

GREEN MINE

NCSU's Dr. Tom Ruffy and Dr. Danesha Carley showcase the university's 18-hole public golf course opened in June. Crafted by Lonnie Poole Golf Course — Arnold Palmer's design group — the course relies on solutions donated by Bayer Environmental Science to control turf weeds, diseases and pest insects.



continued from page 19

recently named the first Bayer Environmental Science Professor of Sustainable Development, a chair endowed by the Bayer CropScience business unit. “Ready or not, like it or not, we are challenged with using our resources much more efficiently and better protecting our environment — while maintaining the quality of life we value so much.”

Nurturing green spaces

Dr. Ruffy noted 1 hectare (2.47 acres) of healthy turfgrass can sequester 1 ton of carbon emissions annually. The United States is home to up to 60 million acres of turf, capable of storing a combined 24 million tons of carbon each year. Healthy trees reportedly store another 3,200 lbs. of carbon per acre annually.

Lawn care chemicals help combat turf weeds, diseases, pest insects, and heat and water stress. They are part of the solution — not the problem, Dr. Ruffy said. These Green Industry innovations help protect our turf and, in turn, our ability to sequester carbon and keep temperatures from rising higher than the 6- to 7-degree climb already projected by some scientists to occur in the coming decades.

“There are a lot of misperceptions about lawn care chemicals,” Dr. Ruffy explained. “For instance, our research shows very little leaching with pesticides on turfgrass. Pesticides last five to 10 times longer in agricultural settings.”

In addition to carbon sequestration, turfgrass rapidly is becoming a key effluent dispersal solution. As populations bloom and fresh water supplies dwindle

across the globe, intelligent irrigation on green spaces increasingly will incorporate the reuse of “gray water.” However, Dr. Ruffy noted some studies have shown an increased need for fungicides in such cases to ward off heightened vulnerability to dollar spot and other diseases. More studies need to be conducted, but there also might be a greater need for weed and pest control solutions on effluent-irrigated turf.

Turf research central

Bayer's Development and Training Center is a 280-acre research site in Clayton featuring four golf course holes, a number of 20,000-sq.-ft. “super greens” and more than 50 types of cultivars used for testing sustainable turf solutions under an array of stress scenarios.

“We're located in the transition zone: We can work with warm- and cool-season turf,” said John Rock, manager of technical information for Bayer's Clayton D&T Center. “Neither type is extremely happy here, but that's a benefit to us as we test the stress tolerance of various turf types.”

“We joke that we can grow every single type of turf here — but badly,” Hamon chimed in.

“And my home lawn testifies to that,” Rock added.

Bayer's Clayton D&T Center also houses an 8-acre ornamentals nursery.

“We recently added a chain-linked fence around the nursery because it had become quite the salad buffet for deer,” Rock said.

The Center also serves as a proving grounds for all types of John Deere equipment.

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TIMING:

July 13, 2009

SUMMARY:

“This was not ideal herbicide application timing for ground ivy control, but we still had great results on it and all the other weeds on the 4-Speed XT label. As a result, we saved several contracts. We'll be using a lot more 4-Speed XT and other Nufarm products in the future.”

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GREEN MINE

Participants in Bayer Environmental Science's first-ever Plant Health Symposium survey NCSU's outdoor turf lab spanning more than 24 acres. Approximately 6 acres have been added for NCSU's new turf breeding program.



Dr. David Spak, Bayer Environmental Science's herbicide lead – product development, shares how Bayer is leveraging GPS and radiometer technologies to measure and digitally map plant health.



Bayer's close collaboration with NCSU gives the partnership access to:

- The vast Clayton D&T Center, where staffers deploy technologies such as an infrared gas analyzer gauging the carbon sequestration of different turf types, and a GPS-radiometer tech duo that allows easy measurement and digital mapping of plant health;
- NCSU's outdoor turf lab, spanning more than 24 acres; 6 acres recently were added to accommodate a new turf breeding program;
- NCSU's phytotron featuring more than 70 environmental chambers for testing plant health under various controlled conditions; and
- NCSU's 18-hole public golf course, which opened in June and relies on a host of Bayer Environmental Science's Green Business solutions to sustain plant health.

