



Extra Credit

WHEN A GREEN ROOF FAILS TO PERFORM, A SCHOOL STARTS OVER WITH A NEW, MORE APPROPRIATE, DESIGN.

Text Linda McIntyre

The original green roof at Sidwell Friends Middle School (1, as seen in August 2009) did not take root as anticipated and began to sprout weeds. In replanting the green roof, Furbish Co. started over with a new mix of sedums (2) that were chosen over the original perennials. The sedums' metabolism allows them to survive long periods of drought, and thus makes them well-suited to a hot, dry, and windy green roof. The designers also worked with a new growing medium (3) that offered a more consistent particle size and was rigorously tested. It was mounded up to provide more depth and support for the plants.

The plants on most green roofs aren't there just to look nice. They contribute to the roof's performance and help knit the components of the assembly together. But to provide these benefits over the life of the roof—and to provide the owner with an aesthetic return on investment—the plants have to survive the strong heat, light, and wind conditions found on top of even low buildings.

That's a tall order for most plants, and also for many designers. Selecting plants for green roofs, and the horticultural components that support them, is often a counterintuitive process that requires setting aside most of what you know about plants when they are planted at grade.

The plant palette originally chosen for the green roof at Sidwell Friends School in Washington, D.C.—native flowering perennials—was in keeping with other landscape features in the school's sustainability-focused master plan. But while these species are beautiful and, on the ground, relatively carefree, they don't work on a basic green roof assembly such as the one on the school, which had a thin layer of mineral-based growing medium (composed of mineral aggregates) and no irrigation. In this environment, the specified plants died, leaving the medium exposed and, soon, sprouting a motley assortment of weeds. "We quickly saw that the plants couldn't take the D.C. summers," says

LESSONS LEARNED

- **A green roof isn't a garden, and no plant is native to a roof.** Unless the owner wants to invest in a complex design that includes irrigation and deep soil, stick with tried-and-true green roof plants for most of the roof area. Try accent plants in protected areas or those where the medium can be mounded to provide more soil depth, not all over the roof.
- **Shortcuts are often shortsighted.** Green roof growing medium from an established supplier might seem expensive, but it's been formulated and tested to support plants on a roof and stay physically and chemically stable over time. It's also generally inhospitable to weeds.
- **Maintenance, especially right after installation, can make or break a green roof.** An experienced team can often spot and deal with problems before they spin out of control.
- **Embrace the learning process.** The school has had some setbacks in its ambitious effort to green the campus. "But we were prepared for that," says plant manager Steve Sawyer. "When you push the envelope, sometimes it pushes back. Six or seven thousand people have seen this project, we don't hide that some things have gone wrong, and we're making it easier for others."



COOL ROOF

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plant manager and head of buildings and grounds Steve Sawyer. And Sawyer's small grounds crew, charged with maintaining the roof as well as the rest of the campus landscape, had no maintenance plan to guide them through the situation.

The school administration brought in Furbish Co., a Baltimore-based design/build firm with considerable green roof experience, to try a different approach. The new roof "is a more conventional extensive green roof, mostly a sedum meadow with some accent plants," says owner and founder Michael Furbish.

The Furbish team started with new growing medium; the medium in the earlier installation was extremely coarse. Working with it would have required a lot of amendment, and killing the bank of weed seeds in the system would have taken years. After laying down a new course of lightweight medium specially blended for extensive green roofs, Furbish's team planted a mix of tough, drought-tolerant plants, mostly *Sedum* species. In comparison to the flowering perennials previously planted on the roof, the *Sedum* species conserve water in their cells, which allows them to survive long periods of drought and makes them better suited to the hot, dry, windy roof environment. In some areas, the medium was mounded a few inches higher than the typical 4-inch depth to support some flowering accent plants. Installed in spring of 2010, the plants are growing in well, despite this year's scorching summer.

Perhaps most important to the new roof is that the Furbish team maintains all of its installations for two years. Furbish team members will conduct site visits, with more checks front-loaded during the growing season to ensure the plants are well-established. As a result, they are able to catch any problems early and swap out plants that are struggling. After each visit, the team will send reports, along with photos, to Sawyer. In addition, he is building an archive of maintenance reports for future reference. ■

Linda McIntyre is co-author of The Green Roof Manual: A Professional Guide to Design, Installation, and Maintenance, published in August 2010 by Timber Press.