

Mapping *the* **FUTURE**

A revolutionary solar radiation mapping computer program enabled a landscape architect team to design a sustainable courtyard for the future New York Times Co. headquarters in Manhattan.

When all is said and done, the striking, simplistic beauty of the courtyard in the New York Times Co.'s new headquarters will belie the work and research that made it possible. When the garden opens in fall 2007 in midtown Manhattan, onlookers will see a small stand of paper birches that reach 40 feet into the sky. Below the trees will stretch an undulating bed of moss, broken by a wooden walkway and bridge.

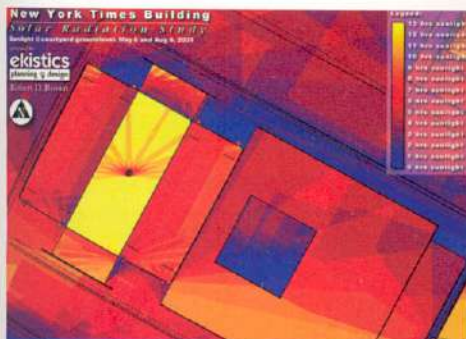
The glass-encased, 70- by 70-foot courtyard will be located in one of the densest parts of the city, where skyscrapers eclipse much of the sun and create numerous microclimates on the ground below. The courtyard's own building will pose challenges to sustaining plant growth. Three of its glass walls will stretch 70 feet tall, and on the fourth side will be a 52-story office space.

To some, it may seem like a fruitless challenge to create a courtyard where such difficult growing conditions exist. However, this garden was not simply an afterthought of the building's design, says Hank White, founder, owner and a principal of HM White Site Architects, New York; rather, it was a key part of architect Renzo Piano's plan.

"[Piano] spoke about the project publicly and made a number of presentations in the city. ... He spent a great deal of time explaining the project's courtyard and roof garden [which has been tabled]. They were extraordinarily important," White says. "He did not perceive these as leftover spaces. They were part and parcel of the building design and integral to how the building presents itself and how it would be experienced."

Piano's design for the building focused on transparency, White explains.

by SARAH LANDICHO



Solar radiation mapping made it possible to determine exactly where and how much light would be available to the courtyard plants. It also clarified the fact birch trees would not be an indefinitely sustainable plant selection for the space.

“What is rather revolutionary about this piece of architecture is that people will be able to see through this building day and night. You will actually be able to decipher people sitting at their desks. The glass they use — and the extent of the glass — will have this remarkable transparency. You will be able to see a good deal of 41st Street on the north side from 40th Street,” he describes. “That’s where the garden plays an incredible function. ... One will be able to see aspects of the courtyard from the sidewalk and other public spaces. And not just at ground level. You can see the canopy of birch trees from those upper floors. This whole idea of nature being visible within a manmade construct is a wonderful juxtaposition.”

Piano had an idea of what he wanted to see in the space, White says.

“He had visualized a birch tree grove for the courtyard; a very simple grove of birches,” he adds. “When we were brought on, our charge was to fulfill the design aspiration.”