Symposium participants received backstage passes to tour all of the facilities.

Forward acting

According to Bayer Environmental Science, much of it boils down to:

1. **Sustainable Development** — “A commitment to living and conducting business in a way that meets the needs of the present without compromising the ability of future generations to meet their needs.”
2. **Greening and Growing** — “Managing



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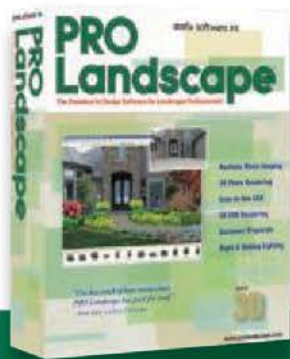
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harmful plants and pests while improving plant health, and contributing to the well-being of people and the quality of their urban and recreational environments.”

3. Together with Nature — “Reducing our footprint and fostering environmental stewardship” through, among other practices:

- Manufacturing processes that reuse water and reduce greenhouse gas emissions and freight;
- Packaging that incorporates more recycled content; and
- The development of new technologies featuring low-dose active ingredients, more-targeted applications and integrated pest management (IPM).

Bayer Environmental Science’s commitment to sustainability has yielded myriad advances.

“We recently received registration for Celsius, our newest post-emergent herbicide that attacks weeds through their shoots and roots,” noted Matt Bradley, Bayer Environmental Science’s herbicides marketing product manager. “The development of Celsius required a significant investment, but it paid off with a new formulation for warm-season turf that combines three active ingredients to achieve improved weed control with 25% to 75% less active ingredient.”

StressGard is another gem discovered during “green” mining, noted Richard Rees, Bayer Environmental Science’s fungicides product development manager. Incorporated within several Bayer Environmental Science turf management solutions, StressGard protects against environmental stress and disease, while improving turf quality and overall plant health.

Bayer Environmental Science has made sustainability — namely,

Neil Cleveland, Bayer Environmental Science’s director of Green Business, discusses the Green Industry’s role in “providing great places for people to live, work and play.”

“*Protecting Tomorrow ... Today*” — the primary principle behind its strategic, operational and cultural activities, said Neil Cleveland, director of Bayer Environmental Science’s Green Business.

“Bayer Environmental Science’s CEO, Pascal Housset, has great vision,”

Cleveland noted. “Years ago, Pascal said, ‘We need to move from killing stuff — weeds, diseases and pest insects — to greening and growing.’ And, today, that’s precisely what Bayer Environmental Science and this Plant Health Symposium are all about.” **LM**

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BESTPRACTICES

BRUCE WILSON

The author is a partner with the Wilson-Oyler Group consultancy. Visit www.wilson-oyler.com.

Reevaluate capital investments

As landscape contractors, we don't look at the use of capital as part of our decision making. Sure, we worry about meeting payroll and cash flow, but at the same time, we make capital purchases and don't always evaluate thoroughly whether we're investing that capital wisely or making the best use of it. This recession probably has made many contractors dust off the balance sheet and begin to use it as a tool to measure overall business health. The banks and bonding companies are looking at financing more closely today, causing companies to take a harder look at debt and cash reserves.

Equipment purchases consume a large portion of landscape companies' capital. Unlike some capital purchases, such as those for facility equipment, some purchases can be a variable cost to a degree.

This is an expansive subject, but for now, I'm focusing on equipment purchasing decisions. Generally, we purchase equipment to reduce labor costs and perform work we're paid to do — mow, blow, edge and clean up. Many contractors love equipment and, in many instances, have strong opinions about it.

