council

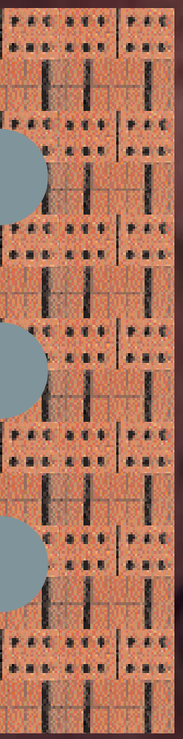
In the 1980's, "sick inside" took on a new meaning. That's when we became painfully aware that some new construction was filled with potentially hazardous materials and unhealthy emissions. Since then, there has been an aggressive effort to eliminate these risks. Today, this vital concern has naturally become a measure of a building's "green" success, since environmentally-sensitive new construction misses the point if it isn't a safe and healthy environment for the people within it.

As you might imagine, brick has always been people-friendly. It has virtually no emissions and it's 100% safe. Add to that it's fireproof, and water and insect resistant. It's virtually impervious to the ravages of time and weather, and it's a natural insulator. Its ability to absorb and release thermal energy over an extended period makes it an ideal choice for reducing peak energy loads. This "thermal lag" also makes it a particularly attractive material for use in conjunction with passive solar construction.

Hey, you may not be able to snuggle up to brick, but you almost wish you could. In the built environment, it's a breath of fresh air.

a COMFORTABLE *choice*

go for the GREEN



TAKE THE LEED
As the environmental consciousness of clients and society grows, building professionals will increasingly be asked to create projects that incorporate green design principles.

One of the first steps toward building environmentally sensitive structures is to select the best materials for the job-at-hand.

You've chosen brick for its beauty, design flexibility, durability and overall value.

Now you can confidently choose it to help you achieve environmentally friendly, sustainable, LEED™ certified projects.

Here are just a few areas where **brick can contribute** to a project being awarded a **LEED**™ certification

CATEGORY: ENERGY & ATMOSPHERE

Credit 1. Optimize Energy Performance
(2-10 points)
Brick is an energy-efficient material with insulating value and high thermal mass. It can also be used in passive solar construction by utilizing its thermal lag to reduce peak energy loads.

CATEGORY: MATERIALS & RESOURCES

Credit 2. Construction Waste Management
(1-2 points)
Brick's small unit size helps divert waste from landfills, and salvaged brick can be used in road construction or other buildings.

Credit 3. Resource Reuse
(1-2 points)
Brick and other masonry are among the most commonly salvaged building materials.

Credit 4. Recycled Content
(1-2 points)
Numerous manufacturers make brick that incorporates recycled or industrial waste aggregates that are rendered harmless when the brick is fired.

Credit 5. Local/Regional Materials
(1-2 points)
The raw materials of brick, clay and shale, are abundant and always nearby, making brick available regionally, efficient to transport and distribute.

LEED™ is a self-assessing system for rating "whole building" environmental performance from a life-cycle perspective, and provides standards for what constitutes a "green" building.

It is based on accepted energy and environmental practices, and is built around a point system, with specific points available in six distinct categories:

CATEGORY	POINTS
Sustainable Site	14
Water Efficiency	5
Energy & Atmosphere	17
Materials & Resources	13
Indoor Environmental Quality	15
Innovation	5
Total Possible Points	**69**

In addition, there are four levels of **LEED**™ building certification:

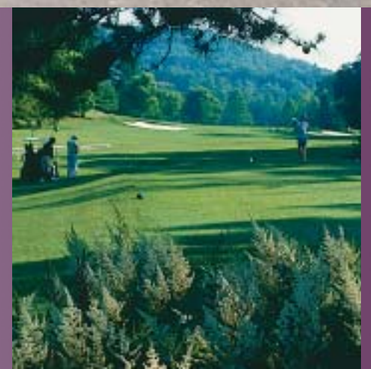
CATEGORY	POINTS
Certified	26-32
Silver	33-38
Gold	39-51
Platinum	52-69

Like anything made from natural materials, there is an ongoing, delicate balance between the earth itself and that which is harvested from it.

Brick is no exception.
In fact, it is an exceptional example.

an ONGOING *commitment*

Over the years, the brick industry has taken numerous positive steps to ensure that it respects and protects our environment. For instance, over 90% of all brick manufacturers are aggressively reclaiming and enhancing the land from which clay and shale have been harvested. Over 90% use dust control and collection equipment. About 80% reuse their own fired waste material or convert it into other products, and almost half use processed or recycled waste materials in brick production. Numerous brick companies have received both state and national recognition for outstanding accomplishments in safeguarding the environment. And more improvements are in the works.



The brick industry funds and supports a National Research Center that continually seeks ways to improve the efficiencies of the manufacturing process to reduce impacts on the environment.

Left
Etowah Valley Country Club & Golf Lodge is an excellent example of a reclaimed clay and shale harvesting site.

Now, more than ever, building professionals will be expected to incorporate "green" concepts that satisfy or exceed guidelines established by local, state and federal governments, agencies, and institutions. The brick industry is committed to supporting this movement by adhering to the following Brick Industry Environmental Policy Statement:

The brick industry recognizes that the stewardship of our planet lies in the hands of our generation. Our goal is to continually seek out innovative, environmentally friendly opportunities in the manufacturing process and for the end use of clay brick products.

As demonstrated over time, we are committed to manufacturing products that provide exceptional energy efficiency, durability, recyclability and low maintenance with a minimal impact on the environment from which they originate. We assure that our facilities meet or exceed state and federal environmental regulations, and we will continue to partner with building professionals to help them in using our products to create environmentally responsible living and working spaces for today's and future generations.

IT'S GREEN

It's world-wide
and history-long.
Natural & abundant.
It's amazingly
recyclable, with an
incredible life cycle.
Low-maintenance.
Environmentally
responsible. With
proven durability.
Near zero waste.
Truly green.

Brick.
It's the basic
building material
we can all live with.
Again and again.

Brochure
hixson design

Primary photography
Rick Hovis

The cover contains no less than 30% post-consumer fiber, and the text contains no less than 10% post-consumer fiber and is elemental chlorine free.

If possible, please pass this brochure along to an interested colleague.

GO WITH BRICK

THE BRICK INDUSTRY

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