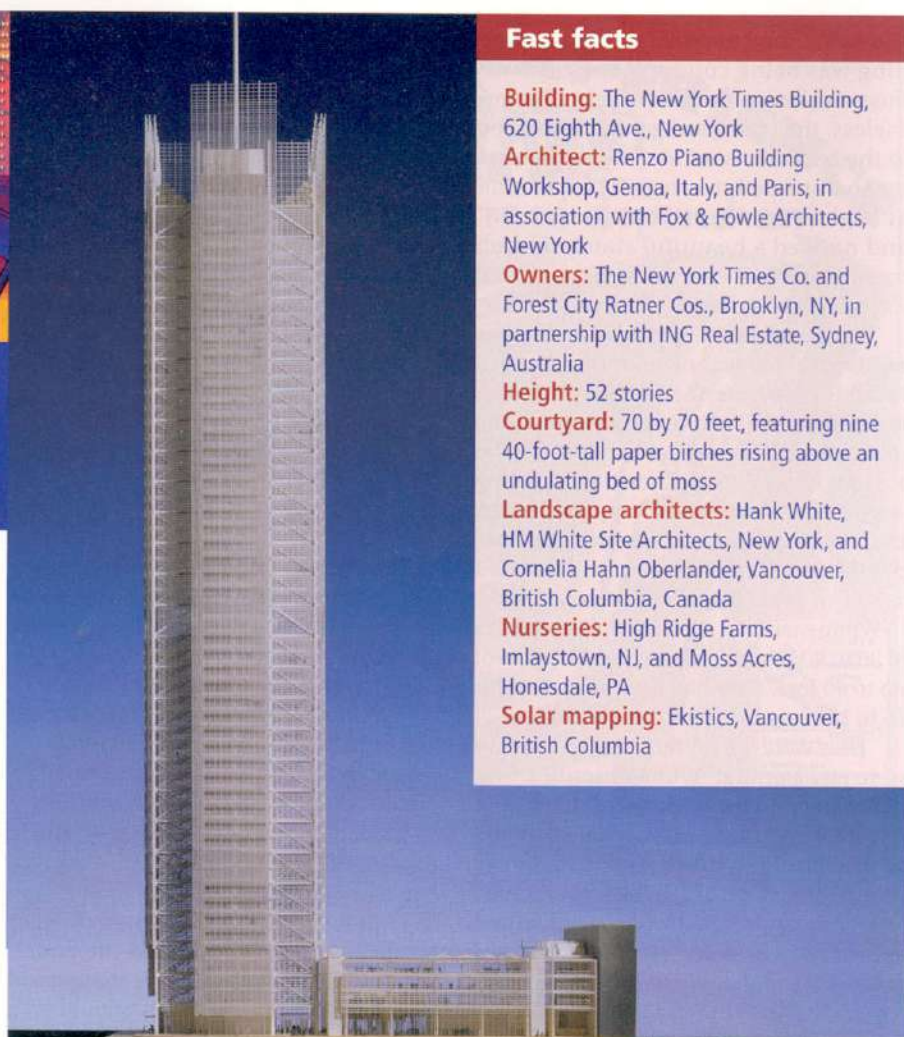
While Piano didn’t issue a directive as to what had to be planted in the courtyard, he spoke of the poetry of the space and its spirit, White explains.

“It was clear that whatever we put in the ground, it needed to be extraordinarily simple and not create a lot of visual competition with other things,” he says.

What remained to be seen was what kind of plant life could be sustained.

Science behind design. “How do you design a space that does not exist? How does a landscape architect specify plant material for future growing conditions when there’s no way to occupy that space until well after it’s built?” White asks. “One needs to have some scientific prediction as to what one’s dealing with prior to the completed form.”

That’s when his collaborator on the project, famed Canadian landscape ar-



Passers-by should be able to view parts of the courtyard garden through the transparent New York Times Building.

chitect Cornelia Hahn Oberlander, suggested trying something new. She was aware of new technology that was able to map solar radiation levels based on computer modeling of a proposed structure within its surrounding complex urban environment. Robert Brown and Rob LeBlanc, two professors at the University of Guelph, Ontario, Canada, pioneered the program. They brought it to Ekistics, a company based in Vancouver, British Columbia, Canada.

“The solar maps clearly demarcated where light would occur at key points within the calendar year. They also [showed] light levels at ground level, as well as at 3 meters above ground level,” White says.

Not only did the program base its findings on a 3-D model of the future New York Times building, it compiled the solar radiation mapping information based on a 3-D model of all the buildings within a 12-block radius. The program was able to accurately map the exact sun levels of the nonexistent courtyard, he adds.

While there are a number of pro-



grams available that give a cursory notion of sun levels in newly constructed spaces, the solar radiation mapping was crucial to developing a plan for the courtyard, White says.

“In a lot of our assignments, there is an aspect of final growing conditions that we can hinge onto to inform our decisions,” he explains. “In this case, we were talking about a 100-percent, newly created, artificial, manmade space where we had nothing from which to work. All of our decisions to make any sort of intelligent recommendations to our client needed to be simulated through that technology.”