Contractors have developed practices of assigning equipment to single crews to discourage problems associated with abuse and instill pride of ownership. They like to equip all their crews with a similar palate of equipment because it's easy to manage. These aren't bad practices. In fact, I

espouse some of them in principle. However, as we're all trying to figure out how to make money in a price-driven market, it's time to test all assumptions. The easy, safe way of managing just may not be affordable.

Furthermore, maintenance programs are put in place to care for equipment that's more schedule based (day of week or interval of time) instead of running hours of the equipment.

We're in an unprecedented era of price cutting in the market that's starting to compress everyone's margins. Prices are unlikely to increase soon, so it's time to look anywhere and everywhere for margin savings and capital preservation.

One untapped area is equipment usage. If hour meters were used to evaluate use time of a piece of equipment, we'd find we have equipment in all our fleets that could allow us to do much more work without additional capital investment.

Most likely, that work would involve sharing equipment between crews, scheduling, an increased focus on preventive maintenance, etc., but it could allow companies to grow out of this recession with less capital investment. It could allow contractors to retire debt without taking on new debt. It could accomplish efficiency gains that would allow contractors to regain some of the margins they sacrifice with low prices.

In addition to equipment sharing, another concept that has been bantered about, but usually not implemented, is running split shifts, which could extend the use of equipment from 4 to 5 days to 6 to 7 days. When you start thinking like this, it opens unique opportunities to work on properties that aren't open for business, making it more favorable to work with less interruption or interference. This scenario creates management challenges, but trying to compete today within the old framework is challenging enough.

So, while it tests common practices, it might be time to look at equipment management and usage in a different way in a different world.

We ... don't always evaluate thoroughly whether we're **investing ... capital wisely** or making the best use of it.



High-Tech holiday gifts

Why not celebrate the holidays by buying a few technology gadgets for your employees, your business and yourself? This month, I've collected information on a number of innovative products that are fun and useful:

Dell Latitude XT2 XFR | dell.com

Are your field-service employees rough on gear? Use this rugged laptop to digitize your field operations without worrying about broken hardware and expensive repair services. The XT2 features a capacitive multitouch screen (think iPhone), an EVDO wireless broadband Internet connection and a solid-state disk drive with full disk encryption. With its backlit rubber sealed keyboard, this laptop is ready for even the dirtiest environment. Or, you can turn the 12.1-in. touch screen around and use it as a tablet for taking notes and other handwritten applications.

Sprint HTC Hero | sprint.com

With the success of Apple's iPhone, Google now has a big push into the mobile phone market with its second generation of Android phones. The first to be offered by Sprint is the HTC Hero, which has everything the modern smart phone needs and more. From the 5-megapixel camera that also functions as a camcorder, to the built-in GPS, magnetic compass and accelerometer, you can be sure to have all of the functionality you've come to expect from a mobile phone.

And just like the iPhone, neat applications are readily available from the Android Market. As an added plus, because its software is from Google, HTC Hero works with all of your favorite Google applications and social networks.

WikiReader | thewikireader.com

Tired of losing arguments because you don't know the facts? Well, that doesn't need to happen any longer with the WikiReader in your pocket. This

easy-to-use device puts all 3 million-plus articles found on the popular online encyclopedia Wikipedia in the palm of your hand.

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Optoma Pico PK102 Pocket Projector

| optomausa.com

Building the perfect PowerPoint sales presentation will close the deal — only if your customer can see it. With the Pico PK102 Pocket Projector, you can create images as large as 60-in. and audio anywhere you are. The portable, lightweight and rechargeable projector has 4GB of internal memory, so you won't even need a PC to view 6,000 pictures or eight hours of video. And with the LED light source, a burned out bulb is a thing of the past. This projector is the ideal companion for any road warrior.

One of the best parts of the holiday season involves finding the perfect gift. Putting the right technology into your employees' hands, should increase productivity and sales. What business owner wouldn't want that gift this holiday season?

Putting the right technology into your employees' hands, should **increase productivity and sales.** What business owner wouldn't want that gift this holiday season?

