

*Hoboken, New Jersey,  
reclaims a dilapidated pier  
as a most improbable park.*

BY J. WILLIAM  
THOMPSON, FASLA  
PHOTOGRAPHY BY  
FRED CHARLES

# ROOTS OVER THE RIVER

2000 ASLA AWARD WINNER

The urban fabric around Manhattan Island seems to be developing in a direction exactly opposite that of the rest of the country. As most American metropolitan regions sprawl relentlessly outward, places like Hoboken, New Jersey, just across the Hudson River from lower Manhattan, seem to be maximizing every square foot of ground—and even creating ground where there was none. Whereas Phoenix just set aside 21,500 acres as a desert preserve, Hoboken last year completed its new South Waterfront Park with a grand total of seven acres—five of which are on a pier jutting out into the Hudson.

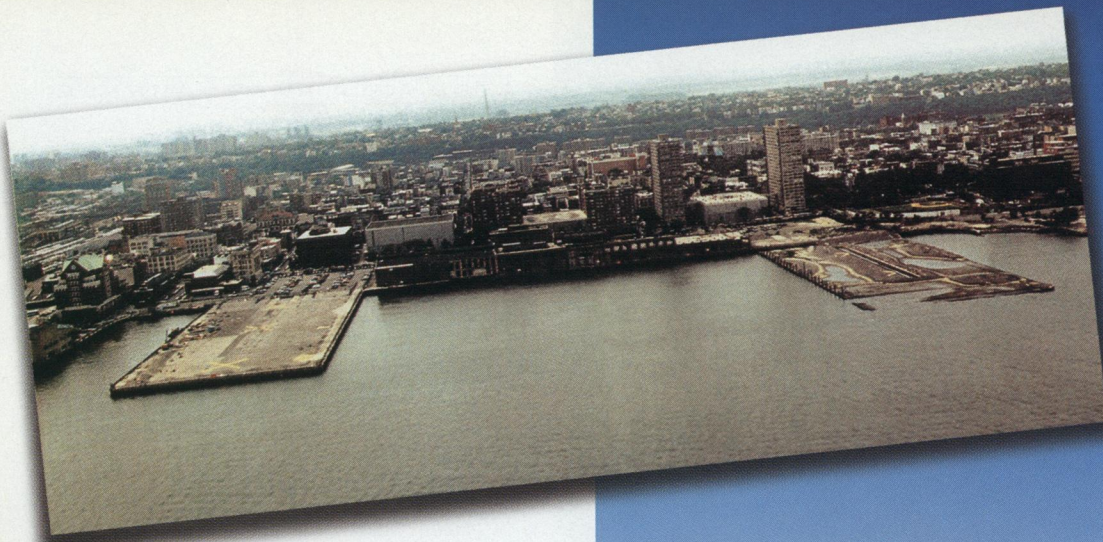
The resulting park incorporates trees and lawn, planted in manufactured soil atop the restored pier—and hence actually suspended in the air over the Hudson. As such, it joins the burgeoning category of on-structure gardens that includes “green roofs” and gardens built over subway entrances as well as more conventional roof gardens. In addition to a 2000 ASLA honor award for design, the park has won an honor award from the Washington, D.C.–based Waterfront Center.

But why manufacture ground and plant trees in it over a river, of all things? The answer has to do with the constrictions of Hoboken itself: One square mile in area and laid out on a high-density grid, Hoboken until recently had a pathetic 12 acres of open space for a population of 35,000—the poorest open-space-to-population ratio anywhere in the densely populated state of New Jersey.

So local residents turned their attention to the one area with any potential for expansion—the waterfront. Once a gritty but thriving port of entry—*On the Waterfront* with Marlon Brando was filmed here—Hoboken’s waterfront was abandoned in the 1970s as containerized cargo ships became too mammoth to dock at Hoboken’s outmoded facilities. So the waterfront was abandoned and left

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LOOKING DOWN *the walkway on the land side of South Waterfront Park, the pier juts out directly ahead. The walkway will eventually form part of an 18-mile riverwalk. Trees are planted in a form of structural soil devised by Henry Arnold, and pavers are widely spaced so that rain can percolate through. Note the lack of tree grates; as the trunks grow, pavers can simply be removed.*