Fast facts

Building: The New York Times Building, 620 Eighth Ave., New York

Architect: Renzo Piano Building Workshop, Genoa, Italy, and Paris, in association with Fox & Fowle Architects, New York

Owners: The New York Times Co. and Forest City Ratner Cos., Brooklyn, NY, in partnership with ING Real Estate, Sydney, Australia

Height: 52 stories

Courtyard: 70 by 70 feet, featuring nine 40-foot-tall paper birches rising above an undulating bed of moss

Landscape architects: Hank White, HM White Site Architects, New York, and Cornelia Hahn Oberlander, Vancouver, British Columbia, Canada

Nurseries: High Ridge Farms, Imlaystown, NJ, and Moss Acres, Honesdale, PA

Solar mapping: Ekistics, Vancouver, British Columbia

Kismet. While the solar radiation mapping was being conducted, White was busy working on other projects. Nevertheless, the courtyard garden remained in the back of his mind. So when he was on an unrelated tree-tagging expedition at High Ridge Farms, Imlaystown, NJ, and noticed a beautiful stand of birch trees, it was as if everything began to fall into place, White says.

“Renzo started it by declaring birches as his ideal plant choice for the garden,” he adds. “We weren’t sure that was going to work; hence, we went through all the microclimate issues. ... I happened to be at High Ridge Farms, known for growing large-caliper trees, and I happened to see this amazing block of multistemmed paper birches 30-plus to 40-plus feet tall. I said, ‘I’ve got to take a look at these.’”

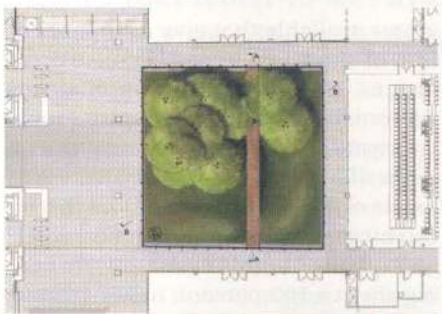
White marched down to the two blocks of 30 to 40 birches that reached heights of up to 40 feet. They had been inground for 15 to 18 years, according to the grower.

“They were the perfect size for what we were envisioning,” White describes. “We photographed the heck out of them.”

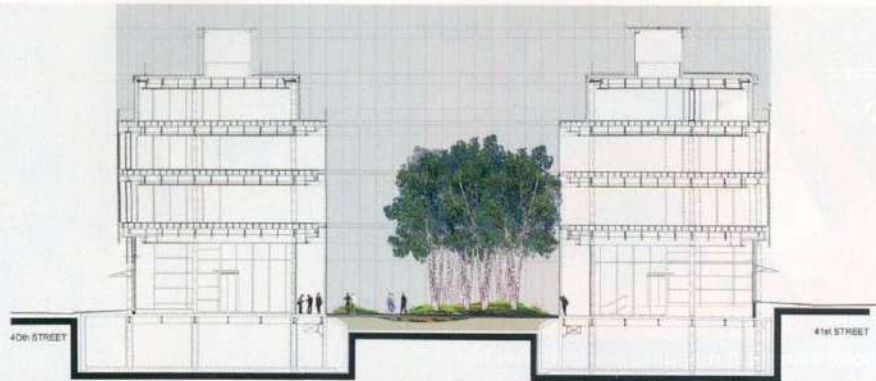
The key presentation was quickly approaching. With the solar mapping complete and the final analysis in, what the landscape design team feared appeared to be true. “It was clear that a great deal of the courtyard gets no direct sunlight,” White says.

Nonetheless, the design team went forward with the birch plan.

“When we made our key presentation to this enormous consortium of project team members — the decision makers of the New York Times Co. and the entire design and project team — we had the final analysis of the [solar radiation mapping] and what was going to be possible for the plant choices,” White says. “We presented these images of the birches [we photographed]. We superimposed them through computer graphic simulation into the space. It just blew everybody away as being the perfect trees for the garden.”



The architect envisioned the courtyard as a centerpiece of the New York Times Building that would offer a miniature forest to the people who work there.



The landscape architect team was able to incorporate the birch trees they wanted into their key presentation, so building owners could make an informed decision as to whether they would spend the extra money to replace the unsustainable plants every 12 to 18 years.

There was a caveat, however, that the building owners needed to be aware of: The trees would have to be replaced periodically. Because the light levels were not ideal for birches to thrive, there would be a gradual decline of the trees, including periodic dieback within the tree canopy. Within a 12- to 18-year time frame, the birches would have to be replaced.