PROJECT PORTFOLIO

A SCRAPBOOK OF DESIGN/BUILD OVERHAULS

Landscaping in new heights

THE MISSION

A rooftop terrace by New York-based Town and Gardens Ltd. derives its inspiration from where the Manhattan winds blow and the movement of the Hudson River.

With a budget of less than \$500,000, Town and Gardens' landscape design and installation was completed on schedule — and was well received by the client, residents and architect.

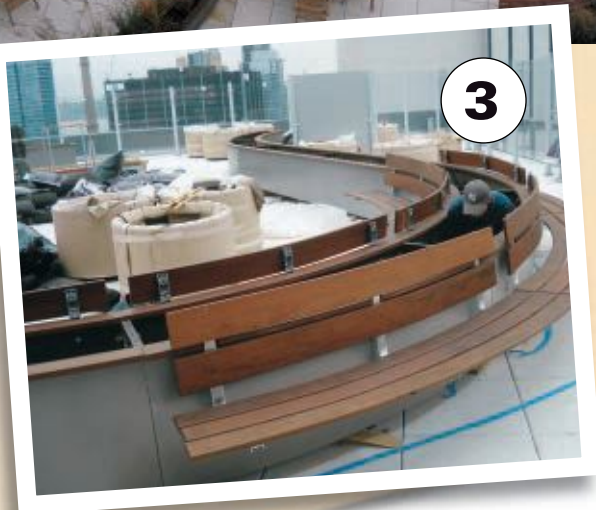
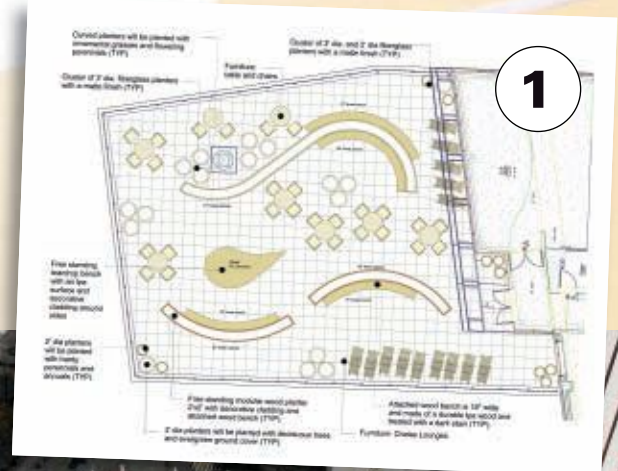
A notion of movement and the need to generate multiple spaces is what inspired Michael Franco, a landscape architect with Town and Gardens Ltd., to create a series of modular planters joined together to create two serpentine patterns and a custom teardrop-shaped bench.

Like any project, this one wasn't without its challenges. Each step, including having to carefully cart all materials up to the rooftop within the six-month time frame, was orchestrated efficiently.

Before the installation, the roof's precast paving system was installed by others and set on insulation, rather than a pedestal system, Franco says. That created an unsuitable surface for the continuous curved planters and benches. To resolve this, all modular units had to be shimmed up, and an additional metal kickplate had to be added to hide the gap.

The team worked closely with Union City, NJ-based FJC Woodworking, Inc. to test and determine the maximum curve of the wood benches, so they could minimize the number of cuts necessary.

During the summer, the grasses helped create lush green walls to further define and screen the various seating areas from one another. Residents continue to use the terrace through the winter. After all, it provides a little bit of nature high above the city.



PHOTOS COURTESY: TOWN AND GARDENS LTD.



THE WORK

1 | THE MASTER PLAN. Note the design relationships formed between the curved planters, benches, clusters of planters and furniture. The client was pleased with the open circulation it provided, as well as the many options for seating and opportunities for shade and screening.

2 | THE THEORY IN PRACTICE. This view, taken two levels above the mechanical area, shows the garden in the winter. A lounge area on the same level allows residents to enjoy the garden throughout the year.