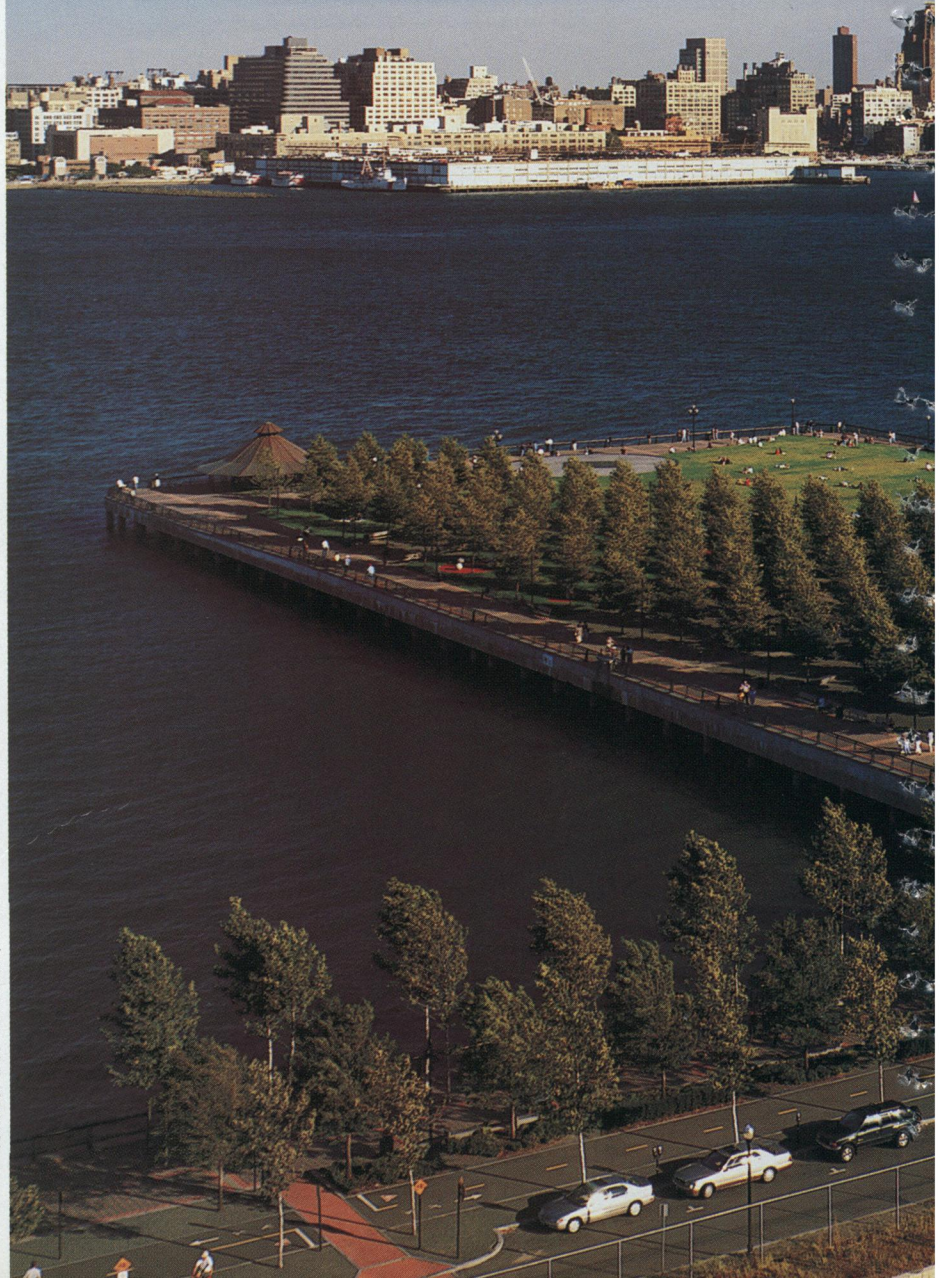
derelict—fenced off, inaccessible to local residents, contaminated in places. Nevertheless, the waterfront—including two abandoned piers where freight had once been loaded and unloaded—was the only land left in this densely populated city that seemed to have some potential for a riverside park. Across the river in Manhattan, abandoned wharves and piers were beginning to be converted to waterside parks and greenways. (See “An Island Unto Itself,” *Landscape Architecture*, July 1999.)

