

BY EMANUEL SILVA



Supporting a Ledger From Above

Installing a deck ledger on an older home where the door onto the deck is only a few inches above a skinny 4x6 sill can be challenging enough. Set that sill on top of an old rubble stone foundation that's impossible to anchor anything to, and some guys might be wishing they hadn't taken on the deck job in the first place. That was the situation I ran into on a recent project.

In the past, I've anchored ledgers to solid concrete or brick foundations using specialty fasteners such as Tapcons, but the foundation stones on this house were large and nearly impossible to drill into. Also, the mortar around the stones was in bad shape. I couldn't have anchored a ledger to the foundation even if I'd wanted to. The worst

thing about the foundation was that it stuck out past the sill and the plane of the wall by a few inches.

Drawing from a technique I had seen a respected carpenter use to solve a similar problem, I decided to fasten through the top of the ledger to catch the sill. Then, to support the bottom of the ledger, I would secure it to the house wall with Simpson Strong-Tie LSTA Strap Ties; these 18-gauge galvanized steel straps have a load rating high enough to hang the ledger solidly without my having to worry about it—and the deck—falling down.

PREPARING THE LEDGER

I first tore off the original deck that served as the entry platform for the house. Then I

peeled back the bottom 2 feet of siding from the two walls adjacent to the deck, exposing the original board sheathing. To protect the walls from water and potential damage, I applied Grace Ice and Water Shield flashing to the sheathing, letting it wrap around the bottom of the door (1). Next, I applied a thin coat of mortar with a bonding agent to the foundation walls that would be below—and hidden by—the deck, to seal and stabilize the mortar around the stone. I was then ready to prepare the ledger.

With the deck being only about 8 feet square, pressure-treated 2x8s would be big enough for the ledger, the rim, and the joists. Because the foundation jugged out past the wall plane, spacers would be required to pad



out the ledger so that it could hang beyond the foundation. The wall with the door needed a pad at least 2¼ inches thick, while the adjacent wall needed only a 1½-inch pad. For the door wall, I sandwiched a length of Azek between the ledger and a pressure-treated 2x4. A 2x4 alone was sufficient to pad out the adjacent ledger.

Knowing the dimensions of the ledger and pads, I was able to determine the length of the straps I'd need. For a strap to wrap completely around the ledger and extend up the wall far enough for me to anchor it to solid framing, it needed to be 36 inches long.

I measured the length of the ledgers on both walls and located and marked the wall framing where the straps would attach. Then I was ready to cut and assemble the ledger units.

ASSEMBLING THE LEDGERS

I started by cutting the ledger and spacer stock to length. I laid out the strap locations on the stock and then cut a series of shallow dado grooves on both sides of the spacers and on one side of the ledger, making sure the grooves weren't too close to the straps. These grooves will help channel any moisture down from behind the ledger-and-spacer assembly. I sealed all the cut ends and the dados with a wood preservative to help prevent rot (2).

To prevent any reaction between the treated wood and the metal straps, I applied a strip of adhesive-backed membrane to the ledger at each strap location (3).

Then I screwed the spacers to the back of the ledger. On the door-wall ledger, I secured the Azek spacer to the ledger first, using a few structural screws; next I used longer structural screws to secure the 2x4 spacer to the Azek-and-ledger assembly (4). A membrane strip wrapped around the spacers would help isolate the treated wood from the metal straps.

STRAPS GO ON THE LEDGER

I had decided that the best way to suspend the ledger was to bend the metal straps around the ledger assembly in the shape of a giant hook. Forming the 18-gauge strap around the ledger wasn't difficult. I started



at the top of the ledger on the side that faced away from the wall. Using a layout square as a guide, I drove Simpson screws through each hole in the strap (5).

Next I bent the strap around the bottom of the ledger and screwed that section (6). As I went around the ledger, I bent the strap and tapped it flush with a hammer before securing it with screws. The only tricky part was at the inside corner formed by the ledger and the spacer; here I used a 2x4 scrap to help bend the strap into the corner (7). The back of the spacer was supposed to lay flat against the sheathing, so I used nails in those holes—the nail heads had a much lower profile than the screw heads, so they wouldn't interfere with the ledger assembly fitting tight against the wall.

INSTALLING THE LEDGER TO THE HOUSE

The inside corner where the ledgers joined wasn't square, so I needed to install the outer rim joists to make a square outside corner before attaching the ledgers permanently. I started by snapping a level chalk line for the ledger height along both inside corner walls and hung the side-wall ledger with a couple of screws through the tails of the straps. (I drove screws through all the holes in the straps once the perimeter deck framing was complete.) The screws were long enough to penetrate through the sheathing and into the wall framing (8). I then installed both outside rim joists, squaring them up and leveling them on temporary supports.

The second ledger slid into place fairly easily (9). I simply lined up the tops of both ends flush with the adjacent members and permanently secured the straps to the wall



using at least six Simpson screws for each one (10). To stabilize the ledger assemblies and to secure them tight to the house, I drove galvanized lag screws through the ledgers and into the sills. When I was happy with the placement of the perimeter framing, I then permanently attached the straps on the side-wall ledger.

With one ledger assembly thicker than the other because of variations in the foundation wall, I used different-size lag screws for each ledger: 7-inch lags for the ledger assembly under the door and 5-inch lags for the adjacent ledger. Because the sill was only a 4x6, I staggered the lag-screw locations to discourage a stress crack from forming along the length of the sill.

I measured 4 inches in from the end for

the first lags and then spaced them 2 feet apart. I drilled 1/2-inch holes through the ledgers at each location and tapped the lags into place (11). Then I tightened them with a socket wrench, taking care not to crush the surface of the ledgers (12). To keep the ends from twisting, I installed corner brackets in each corner. With the rims and ledgers in place, I finished the framing for the floor of the entry deck, followed by the framing for the rest of the porch.

When the inspector arrived to check the work, he was impressed with how I'd resolved the challenge of securing the deck ledgers to this older home.

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