3 | LONG-SLEEVED IRRIGATION EFFORTS. During the installation, the irrigation system was run underneath the pavers and brought up through the metal-clad wooden planters. A special sleeve was used to route the piping, preventing soil from draining through and out onto the pavers.

4 | A SPLASH OF COLOR. Annual plantings are added in the spring and fall to all the round clusters of trees and shrubs. This helps to brighten the space and accent the perennial plantings.

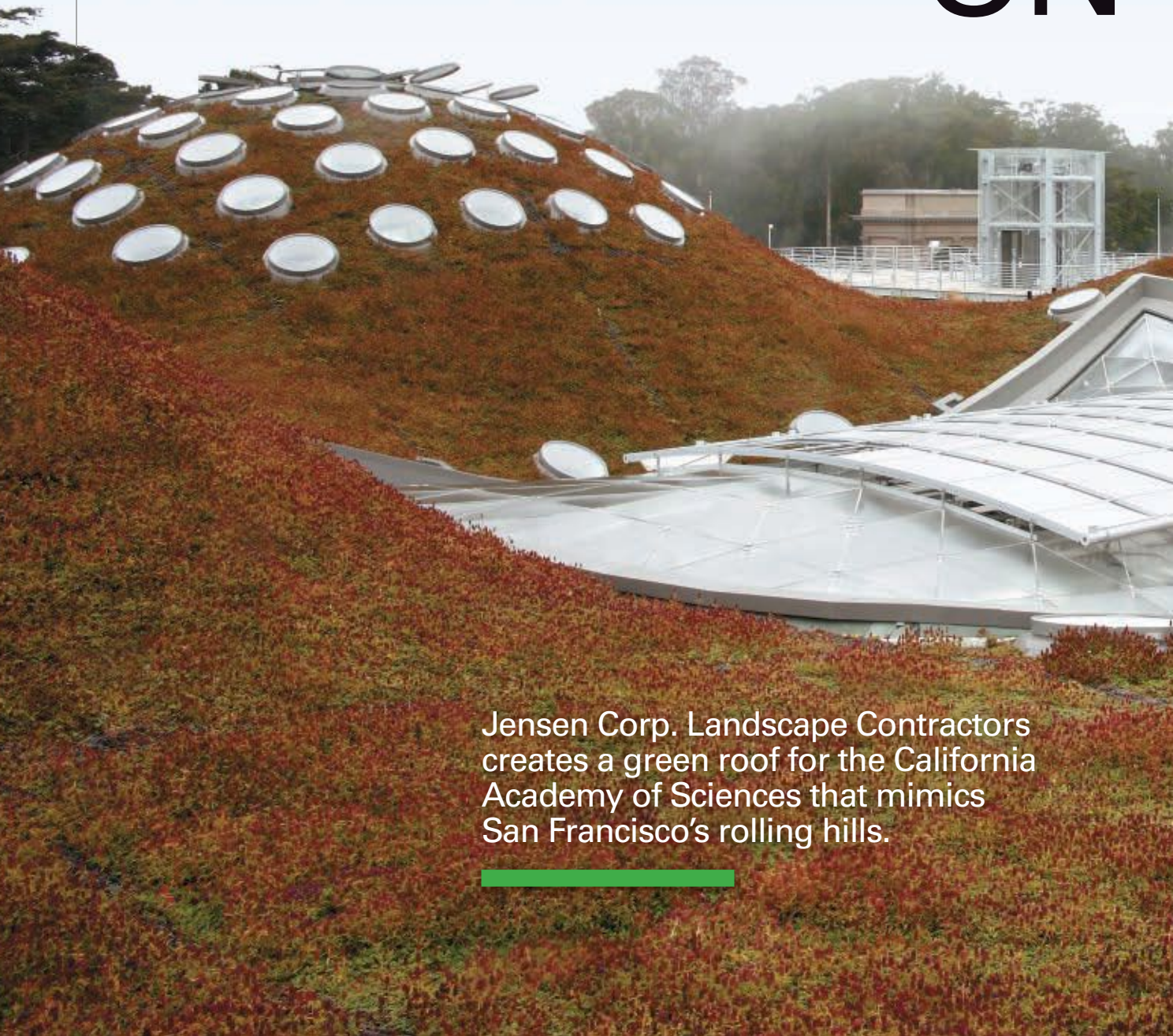
5 | TIDY BY THE TRUCKFUL. All plant materials and bagged soil had to be carefully carted through the recently finished building. The Town and Garden staff took special care to protect the walls and carpeting. The entire planting and cleanup processes were completed in two days.