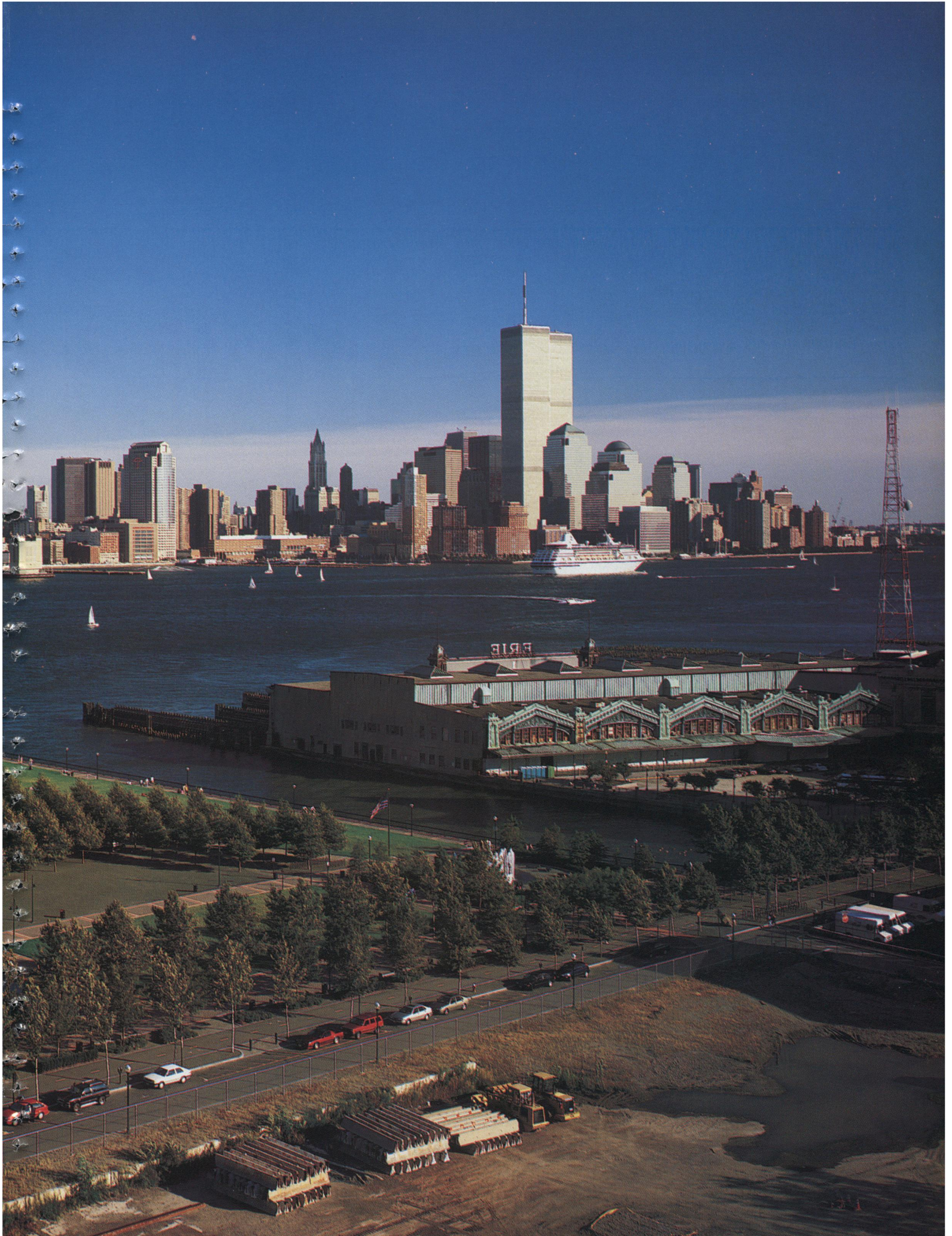
Also since the 1970s, Hoboken had gentrified from a factory workers’ and longshoremen’s town to a bedroom enclave for young professionals who work in Manhattan, a short subway ride away. So developers (with the blessing of the city and the local Port Authority) began eyeing the abandoned piers as a site for high-rise buildings.

