

7 World Trade Center and Hearst Building: New York's Test Cases for Environmentally Aware Office Towers

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Top, Suzanne DeChillo/The New York Times; Esto Eco-friendly: Hearst Tower, at 57th Street and Eighth Avenue; above, 7 World Trade Center, near ground zero.

A DECADE ago, office towers guzzled energy as fast as they could, and "sick building syndrome" was dismissed as a hypochondriac's all-purpose excuse. Since then, however, the rise of "green" architecture has encouraged architects, developers and construction managers to consider the effect their buildings have on the health of their occupants and the environment. Today green is a buzzword, a term to which all sorts of new buildings attempt to lay claim. But does that mean people who show up to work in the morning breathe more easily?

New York now has two important test cases, as workers prepare to occupy the city's first officially green office towers. Seven World Trade Center, a 52-story, \$7 million replacement for the building that fell at that address on 9/11, was certified by the U.S. Green Building Council last month. The 46-story Hearst Tower, on 57th Street near Eighth Avenue, is expected to follow suit after completion next month.

Certification was not a simple matter. (In fact the developers turned it into a marketing strategy all its own: "going for the gold" in the race to be first.) In 2000, the council — a coalition of construction-industry leaders — established the LEED system (Leadership in Energy and Environmental Design), which grades buildings in areas like energy and water consumption, indoor-air quality and use of renewable materials. Ratings for this so-called sustainable design range from certified (26 to 32 points) to platinum (52 to 69 points); 39 gets you the gold. Seven World Trade Center received 35 points, which qualified it for a gold rating in the council's pilot program for "core and shell" buildings, with no tenants.

"All gold is not equal," said Frank A. Bennack Jr., former president and chief executive officer of the Hearst Corporation. "We made a basic decision to do a building for the 21st century. We knew it was going to cost more, but we thought it was the right thing to do."

[Larry A. Silverstein](#), the Trade Center building's developer, said, "There was not a question in my mind" to go green. "I'm an asthmatic," he said. "When you have asthma, you realize how important it is to have clean air to breathe."

When Hearst's 2,000 employees return to their \$500 million headquarters, expanded by the architect Norman Foster, they will enter an atrium lobby filled with air that has been ventilated and filtered. Hearst executives say it may even be superior to the air outside. "We will have the cleanest air of any other building in the city," boasted Brian G. Schwagerl, Hearst's director of real estate and facilities planning, on a recent tour of the building. "Everything else is gravy."

The lobby's radiant stone floors will generate heat in the winter and absorb heat in the summer. Employees will ride escalators past a three-story sculptured waterfall that also humidifies and chills the lobby.

Their windows are made from coated glass from Belgium that will keep out the solar radiation that causes heat while letting in light. And with internal walls kept to a minimum, even those who don't have perimeter offices will get to share the sunshine.

Sustainable design once added as much as 20 percent to a project's cost, but because of the increasing availability of new building materials, that figure has declined to between 2 and 5 percent. Still, some developers choose not to seek LEED rating because the application process is cumbersome.

"It's a lot of work," says Carl Galioto, the partner in charge of Skidmore, Owings & Merrill's technical group. "Everything has to be carefully documented. If we say this deal is X percent recycled, where are the tickets from the steel mill that proved they were recycled?" The certification process itself involves fees — from \$1,250 for LEED members with small projects to \$22,500 for nonmembers with large projects.

Still, the ratings have become increasingly sought after: since 2000 about 3,600 projects nationwide, including residential buildings, have registered their intention to seek LEED certification, and 450 have been certified. In New York City, 50 commercial projects are in the process for certification, according to the Green Building Council.

The Color of Money

Of course, it isn't just environmental consciousness that is motivating developers. Because green buildings use from 30 to 70 percent less energy, they can be run for less money — but leased for more, because companies want healthy offices, which several studies have shown lead to increased productivity.

"If you can save 10 percent by creating a good interior, you're talking really big numbers," said Bruce Fowle, the architect behind 4 Times Square, aka the Condé Nast Building, a green office building built before the green guidelines were in place.

A 2000 study conducted by William Fisk, head of the Indoor Environment Department at the Lawrence Berkeley National Laboratory in California, estimated that improved indoor environments in the United States could save \$6 billion to \$14 billion from reduced respiratory disease, \$1 billion to \$4 billion from reduced allergies and asthma, \$10 billion to \$30 billion from reduced sick building syndrome symptoms, and \$20 billion to \$160 billion from direct improvements in worker performance that are unrelated to health."

The Green Building Council cites studies showing that students in classrooms with the most natural daylight progressed 20 percent faster on math tests and 26 percent faster on reading tests in one year than those in rooms with the least; that sales in stores with natural light are 40 percent higher than in those with artificial light; and that better hospital lighting and ventilation improve patient outcomes.

Green buildings receive big state tax credits in New York. And some developers now have no choice. In October, New York City mandated that nonresidential public buildings costing \$2 million or more be built to LEED's standards. The legislation also applies to private projects that receive \$10 million or more in public funds or half of whose budgets come from public money. The law, which takes effect next year, is expected to affect \$12 billion in new construction.

In addition, green design has become chic. It is the focus of the latest exhibition at the Museum of Arts & Design, "Beyond Green: Toward a Sustainable Art." A six-part PBS series in June on sustainable architecture around the world, narrated by Brad Pitt, dedicates one entire episode to New York City: "The Green Apple." The current show at the Skyscraper Museum in Lower Manhattan highlights the Hearst Building and 7 World Trade Center, with 13 other green towers, including the Bank of America building developed by the Durst Organization and the Goldman Sachs headquarters in Battery Park City.