6 | TAILOR MADE. Each custom planter had to be manufactured individually off-site, and they were joined together on the terrace.

7 | BOTH SIDES NOW. The larger curved planter provides opportunities for cantilevered benches on both sides. Magnificent views of the city are on one side, and a sense of enclosure, with the plantings and the curve of the planter and bench, are on the other.

Founded in 1995 by Don Sussman and Chris Fitzpatrick, Town and Gardens Ltd. maintains a fully stocked warehouse and offices in Manhattan. The projects in which it specializes range from modest patio plantings to year-round maintenance of large institutions and community developments. This installation garnered a 2008 Environmental Improvement Grand Award from the Professional Landcare Network (PLANET). For more information, visit TownAndGardens.com.

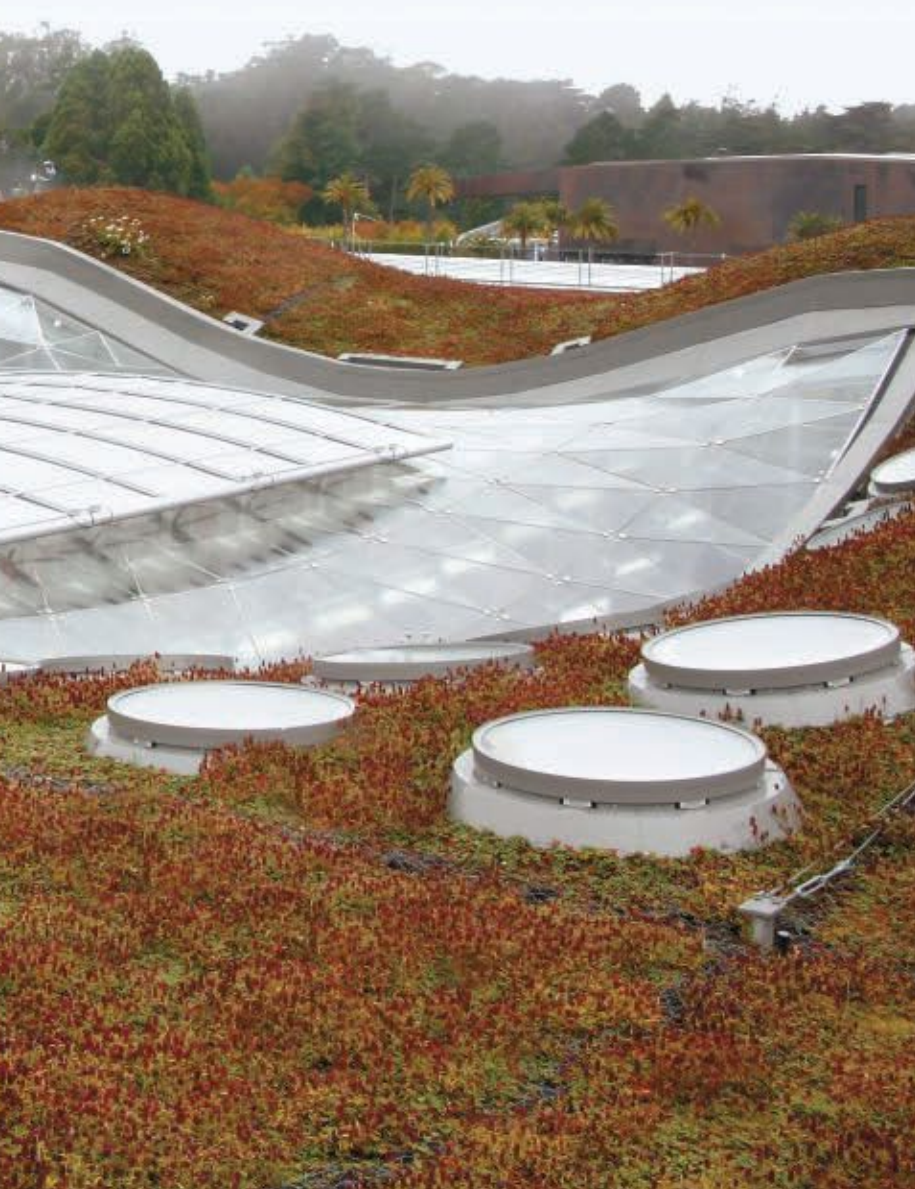
THE GREENEST ON



Jensen Corp. Landscape Contractors creates a green roof for the California Academy of Sciences that mimics San Francisco's rolling hills.

MUSEUM EARTH

BY **DANIEL G. JACOBS** MANAGING EDITOR



PROFESSIONAL LANDSCAPERS SPEND their careers making the grounds around homes and buildings a little more beautiful and a little more green. Jensen Corp. Landscape Contractors helped take that concept one step further when it installed a green roof on the California Academy of Sciences.

The roof, designed by architect Renzo Piano, echoes San Francisco's rolling hills, which posed some unique challenges for Jensen's workers.

"Keys to this job were the steep slopes," says John Vlay, CEO of Jensen Corp. Holdings, the parent company of the landscape contractor division. "Some of the slopes were greater than a 45-degree angle. We had to specially train our men with harnesses and climbing ropes, and how to tie-off to get the materials all the way up on the sides and up to the top of the hills."

Translating the design on paper to the reality of the 2.5-acre roof had its challenges, including transporting the material onto the roof.