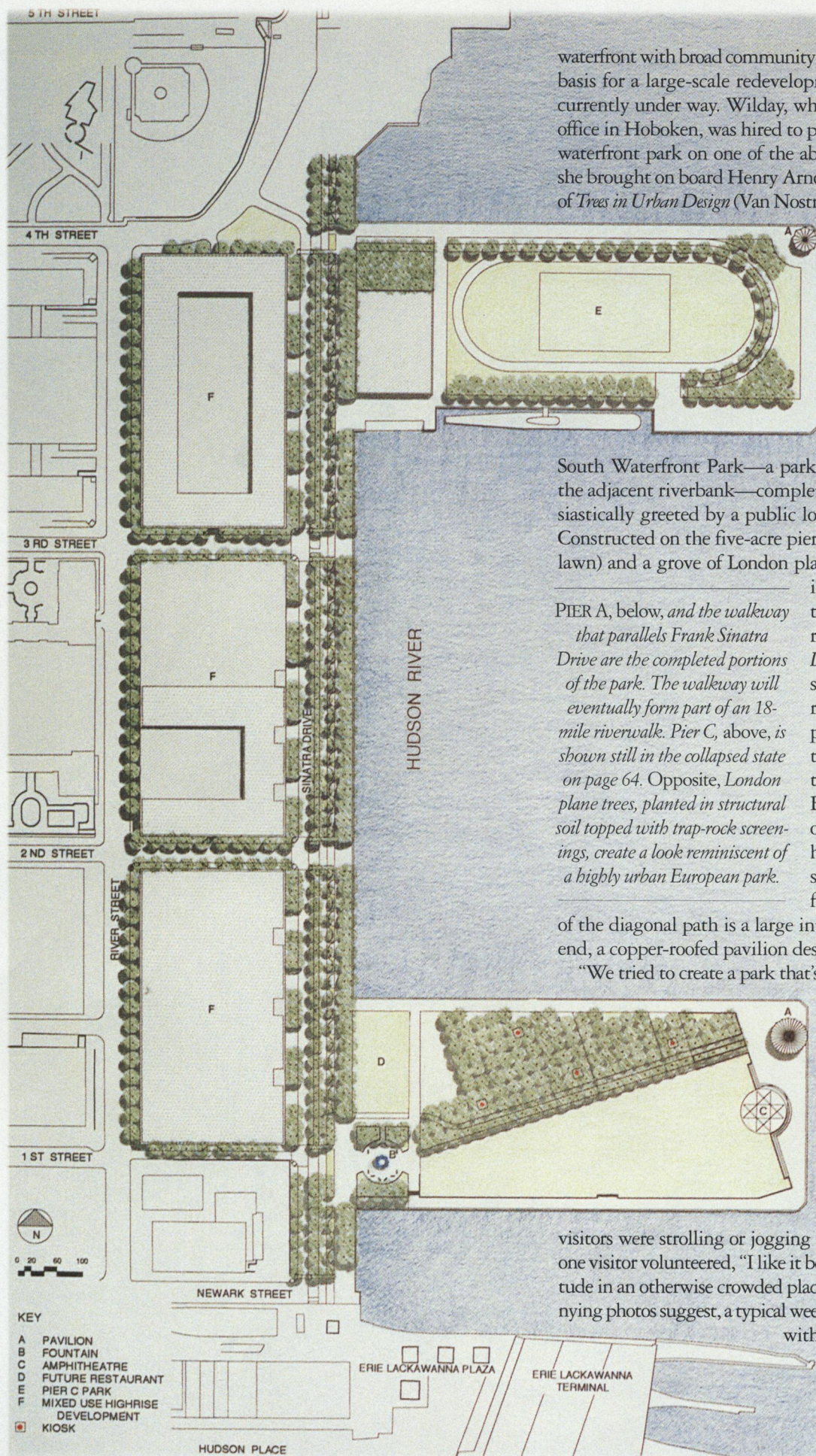
The proposal outraged many local residents. Not only would the towers make Hoboken look egregiously like Jersey City, the city just south of Hoboken, but they would also effectively block public access to the waterfront. In 1989 the plan for waterfront towers was defeated in a public referendum. The Coalition for a Better Waterfront, a community group instrumental in the defeat, formed a group of local architects and planners and one landscape architect, Cassandra Wilday, ASLA, to develop an alternate plan for the site. The mayor and city council responded by forming an advisory group and appointing a diverse group of residents, charged to create one plan for the

THE AERIAL VIEW of the site, above, shows Pier A structurally repaired to the left of the photo and Pier C still in its collapsed state. The waterfront buildings have since been demolished and replaced by Frank Sinatra Drive, visible in the contemporary photo at right. (The crooner grew up in Hoboken.) The park on Pier A enjoys views of the Manhattan skyline. The building adjacent is the Erie-Lackawanna Ferry Terminal, which is on the National Register.

