

Rooftop oases find growing enthusiasm

Plants take root on a college building in Pasadena and elsewhere as cities see economic and environmental benefits of going 'green.'

By Mira Tweti, Special to The Times
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As you lie in the tall Pacific dune grass, amid grasshoppers and butterflies, it's all blue sky and San Gabriel mountains as far as the eye can see. The sounds of the city are a distant murmur.

Here, in an industrial section of Pasadena, it is hard to imagine a more unlikely oasis: nearly 14,000 square feet of transplanted meadow four stories above ground — on a roof.

Atop the Art Center College of Design's downtown campus, this roof is covered in 6 inches of soil bearing native grasses and shrubs. More than a garden, it is an ecologically designed green space that cools the building in summer by absorbing heat — much like an urban park does — and insulates it from cold in winter.

FOR THE RECORD:

Rooftop oases: An article in Thursday's California section about rooftop gardens said that according to Paul Kephart, a Carmel Valley landscape architect, grass planted on rooftops as small as 11 square feet can remove 5 pounds of toxic particulate matter from the air every three months. Kephart was describing roofs 11 feet by 11 feet, or 121 square feet. The article also stated that in April the city of Pasadena made green roofs mandatory on all new city buildings of 5,000 square feet or larger and that 800,000 square feet of new building construction in the city, if completed, will have green roofs. In fact, the city did not make green roofs mandatory but rather made green buildings mandatory under certain conditions. Those buildings may or may not include green roofs.

The Art Center's roof is one of hundreds that have been planted in the Los Angeles area and in major cities around the country. Among the first were a handful of "green"-roofed buildings erected in the 1930s at New York's Rockefeller Center.

Living roofs have a long history. The Vikings grew sod on their homes for insulation. The hanging gardens of Babylon were planted rooftops. Europeans have cultivated green roofs for decades. After World War II, Germany made them mandatory in all major cities to prevent rainwater from washing into aging sewer systems.

In modern cities, the roofs are a way to recreate the Earth's natural footprint that has been displaced by buildings. The roofs replicate the outdoors in a variety of ways, from manicured lawns to unruly meadows.

Experts say such roofs retain storm water, decrease the cost of greenhouse gas reduction and lessen the need for interior building insulation. They also help to bring fauna back to inner city areas by attracting insects and birds, just as a backyard would.

Carmel Valley architect Paul Kephart, a pioneer of green roof design, maintains that even roofs as small as 11 square feet can remove 5 pounds of toxic particulate matter from the air every three months, filter and purify rainfall and control runoff. Through evapotranspiration the water is released back into the atmosphere, cooling it. Or it drains slowly into storm sewers.

Experts believe the roofs can reduce the lethal effects of heat waves, such as the one that led to the deaths of 465 people in Chicago in 1995.

Since then, 2.7 million square feet of green roofs have been built in Chicago or are in the pipeline. The first building to get one under the city's green roof program was City Hall. Because the city shares the building with Cook County offices, it could green only its half of the 38,000-square-foot roof. It contains 20,000 plants in 158 varieties.

On a day when ground temperatures reached 95 degrees, the reading on the City Hall side of the roof was 91 degrees. On the county's half, which was covered with black tar, the temperature was 169 degrees. "The city is saving \$40,000 a year in air conditioning costs from this 'green' roof alone," said Constance Buscemi, of the Chicago department of planning and development.

In April, the city of Pasadena made green roofs mandatory on all new city buildings of 5,000 square feet or larger, on commercial buildings and residential tenant improvement construction of 25,000 square feet or more, and on all mixed-use or residential buildings of four stories or more.

Alice Sterling, Pasadena's green building coordinator, said there are 800,000 square feet of new building construction on the books in Pasadena that, if completed, will all have green roofs.

Los Angeles Deputy City Engineer Deborah J. Weintraub has submitted a report to the City Council's planning and land use management committee outlining a possible green roof pilot project for one of several city buildings, including two low-rise wings of City Hall.

Construction of a new constituent services building on Central Avenue at 43rd Street near the famed Hotel Dunbar will break ground Jan. 7. The living roof of the \$13-million, 7,000-square-foot, city-owned building, which is scheduled to be completed by mid-2008, was a requirement of 9th District Councilwoman Jan Perry. "I thought, why can't we have the amenities of the Santa Monica Mountains in South-Central?" Perry said.

The planted roof will hold more than 100 people for special events. "It will help people think a different way about that area. I want it to be a catalyst and template for development that may follow," Perry said.

Green roofs start with a waterproof roof cover called a membrane. Then comes a root barrier, a drainage layer, and finally the growing medium and plants. Many plants native to California are drought-tolerant and need little maintenance

Depending on how the roof is designed, architects say the additional weight, which can equal that of a load of snow, is not unsafe even for older buildings. Greenery can be rooted on roofs that slope up to 60 degrees.

Nancy Goslee Powers, the Santa Monica landscaper who designed the roof at the Pasadena Art Center building, is working on similar projects in Beverly Hills and Century City, where a living roof is being installed on a public parking structure to keep it cool. It will be three-quarters the size of a football field.

Living roofs aren't risk free. One of Powers' earlier projects — at a store on Rodeo Drive in Beverly Hills — sprang a leak and flooded the store, ruining thousands of dollars in merchandise. That was more than a decade ago. Now, experts say, the roofs are stronger and more waterproof than standard roofs, and some manufacturers offer 20-year guarantees.

Powers acknowledged that there is resistance to the roofs on the part of colleagues and customers in the Los Angeles area.

"You have to keep plugging living roofs," she said. "A crew cut on top of a building may not appeal to every architect. And we have a culture of fear when it comes to new ideas.

"So, it's not always an easy sell to clients. We have to remind people we can't survive without plants."