Building Rooftop Decks

Composite pavers fit in a freight elevator and are light enough to use on a roof

by Milt Charno

When I started building decks in the 1970s, quality redwood decking was plentiful, framing lumber was CCA-treated for ground contact, and code requirements for decks were virtually nonexistent. But then the redwood supply dried up in the 1990s, my lumberyard stopped stocking CCA-treated lumber in 2003, and building codes began requiring all sorts of hardware that wasn't even available when I started out.

Our decks are still standing, though, and a good part of our business recently has been renovating or updating decks, many of which we had originally built. In the process, we've had a chance to try out new materials, including a composite paver that we first saw at the 2011 DeckExpo in Chicago. At the time, it was made by Minneapolis-based Vast Enterprises, but that company has since been acquired by Azek Building Products, which has expanded the product line beyond the basic 4-by-8-inch pavers we saw at the show. In this article, I'll describe a couple of projects on which composite pavers turned out to be a good alternative to traditional types of decking.

Composite Pavers

Azek's composite pavers are made from 95% recycled content—primarily old tires

PHOTO: R&D CONSTRUCTION, KAMLOOPS, BRITISH COLUMBIA

Figure 1. Azek's lightweight pavers are made from old tires and recycled plastic and are installed over a plastic grid system, which locks the pavers in place.

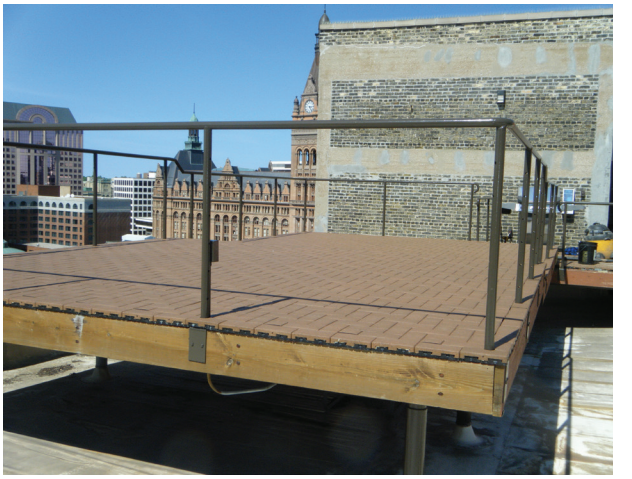

Figure 2. Faced with the logistics of transporting traditional decking in a freight elevator up to the roof of this downtown high-rise building, the author chose instead to resurface the deck with composite pavers.

and plastics, according to the company. When you think of pavers, you probably picture a ground-level application such as a walkway or patio, and I suspect that's how the original manufacturer envisioned that they would be used. The concept isn't new; an associate of mine once showed me a rubber brick paver that Goodyear had manufactured in the 1920s and that I understand the company had used to pave the road in front of their headquarters in Akron, Ohio.

Why should deck builders be interested in composite pavers? Because they're about one-third the weight of brick or concrete pavers—comparable to the weight of composite or wood decking. So they can be installed over a standard wood deck frame without appreciably adding to a deck's dead load, and they don't require any particular masonry skills or tools to install, thanks to the 16-by-16-inch plastic installation grids that are used with the system (**Figure 1**).

First Impression

When I first discovered the pavers, I had been puzzling over how to transport lengths of decking in a freight elevator up to the roof of a 12-story building in downtown Milwaukee. The building's condo owners had hired me to replace a 1,000-square-foot deck on the top of the building (**Figure 2**).

When I inspected the existing deck, I found that it had been framed with steel, and had sound but weathered 2x6 PT decking. Rather than replace the decking per the original scope of work, I proposed installing pavers on top of the old decking. Not only would the boxes of pavers and grids fit easily in the freight elevator (unlike composite decking, which we would have needed to cut into shorter lengths), we would not need to remove the old decking, which had been fastened to the frame with screws driven up through the flanges of the steel joists. The condo owners especially liked that my proposal would save them $6,000 vs. the cost of installing new composite decking.

Installation. We installed the pavers right over the old deck. There's no trick to installing these pavers, though planning is more akin to a tile installation than to laying down decking. As with tile, you want to avoid cuts when possible and make any necessary cuts look planned and symmetrical. For example, one side of the deck shouldn't have a full course of pavers while the other side has a half-course. Layout is a matter of determining centers for each side, snapping lines, and figuring out if the lines mark the center of a paver or an edge.

Because the installation grids lock the pavers into a predetermined spacing, it's really the grids that are being laid out, not the pavers themselves. On this project, we needed nearly 600 of them. To resist wind uplift on this rooftop location, we fastened through the center of each grid to the decking beneath with a couple of screws. At first, we had screwed the grids through their corners, but found that as the grids heated up in the sun, they tended to buckle upward in the middle.