COURTESY CASSANDRA WILDAY, TOP







waterfront with broad community consensus. This plan became the basis for a large-scale redevelopment of the waterfront that is currently under way. Wilday, who lives and at that time had an office in Hoboken, was hired to pull together a design team for a waterfront park on one of the abandoned piers. Among others, she brought on board Henry Arnold, FASLA, of Princeton, author of *Trees in Urban Design* (Van Nostrand Reinhold, 1994) and an authority on getting trees to thrive on tough urban sites;

and Dmitri Sarantitis, an architect with whom she had collaborated on the design team for the Chinese Scholar's Garden on nearby Staten Island (*Landscape Architecture*, April 2000).

The first installment of South Waterfront Park—a park on Pier A and a riverwalk on the adjacent riverbank—completed in spring 1999, was enthusiastically greeted by a public long cut off from its waterfront. Constructed on the five-acre pier are a green “beach” (actually a lawn) and a grove of London plane trees. The trees are planted in a formal grid that looks like the geometric plantings Arnold recommends in *Trees in Urban Design*. Among the trees are seating, kiosks housing public restrooms and other uses, and play areas. A diagonal walk down the center of the pier is oriented to views of the Empire State Building, but the entire skyline of midtown and lower Manhattan—which can only be described as spectacular—is visible from the park. At the land end of the diagonal path is a large interactive fountain; at the water end, a copper-roofed pavilion designed by Sarantitis.

“We tried to create a park that’s simple and durable,” says Wilday. “There aren’t a lot of bells and whistles.” Both Hoboken residents, Wilday and Sarantitis describe themselves as regular park users: “We’re here all the time,” says Wilday. So are a lot of other people. Even on the early April day that *LAM* visited, with a cold wind blowing off the Hudson, visitors were strolling or jogging through the park. When asked, one visitor volunteered, “I like it because it gives you a sense of solitude in an otherwise crowded place.” By summer, as the accompanying photos suggest, a typical weekend will find the park thronged with people seeking relief from the hot streets of Hoboken.

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The total redevelopment of

## AIR-ENTRAINED SOIL: A STRUCTURAL-SOIL OPTION FOR HIGH-TRAFFIC PEDESTRIAN AREAS

The most interesting technical innovation at South Waterfront Park is a structural-soil mix that Arnold calls air-entrained soil. On the pier, as in many urban sites that get a lot of foot traffic, a major issue in plantings is soil compaction, which ultimately chokes trees and other plants by preventing air and water from reaching their roots. The need to prevent such compaction has been the genesis of the various kinds of structural soil. The kind that Henry Arnold has evolved is a lightweight mix based on internally porous aggregates, as cited in the list of structural-soil types in “Soil Under Pressure” in this issue. The main benefit of this technology at South Waterfront Park, says Arnold, was to allow park users to walk directly under trees without affecting the soil around the root

zone. No amount of foot traffic fazes structural soil, apparently. “You could drive a truck over this stuff” without impacting the tree roots, says Wilday.

Like other types of structural soil, air-entrained soil is simple in principle. It is typically composed of 30 percent topsoil, peat moss or other organics, and fertilizer; and 70 percent expanded slate or shale—products made by coating slate or shale fragments with an oil and heating them in a furnace until they resemble a porous pumice. These products are common in the construction industry; typical brands include Solite and Stalite. The specification that was used for Pier A reads as follows: “A chemically inert manufactured lightweight aggregate of expanded slate or shale meeting ASTM\_C-331.” Arnold prefers these materials over the solid stone fragments used in some structural-soil mixes because the pores guarantee that some air will always be available to the roots.

Specifically, at Pier A each 5-1/4 cubic yards of air-entrained soil consisted of the following: 1-1/2 yards of topsoil, 3-1/2 yards of expanded slate, 1/4 cubic yard of peat, and five pounds of 5-10-10 fertilizer. The mix was laid in eight-inch “lifts”

that were compacted to 90 to 95 percent of maximum compaction before the next lift was spread. Although it may seem ironic that compacting soil can actually help tree roots, this compaction is the key to any structural soil. Compaction forces the angular fragments of slate or shale to lock together, leaving spaces in between for air and water to circulate while preventing further compaction by any amount of foot traffic.

The depth of the air-entrained soil on the pier varies from 18 inches under the lawn to four feet under the trees.