Having built other green roofs, including The Gap's corporate headquarters in San Francisco, the team knew there were several ways to transport the 2.6 million lbs. of soil and plants up to the work site.

"We did a lot of analysis," Vlay says. "Did we want to blow the soil onto the roof? Did we want to crate it up using

The California Academy of Sciences' green roof is the largest living roof in the state and features seven dramatic hills to mimic those of San Francisco.



AWARD WINNER

containers? Or did we want to use conveyor belt systems?"

The company chose to use containers. It hoisted about 50,000 coconut husk trays, each with 3 in. of soil and native California plants, by crane to the roof. Crews also installed a grid of lava rock-filled gabions, reinforced with

steel and straps, to provide support for the roof's walkways. Another 1,000 cu. yds. of soil were distributed with old-fashioned wheelbarrows.

Only half the battle

Getting all the material up on the roof was a short-lived victory because there



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was the pesky matter of containing all the soil on the roof's hills.

"One of the biggest challenges, on these steep slopes, was holding the soil," Vlay says. "In some of these areas, the soil was starting to slip."

Because the roof was worked on in phases, the Jensen team was able to take more established material from different parts of the project and transplant it onto the slopes.

"We took some of the areas from the (flat) 'North 40' that were already rooted in and had almost fully grown sod, cut it out and put those into the areas that were very steep, so we didn't have to wait for them to take hold," Vlay says. "That's how we avoided some of the difficulties with the steep slopes."

What was planted was just as important as how they were planted. Designers wanted to use plants native to the area — and no grasses.

The Jensen team came up with what it called the Fab Four: *Fragaria chiloensis* (beach strawberries), *Prunella vulgaris* (self heal), *Armeria maritime* (sea pink) and *Sedum spathulitholium* (stonecrop).

"All the trays we put up only had those four," Vlay says. "Then we came back in and put down seed of five