Most of the new apartment buildings by big-name architects are meeting LEED standards, whether or not they actually seek certification. Projects that do not pursue certification (among them, the new tower being built by The New York Times Company) are subject to a skeptical reception. "C.F.O.'s and C.E.O.'s understand the financial impacts," said S. Richard Fedrizzi, the president and chief executive of the Green Building Council. "The real question is, why are you not building this way?"

Although 7 World Trade Center won its gold rating first, that tower was certified under the Green Building Council's pilot core-and-shell program. The building has secured three tenants so far, and Mr. Silverstein is taking a floor. The Hearst Tower, when certified, will be several steps ahead because its green features extend to the interiors — from the formaldehyde-free furniture to the carpeting, made of 100 percent recycled materials and devoid of chemicals. Seven World Trade Center "is a relatively empty canvas," said Randolph R. Croxton, an architect who helped develop the sustainable design guidelines for the World Trade Center site. "The other has been fully realized."

In placing a contemporary glass tower atop the Art Deco 1928 stone Hearst building, Lord Norman gutted the original six-story headquarters but retained most of the material for future use. The Hearst Tower's diagonal grid frame contains about 20 percent less steel than a similarly sized conventional perimeter, saving about 2,000 tons of steel, the company said. And more than 85 percent of the structural steel contains recycled material. Floors and ceiling tiles were also manufactured with recycled material.

Energy use is conserved. When Hearst employees go out for lunch, their lights and computers will

note their absence with motion sensors, turning off until their users return. Photo sensors will adjust the artificial light, depending on the amount of natural light entering.

The Hearst Tower lobby largely relies on the radiant floor for both cooling and heating. Tubes embedded in the floor pump hot water through the system, yielding heat that provides a comfort zone to about six feet above the floor. In the warmer months, cold water is pumped through to absorb the heat generated by the sun on the stone floor. Brandon Haw, a senior partner at Foster & Partners, likened the effect to entering a church on a hot day.

"All the stone has embodied the coolness," he said. "This is a huge space — we don't want to just throw loads of air into it."

The building's roof has been designed to collect rainwater, which will reduce the amount dumped into the city's sewer system by 25 percent. Harvested in a 14,000-gallon reclamation tank in the basement, it will replace water lost to evaporation in the office air-conditioning system. It will also be fed into a special pumping system to irrigate plants and trees outside the building — and to serve "Ice Falls," the lobby water sculpture.

To critics who lament the vast size of the Hearst addition, Mr. Haw replies that scale itself can be a green architectural plus. "We're packing more into the city, and the future of the city is about density as opposed to urban sprawl," he said. "Reinventing a landmark building — that is in itself a sustainable aspect of life."

Seven World Trade Center received one point for high density — building high rather than out — and a point for building near public transportation. "More than 95 percent of the occupants will arrive by public transportation, on foot or by bicycle," said Mr. Galioto of Skidmore. Because 7 World Trade Center, designed by David M. Childs, is a core-and-shell project, the architect and the builders could address environmental issues only in the building's exterior, infrastructure and lobby — not the tenant areas. Nearly 30 percent of the structural steel that went into the building was recycled, as was construction waste. The Tishman Construction Corporation, which managed the project, used low-sulfur fuels during construction.

The building has a daylight dimming system in the ceilings that adjusts to the amount of available sunlight, and large tanks to conserve rainwater. The building takes in air at the top, some 700 feet up. Mr. Galioto said that if a chemical agent were to be released on the ground floor, it would dissipate by the time it reached the employees. "It delivers a very high air quality to the occupied floors," he added.

The cost of greening the World Trade Center project added less than 5 percent to its budget, Mr. Galioto said. In 2002, when the project was conceived, "manufacturers and suppliers weren't quite certain about it," he said, but "sustainable design is now mainstream. Suppliers, contractors all recognize this."

Green Is Gold

While the LEED point system implies a high level of precision, experts say it is difficult to compare greenness. The green ratings offer a menu of criteria, from one point for a bike rack to up to 10 points for using less energy. "So many buildings are being built in New York City that are different shades of green," said Ashok Gupta, director of the air and energy program at the Natural Resources Defense Council.

Some say buildings that are not certified claim to be green without having done the hard work to earn it. "Energy conservation is important, but the way it's being bandied about so casually — they're using it as a sales device," said Charles Gwathmey, the architect.

Mr. Fowle, of FX Fowle, added: "It's a point system game. You can have a building that is zero carbon — the greenest, most energy conserving — and not be LEED rated because you don't have the other stuff."

In 10 years will older buildings lacking radiant floors or certified wood furniture seem as unacceptable to office workers as one that lacks central air conditioning today? "Tenants will demand healthy buildings — they'll force developers to build them," said Craig Graber, co-chairman of the Committee on the Environment at the New York chapter of the American Institute of Architects.

At the same time, Mr. Graber said, green buildings in New York might eventually become so commonplace that they lose their cachet. "In a few years, when there are 20 or 30 green buildings, they're not going to be so special anymore," he said. "I wonder if people are going to put in the extra effort."

[New York Times print edition April 16 also has detailed notes and pictures on some of the attributes that contribute to the LEED Gold ratings the U.S. Green Building Council awarded to 7 World Trade Center and Hearst Tower, Manhattan.]