Unlike the soil mix devised by Cornell University’s Urban Horticulture Institute, air-entrained soil is not patented. Arnold got the idea for air-entrained soil by working on a project in Washington, D.C., with federal agronomist Jim Patterson, who was experimenting with similar mixes for use on high-traffic lawns. Arnold began experimenting on his own with similar mixes in tree plantings and has since used air-entrained soil on about 15 projects. The most extensive of these is Metro Tech in Brooklyn, New York, an eight-block urban area with numerous tree plantings.





the waterfront park and adjacent three-block area has cost a whopping \$145 million, most of it provided by the Port Authority of New York and New Jersey. Redevelopment costs covered environmental cleanup, demolition of old buildings, rebuilding the piers, and putting in new streets and other infrastructure—including the park. Ultimately, a second pier adjacent to Pier A will be recreated as a park, probably following Wilday and Arnold's original concept for the two piers, although it's uncertain whether they will be on the design team—this is entirely dependent on the always-volatile political climate in Hoboken.

Also in the future is the Hudson River Walkway, an 18-mile-long recreation path projected from the Bayonne Bridge south of Hoboken north to the George Washington Bridge. A short stretch of this riverwalk has been completed on the land side of South Waterfront Park; other fragments exist farther up the Hudson. But in the hotly contested struggle for waterfront space on this shore of the Hudson, completion of the entire 18-mile system is many years away. For now, however, the South Waterfront riverwalk and park are in place and seem to be working for the citizens of Hoboken.

"It was a simple solution that was very well executed," noted one design juror in handing out the ASLA honor award. "It related well to its context. It looks and works like a people place, and it made the most of the site with its incredible beauty."  
 "Hoboken never looked so good," said another. **LA**

#### HOW TO GET THERE

South Waterfront Park is easily accessible via the PATH subway train, which stops at the Erie-Lackawanna Ferry Terminal, adjacent to the park in Hoboken. The PATH train is accessible from the New York City



THE DIAGONAL PATH  
*from the fountain to the pavilion  
 designed by Dmitri Sarantitis, top,  
 is aligned to view the Empire State  
 Building. The fountain, left, looks  
 back toward Hoboken.*

ARNOLD ASSOCIATES

subway system in Manhattan and from the Amtrak station in Newark, New Jersey.

#### PROJECT CREDITS

**Landscape architects:** Arnold/Wilday Landscape Architects, Hoboken.

**Bikeway planning:** Bikeways Engineering, Inc., Bellemeade, New Jersey.

**Architecture:** Dmitri Sarantitis Architects, New York City; H.M. Brandston & Partners, Inc., New York City; Lance Wyman Ltd., New York City; Port Authority of New York and New Jersey.

**Project and construction management and financing:** Port Authority of New York and New Jersey.

**Construction:** J. Fletcher Creamer Construction, Hackensack, New Jersey.

**Owner and Client:** City of Hoboken.



#### PERSPECTIVE : *Tamara Shapiro,* *Department of Landscape Architecture, Rutgers University*

It is not always easy to get to the waterfront in northern New Jersey. When traveling on the elevated rails and bridges that pass through the corridor, it is possible to glimpse the water over acres of meadow choked with common reed, shipping containers, warehouses, and shiny new cars waiting for inland delivery. But most of us, usually on our way to New York City, submerge into the mouth of a tunnel before ever really experiencing anything like a real waterfront on the west side of the Hudson. However, the development of Hoboken's waterfront, particularly the design of South Waterfront Park, promises new access to the postindustrial glory of the Hudson River.

South Waterfront Park extends toward Manhattan's Greenwich Village from the end of First Street in Hoboken. It sits on the water next to the Erie-Lackawanna Ferry Terminal, a patina-covered civic

monument currently being retrofitted and returned to a healthy urban condition. The layout of the park accentuates the spectacular views of the Manhattan skyline while maintaining, in material and scale, its connection to Hoboken. For example, the diagonal path and expansive lawn draw the eye out to the sky and water, while the copper-roofed pavilion at the end of the pier both anchors the path and refers in material and form to the Erie-Lackawanna Terminal.

The park occupies approximately five acres and provides a variety of spaces for activities. A generous promenade rings the perimeter from which it is possible to stand within 50 feet of a working tugboat. On a Sunday in early spring, no fewer than 10 people were fishing from the pier. Extended families dressed in their Sunday best strolled along the water as their children balanced on the walls and climbed on the sculptures. On what must be the largest piece of open lawn in the city, people sunbathed, flew kites, and kicked soccer balls, while under the urban bosque of bare London plane trees, an elderly couple quietly fed pigeons.

South Waterfront Park provides physical and visual access to the water, and its understated, well-conceived design also provides a kind of elegant civic space that rivals anything else on the Hudson River waterfront.