We installed the pavers in a herringbone pattern, though basketweave, running bond, and other patterns can also be used with the system. Where we needed to cut the grids or pavers, we used our

PHOTOS: FIGURE 1, AZEK; FIGURE 2, MILT CHARNO

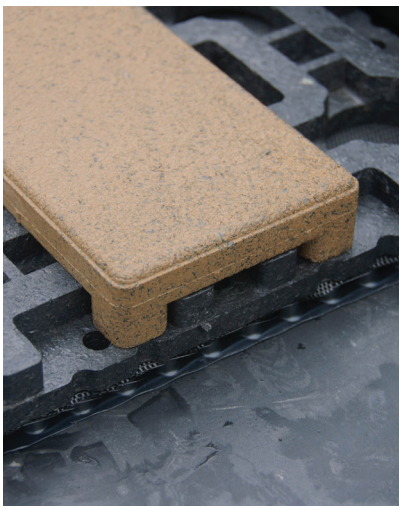

Figure 3. Drainage mat must be used when the grids and pavers are installed directly over a roofing surface.

Figure 4. This deck was finished with a traditional two-tier fascia, which locks the pavers in place. The pavers were also glued to the installation grid to counter wind uplift.

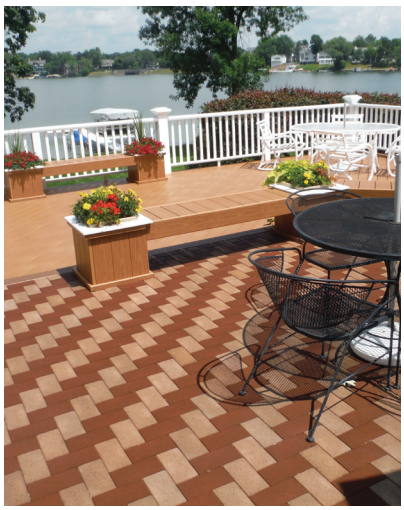

Figure 5. On this project, the author picture-framed the pavers with a composite-decking border.

regular saws equipped with low-tooth-count blades. To accommodate the existing round rail posts, we cut round holes in the pavers using drill-mounted hole saws, which tended to gum up a bit, but otherwise worked fine.

We were concerned about wind uplift, so we also glued each paver to the grids with standard PL construction adhesive. No guidelines about this detail were available at that time, however, and we found on return visits that the bond between the pavers and the grids had largely failed. According to Azek, this was because the pavers absorb very little moisture, which most adhesives need to cure properly. If we were to install pavers this way again, we would use a product now recommended for this purpose, such as Titebond ProVantage Landscape adhesive.

Drainage. On this project, we weren't concerned about drainage because the pavers were installed on an elevated deck. But the plastic grids can also be set on a flat EPDM or torch-down roof, with a slope of between 1/8 inch and 1/2 inch per foot—with a couple of caveats. First, the roof deck must be reasonably flat, without major dips or undulations (minor ones can be shimmed so that the pavers are level). Second, a drainage mat must be installed between the roof surface and the paver grids (**Figure 3**). There are several brands of drainage mat; Azek mentions American Wick SiteDrain 186 in its installation instructions. According to David Justice of Azek, "The sheet drain protects the waterproofing membrane from abrasion and creates a pathway for the water to properly escape off the roof."

Trim. When we first installed them, the composite pavers came in only one size. Now, there are multiple sizes, as well as trim pieces and low-profile resurfacing pavers that can be used for transitions. These pieces can also be used to finish the perimeter of the deck, but on this project we installed a simple fascia border (**Figure 4**).

While this border does an adequate job of locking in the perimeter pavers and finishing the edge of the deck, I now think that it's not quite substantial enough. Instead, we currently picture-frame our borders with full-width decking that matches or contrasts with the color of the pavers (**Figure 5**). To do this, we install blocking as needed on top of the rim joists so that the surfaces of the pavers and the border are flush.

Durability and Cost

Though this deck is located on the roof of a 12-story building in a windy location, a recent inspection of the four-year-old deck showed that all of the pavers are intact, despite the failed adhesive. While the pavers have lost a bit of their initial shine, and we've noticed a slight smell of rubber on hot days, our clients have been pleased with the virtually maintenance-free surface.

The installed cost that we quote to our clients is comparable to the cost of conventional composite decking. ❖

Milt Charno is a deck builder in East Troy, Wis.

PHOTOS: FIGURE 3, AZEK; FIGURES 4 & 5, MILT CHARNO