If the building owners were willing to take on the additional costs and responsibility of replacing the trees as an ongoing operational expense, birches could be successfully used within the courtyard rather than other trees that would be more horticulturally correct and sustainable, White says. The trees also would have to be treated regularly to fend off the bronze birch borer.

Not only did the building owners agree to buy the trees White had tagged and used in the presentation, they contracted High Ridge Farms to grow the birches that would be needed for the garden’s future.

Grounded decisions. Once the decision was made to go with the birches, the rest of the design followed, White says.

“The portion [of the garden] that does get some direct sunlight, that’s where we placed the grove of birch trees. What remains underneath, shaded by the trees by and large, wouldn’t tolerate anything but deep, ground-shade plants. The obvious choices didn’t excite Cornelia or myself,” he adds.

That’s when they looked to forests for inspiration, White recalls.

“We were really inspired by a woodland forest experience, where you see moss so frequently,” he says. “We thought that would be the perfect choice. This green, velvet plant material would be woven onto this undulating topography — the next important design expression.”

Piano had originally envisioned a very uniform stand of trees; however, the so-

lar mapping made it clear that no matter what species was used, a uniform planting pattern couldn’t survive, White says. The trees need to be planted asymmetrically to match where the light would be.

“From that, we felt the ground plane needed to do something that was very different from the uniform, public surroundings,” he explains. “We introduced this undulating topography where the ground plane rolls up and down, so you have this very fluid and layering spatial effect on what really is a relatively small space.”

The changing topography enabled the design team to add yet another key garden feature — the bridge and walkway.

“The walkway turns out into a bridge, which traverses the low points of the garden,” White describes. “It reinforces the whole concept of this very fragile and sensitive woodland environment where one is only allowed to walk in a specific area — the narrow walkway becomes the steppingstones for one tiptoeing through this very precious environment.”

The walkway and bridge also serve another purpose — an invitation of sorts. While the courtyard garden only will be open during specific, controlled times, the walkway and bridge give onlookers the impression of being able to wander in.

“If the garden were clearly something you could not occupy or see you couldn’t occupy, it would give it too much of an abstraction to anyone looking into it. It would appear as an isolated piece of nature inserted into the building, and it almost becomes a museum piece that becomes lifeless,” White explains. “[The bridge and walkway] suggest one can occupy and experience and feel that space, and that’s very important.”

Finally, a daily misting will be used to maintain the moss-covered ground in the courtyard.

“It’s very much part of the garden design,” White says. “There’s a grid orga-

nization of these beautiful little pop-up misters, which will actually become almost like a miniature fountain when they're on. We are anticipating they will be turned on between 8:30 and 9 every morning, so it will be a garden event every day as people arrive at work."

Other than the daily misting and a seasonal raking of leaves, White and his team don't expect many other maintenance requirements.

Future challenges. The garden will be the final component installed in the building, and the ground below it is the only unexcavated part. The crane used for building construction will occupy the space until it's no longer needed, then the landscape crews can begin to prepare the planting site.

The landscape architect expects the building process to go fairly smoothly.

"It [requires] constant monitoring of the construction process in terms of what is being installed by others so that there is this awareness of what is to come later so that the courtyard can support all the plant material," White explains. "But everyone is abiding by all the coordinated elements."

As for the trees, they will be lifted into the space by crane when it comes time to plant them. When they've reached the extent of their life in the courtyard, they will be lifted out of the space by crane.

The rooftop garden is still another element to be finalized for the building. The space had not yet been leased, and the design will be completed when the space is rented.

"That's going to be a retrofit," White says. "Plants will be selected based on what one can fit in service elevators and such."

While the design comes across as simplistic, the extent of research necessary to make this lovely garden possible resonates with White.

"We were honored and privileged by being forerunners in using this computer program, as it enabled us — at a very economical cost — to arrive at a quick consensus on what plants to specify and to get design decisions made that satisfied many agendas," White says. "The general public is going to look at our birch trees and look at that moss and say, 'That's pretty simple.' They won't understand the infrastructure of what it takes to support that plant life within the small artificial environment. I think that's the main part of this story — particularly when you consider that the design for this courtyard and all of those decisions were made well before that space was even realized."

Sarah Landicho is a contributing writer of AMERICAN NURSERYMAN.

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