

# BUILDING GREEN

## THE WOOD STORY

*The only building material that builds itself*

*Building “green” is a contemporary label for the “three E’s” that must be increasingly balanced by today’s building professionals: energy, environment and economy.*

*A new orthodoxy has also emerged that assumes any alternative to wood is somehow environmentally preferable. So how does wood stack up as a green building material?*

### ENERGY

Wood is the only building material that is largely energy self-sufficient in its manufacture—the only material that builds itself. By weight, wood remains our number one industrial raw material, accounting for 47 percent of total consumption, but for only four percent of the total energy embodied in the manufacture of raw materials.

Steel, on the same basis, accounts for just 23 percent of raw material while consuming 48 percent of the total energy input. Steel’s energy input is largely in the form of mining and burning coal—non-renewable processes—while the primary energy input for wood is from solar energy. Wood is also an energy-efficient structural material when used in a building. Wood is a natural insulator; inch-for-inch it’s 15 times more efficient than concrete and 400 times that of steel.



### ENVIRONMENT

An image of harvested trees begs the question, “Aren’t we running out of trees?”

Early in our country’s history the forests were looked upon as mined resources, another gold rush, and land to be cleared. History books are replete with images of forest giants clear-cut by Paul Bunyan, and Saturday morning cartoons continue to show “eco-villains” destroying the last forest.

Against this backdrop, it’s important to consider the substance rather than the symbolism.

The real story is that almost three billion trees are planted in America’s forestlands each year. Perhaps it has become difficult for our society to visualize a cycle that is 50 years long. But our forest growth now exceeds removals by 37 percent.

Of course, things weren’t always that way; as late as the 1920’s harvest rates were double the growth. The balance changed during the 1920’s as foresters began to control losses due to fire, disease and insects. Serious efforts to replant began in 1941 with the adoption of the first Tree Farm Act and in 1944 the Sustained Yield Management Act was passed as recognition of the finite nature of old growth timber.

Sustained yield is not a new concept to the forest product industry. In fact, it depends on the long-term health of forestlands. Northwest companies like Weyerhaeuser are now growing third-growth forests on their timberlands.

Another environmental plus for wood is its impact on the global carbon cycle. Many scientists contend that rising levels of carbon are leading to global warming. Growing wood fiber in your working forests is very beneficial to the balance of carbon in the atmosphere. The growth of one pound of wood absorbs 1.47 pounds of carbon dioxide and releases 1.07 pounds of oxygen.

### ECONOMY

Americans use a lot of wood fiber. The current annual per capita use of wood products (excluding paper) is 80 cubic feet or about one “standard” tree—defined (by the American Forest Resources Alliance) as 18 inches in diameter and 100 feet tall, or roughly 1,000 board feet.

The untold success story is that advances in methods and materials have provided our society with much more value from the same wood fiber.

The log cabin is an American cultural icon—the first building of the pioneers—and a profligate consumer of wood. A small log house could easily use 30 to 40 of those “standard” trees.

Fortunately, the first major leap in resource efficiency took place in the mid-1830s. So-called “balloon” framing with two-by-fours and the concurrent advent of the steam-driven sawmill began to “stretch” trees to build many more houses.

The next “stretch” of wood fiber began in 1905 when structural fir plywood was developed for the Lewis and Clark World’s Fair in Portland. By the 1950s, 3/8-inch plywood was replacing sheathing.

Today the “stretch” is in the form of products like oriented strand board that makes use of under utilized fast-growing species like aspen and birch.

“Structural Composite Lumber” describes the wide array of products from glue-laminated timbers to wood I-beams that continue to replace solid wood framing and stretch the resource more by putting the high-strength wood fiber into a more efficient shape.

Our local choices truly have global consequences. Wood is the product of sunlight, earth, air and water—all natural elements. Trees grow back; strip mines, gravel pits and depleted oil wells do not.

The responsible growth, harvest, processing and re-growth of wood fiber for building material is the most benign path to a sustainable future.



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